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Development and transfer of technologies

Report of the Global Environment Facility on the progress made in carrying out the Poznan strategic programme on technology transfer

Note by the secretariat*

1. The Conference of the Parties, by its decision 2/CP.14, welcomed the Poznan strategic programme on technology transfer proposed by the Global Environment Facility (GEF).¹ The Subsidiary Body for Implementation (SBI), at its thirty-fourth session, invited the GEF to provide reports on the progress made in carrying out its activities under the Poznan strategic programme, including its long-term implementation, for consideration by the SBI at its thirty-fifth and subsequent sessions, for the duration of the Poznan strategic programme.²

2. In response, the GEF secretariat has submitted the report dated 24 October 2011 contained in the annex; it is reproduced here as submitted, without formal editing, and with the original pagination.

* This document was received from the Global Environment Facility secretariat on 11 November 2011.

¹ FCCC/SBI/2008/16.

² FCCC/SBI/2011/7, paragraph 137.

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GLOBAL ENVIRONMENT FACILITY
INVESTING IN OUR PLANET

October 24, 2011

IMPLEMENTATION OF THE POZNAN STRATEGIC PROGRAM
ON TECHNOLOGY TRANSFER:
REPORT OF THE GLOBAL ENVIRONMENT FACILITY TO THE
SEVENTEENTH SESSION
OF THE CONFERENCE OF THE PARTIES TO THE
UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE
CHANGE

Table of Contents

INTRODUCTION

POZNAN STRATEGIC PROGRAM ON TECHNOLOGY TRANSFER

- a. Technology Transfer Pilot Projects
- b. Technology Needs Assessments (TNAs)
- c. Long-Term Implementation of the Poznan Strategic Programme
- d. Dissemination of GEF Experience and Successfully Demonstrated Environmentally Sound Technologies (ESTs)

ANNEX 1. SUMMARIES OF PILOT PROJECTS

ANNEX 2. LONG-TERM PROGRAM ELEMENTS ON TECHNOLOGY TRANSFER

Table 1. Summary of Technology Transfer Pilot Projects under the Poznan Strategic Program on Technology Transfer

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
AfDB	African Development Bank
CEO	Chief Executive Officer
COP	Conference of the Parties
CRESP	China Renewable Energy Scaling-Up Program
dHRS	Dutyion Rood Hydration System
EGTT	Expert Group on Technology Transfer
EST	Environmentally Sound Technology
GEF	Global Environment Facility
GHG	Greenhouse Gas
GRS	Global and Regional Set-aside
HCFC	Hydrochlorofluorocarbon
HFC	Hydrofluorocarbon
IDB	Inter-American Development Bank
IFAD	International Fund for Agricultural Development
LDCF	Least Developed Countries Fund
NAI	Non-Annex I
PPP	Public Private Partnership
PSC	Project Steering Committee
RCCS	Renewable Carbon Capture and Storage
SBI	Subsidiary Body for Implementation
SCCF	Special Climate Change Fund
STAP	Scientific and Technical Advisory Panel of the Global Environment Facility
STAR	System for Transparent Allocation of Resources
TAP	Technology Action Plan
TEC	Technology Executive Committee
TNA	Technology Needs Assessment
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization
URC	UNEP Risoe Centre

INTRODUCTION

1. The Global Environment Facility (GEF) prepared this report for the seventeenth session of the Conference of the Parties (COP 17) to the United Nations Framework Convention on Climate Change (UNFCCC).
2. COP decision 2/CP.14, in Paragraph 1, welcomed “the Poznan strategic programme on technology transfer³, as a step towards scaling up the level of investment in technology transfer in order to help developing countries address their needs for environmentally sound technologies” and recognized “the contribution that this strategic programme could make to enhancing technology transfer activities under the Convention.”
3. COP decision 2/CP.14, in Paragraph 2, requested the Global Environment Facility:
 - (a) To promptly initiate and expeditiously facilitate the preparation of projects for approval and implementation under the strategic programme referred to in paragraph 1 above in order to help developing countries address their needs for environmentally sound technologies;
 - (b) To collaborate with its implementing agencies in order to provide technical support to developing countries in preparing or updating, as appropriate, their technology needs assessments using the updated handbook for conducting technology needs assessments for climate change published by the United Nations Development Programme, to be made available in early 2009 in collaboration with the Expert Group on Technology Transfer, the UNFCCC secretariat and the Climate Technology Initiative;
 - (c) To consider the long-term implementation of the strategic programme, including: addressing the gaps identified in current operations of the Global Environment Facility that relate to investment in the transfer of environmentally sound technologies; leveraging private-sector investment; and promoting innovative project development activities;
 - (d) To report on the progress made in carrying out the activities referred to in paragraph 2 (a-c) above to the Conference of the Parties at its sixteenth session, in addition to providing interim reports to the Subsidiary Body for Implementation at its thirtieth and thirty-first sessions, with a view to assessing its progress and future direction in order to help inform Parties in their consideration of long-term needs for implementation of the strategic programme.
4. In accordance with decision 2/CP.14, the GEF presented interim reports to the Subsidiary Body for Implementation (SBI) 30 and SBI 31, respectively, on the progress made in carrying out the Poznan Strategic Program on Technology Transfer.
5. Subsequently, the conclusions of SBI 31 (FCCC/SBI/2009/L.18) invited the GEF to provide a report on the progress made on the implementation of this program at SBI 32, including reporting on the long-term aspects of the program. In response to the above conclusions of SBI 31,

³ Previously referred as the strategic programme of the Global Environment Facility (FCCC/SBI/2008/16) and renamed by the Conference of the Parties at its fourteenth session.

the GEF presented an interim report to SBI 32.

6. The GEF presented a report to COP 16 on the progress made in carrying out the activities of the Poznan Strategic Program on Technology Transfer.

7. Under SBI 34 agenda item 12 on the development and transfer of technologies (conclusion L.10), the SBI requested:

- COP 17 to invite the GEF to continue to provide financial support to other non-Annex I (NAI) Parties as appropriate to conduct or update their Technology Needs Assessments (TNAs).
- GEF, Parties and relevant organizations to provide financial support for project proposals, including those for pilot projects of the types supported by the Poznan strategic programme related to technologies for adaptation.
- GEF to provide reports on progress made in carrying out its activities under the Poznan strategic programme.
- The SBI requested the GEF provide a report to the COP on progress made in carrying out its activities under the Poznan strategic programme, summarize its response in the GEF report to the COP, and present at the SBI 35.

8. In accordance with above SBI 34 conclusion, this report presents the progress made in carrying out the Poznan Strategic Program on Technology Transfer. The GEF has also submitted a report to COP 17, which includes a summarized update on the Poznan Program implementation.

POZNAN STRATEGIC PROGRAM ON TECHNOLOGY TRANSFER

9. In November 2008, the GEF Council and the Least Developed Country Fund (LDCF)/Special Climate Change Fund (SCCF) Council approved the Strategic Program on Technology Transfer. The Program aimed to scale up the level of investment in the transfer of environmentally sound technologies (ESTs). The approved Program included a funding window of \$50 million with \$35 million coming from the GEF Trust Fund and \$15 million coming from the SCCF. The Strategic Program was then renamed the Poznan Strategic Program on Technology Transfer at COP 14.

10. There are three funding windows to support technology transfer under the Poznan Strategic Programme, namely: (1) technology needs assessments (TNAs); (2) piloting priority technology projects linked to TNAs; and (3) dissemination of GEF experience and successfully demonstrated ESTs.

11. The report presents the progress made in the order of the COP decision paragraphs. Section a on technology transfer pilot projects documents the progress made in carrying out the activities referred to in COP decision 2/CP.14 Paragraph 2 (a). Section b on technology needs assessments reports on the progress made in carrying out the activities referred to in Paragraph 2 (b). Section c on long-term implementation of the Poznan Strategic Program reports on the progress made in carrying out the activities referred to in 2/CP.14 Paragraph 2 (c). In addition, the dissemination of the GEF experience and successfully demonstrated ESTs is presented as Section d.

a. Technology Transfer Pilot Projects

12. The purpose of this funding window for technology transfer pilot projects is to finance projects that support the deployment, diffusion, and transfer of technologies that have been identified by countries as priorities.

13. The Call for Proposals for technology transfer pilot projects was issued on March 25, 2009 by the GEF Chief Executive Officer (CEO) and circulated to all national GEF operational focal points, copied to the GEF agencies and the UNFCCC secretariat. The call for proposals provided the background information, procedure for proposal submission, and selection criteria. In addition to the standard criteria for reviewing GEF climate change projects, the call for proposal placed emphasis on, among others, consistency of targeted technology with national priorities as identified in the TNAs, national communications to the UNFCCC, or other national policy documents, innovative technologies and mechanisms for technology transfer, as well as highly leveraged projects, including investments from both the public and the private sector, as well as South-South technology transfer and international collaborative projects. The deadline for submission was August 14, 2009, which was subsequently extended to September 30, 2009.

14. Fourteen proposals of technology transfer pilot projects were prioritized for funding out of 39 proposals submitted to the GEF Secretariat. Total GEF resources requested for these 14 projects amounted to \$36.8 million from the Poznan Program, with additional \$21.2 million requested from the GEF Trust Fund. Total GEF funding for the selected 14 pilot projects amounted to \$58 million, and total co-financing for these projects amounted to more than \$195 million.

15. As of September 2011, GEF Agencies charged with implementing the technology transfer pilot projects have reported considerable progress in project preparation and implementation. Three projects have been CEO endorsed and are progressing in project implementation. Nine projects have been undergoing preparations for CEO endorsement. One project was cancelled upon request from a GEF Agency in late 2010. It has since been re-submitted by another GEF Agency, and was approved for Work Programme inclusion by the GEF CEO in September 2011. If approved by the GEF Council in November 2011, this project will again be included under the Poznan pilot project portfolio. Another project was cancelled upon request from the GEF Agency in July 2011. Table 1 provides a summary of progress for project development and implementation of the pilot projects.

16. As of September 2011, the total GEF funding for the three CEO endorsed projects and nine projects under preparation amounted to \$54.6 million, and total co-financing for these projects amounted to more than \$180.8 million. If the re-submitted pilot project is approved by the GEF Council in November 2011, the total GEF funding amounts to \$57.3 million, with total co-financing of \$186.5 million.

17. The technologies targeted by these projects for development and transfer are diverse and innovative. They include technologies on renewable energy (solar, biomass, wind, and hydrogen production and storage), energy efficiency (insulation materials, and efficient and hydrofluorocarbon-free appliances), transport (“green” trucks), composting, carbon capture and storage from sugar fermentation, and membrane drip irrigation for adaptation.

18. The projects take place in the following countries: Brazil, Cambodia, Chile, China, Cote

d'Ivoire, Jordan, Mexico, Russia, Senegal, Sri Lanka, Thailand, as well as Turkey and the Cook Islands. The re-submitted project takes place in Colombia, Kenya, and Swaziland. The project proposals and CEO endorsement documents of those under implementation are available at the GEF website: http://www.thegef.org/gef/gef_projects_funding.

b. Technology Needs Assessments (TNAs)

19. Immediately following COP 14, the GEF Secretariat organized a stakeholder consultation meeting in January 2009 to formulate a strategy and work plan for the implementation of the TNAs. Participants at the meeting, including representatives from the GEF agencies, the UNFCCC Secretariat, the Climate Technology Initiative, and the GEF Scientific Technical Advisory Panel (STAP), provided suggestions, stressing that TNAs should be actionable to provide a pathway to the implementation of projects on the ground. Other suggestions included engagement with the private financial sector in the TNA process, identification of priority technologies for pilot projects, and investment opportunities based on the TNA for future funding by the GEF and other sources.

20. The TNA project concept, under window one of the Poznan Strategic Program, was approved by the LDCF/SCCF Council in April 2009. Based on this TNA project concept, UNEP, as the GEF Agency, developed a full project document, which was endorsed by the GEF CEO in September 2009. Project implementation by UNEP started in October 2009. Total GEF funding for this project is \$9 million.

21. The TNA project has the objective to provide targeted financial and technical support to assist 35 to 45 developing countries in developing and/or updating their TNAs within the framework of Article 4.5 of the UNFCCC. The intention is that assisted countries go beyond identifying technology needs narrowly and develop national technology action plans (TAPs) for prioritized technologies that reduce greenhouse gas (GHG) emissions, support adaptation to climate change, and are consistent with national development objectives. The project also seeks to use the updated TNA Handbook and provide feedback to finetune methodologies through an iterative process.

22. Thirty-six countries are participating in the TNA project. They include:

- Africa: Cote d'Ivoire, Ethiopia, Kenya, Ghana, Mali, Morocco, Mauritius, Rwanda, Senegal, Sudan, Zambia;
- Asia and Europe: Azerbaijan, Bangladesh, Bhutan, Cambodia, Georgia, Indonesia, Kazakhstan, Laos, Lebanon, Moldova, Mongolia, Nepal, Sri Lanka, Thailand, Vietnam; and
- Latin America and the Caribbean: Argentina, Bolivia, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Peru.

23. A Project Steering Committee (PSC) has been constituted by UNEP, to assess the project progress and plan the upcoming activities. The PSC consists of representatives of the Expert Group on Technology Transfer (EGTT), the UNFCCC Secretariat, UNEP, the United Nations Development Programme (UNDP), the United Nations Industrial Development Organization (UNIDO), the World Bank, UNEP Risoe Centre (URC) and the GEF Secretariat. PSC meetings

have been held in December 2009, June 2010, and November 2010. The fourth PSC meeting is planned for November 2011.

24. This project approach is complementary to individual country-level TNA projects supported by the GEF outside the Poznan Strategic Program. Such individual TNA projects help larger countries that need more in-depth and extensive analysis to facilitate technology transfer. For example, the GEF is providing support to China to carry out a detailed assessment of current technology developments and needs, key barriers, and ways to promote EST transfer. Going beyond technology identification, the project will pursue pilot activities to operationalize key assessment findings. Specifically, programs that target and reduce barriers identified as impeding diffusion of priority technologies will be designed and potentially launched on a pilot basis.

25. Key areas of the UNEP TNA project progress, summarized from an update submitted by the Agency, include the following:

Country-Driven Preparatory Activities

26. The project is being implemented in two rounds. For the first round, 15 countries were selected as participating countries in early 2010. They are: Argentina, Bangladesh, Cambodia, Cote d'Ivoire, Costa Rica, Georgia, Guatemala, Indonesia, Kenya, Mali, Morocco, Peru, Senegal, Thailand, and Vietnam. For the second round, 21 countries were selected in October 2010. They are: Azerbaijan, Bhutan, Bolivia, Colombia, Cuba, the Dominican Republic, Ecuador, El Salvador, Ethiopia, Ghana, Kazakhstan, Laos, Lebanon, Mauritius, Moldova, Mongolia, Nepal, Rwanda, Sri Lanka, Sudan, and Zambia. This brings the total number of participating countries to 36.

27. Both first and second round countries have completed preparatory actions including the following:

- Formal institutional structures for project implementation have been established in all countries;
- Operating guidelines to govern activities and inter-agency relationships amongst national stakeholders engaged in TNA work have been agreed and disseminated in several countries;
- Awareness of the TNA among stakeholder groups has been raised through workshops and other mechanisms, such as National Inception Workshops; and
- TNA workplans have been finalized in consultation with stakeholders.

28. In regards to progress in TNA preparations, TNA reports were received from eight countries, and five additional reports are expected by the end of December 2011. TAPs are expected from six countries by December 2011. For the remainder of the countries, project activities are expected to be completed by September 2012.

Technical Support Activities

29. Building on the foundation established in most countries, technical support activities are underway. Three regional capacity building workshops were held for the first round countries in

September 2010 in Africa, Asia and Latin America, attended by 54 participants from 13 countries. The objective of the workshops was to build capacity of the country teams to conduct high quality TNAs.

30. Topics covered included: methodology and tools for prioritization of technologies, multi-criteria analysis, financial assessments of technologies, and facilitation of effective stakeholder consultation. The workshops were organized jointly by URC and selected Regional Centres for the project, namely: Asian Institute of Technology for the Asia region, Environment and Development Action in the Third World (ENDA) in the Africa region, and Fundación Bariloche with Libélula in the Latin America and Caribbean Region.

31. Additional regional capacity building workshops for first round countries were held in Asia, Africa, and Latin America in January and February 2011. The workshops focused on analysis of barriers and development of technology action plans by the countries, a key output expected from the project to help countries identify appropriate policy actions and projects for subsequent implementation.

32. For the second round countries, regional capacity building workshops in Asia, Africa, and Latin America were organized between June and August 2011, focusing on technical support and stakeholder engagement process.

TNA Publications and Information

33. The use of the updated handbook for conducting TNAs for climate change published by UNDP was included in COP decision 2/CP.14. The updated TNA handbook has been shared with country teams and is being used as the basic resource document on the general methodology of sector prioritization. The revised version became available in May 2010.

34. The project has also developed guidebooks to support adaptation TNAs. The three guidebooks developed to date address coastal erosion and flooding (November 2010), water sector (May 2011), and adaptation technologies for agriculture sector (August 2011).

35. The project also supports the development of sectoral guidebooks for mitigation. The guidebook on transport sector has been released (March 2011). Additional guidebooks on mitigation for the building and agriculture sectors are under preparation, and are expected to be ready by the end of 2011.

36. Two finance guidebooks, one for mitigation projects and one for adaptation projects are under preparation, following identification of capacity needs in 2011.

37. A series of articles titled “Technology Transfer Perspectives” are under preparation to document best practices in technology deployment and diffusion in the countries. Two issues covering mitigation and adaptation technologies are expected to be published by the end of December 2011.

38. An experience-based approach was adopted for developing the guidebook entitled “Overcoming barriers to the transfer and diffusion of climate technologies.” A first draft, completed

in December 2010, was distributed to the participating countries. This guidebook was subsequently used as the reference material for TNA training workshops held in January and February 2011. The final version will be published in English in December 2011. French and Spanish versions will be ready in January 2012, in time for use in training workshops for the second round countries.

39. The project website (www.tech-action.org) and intranet are operational, and the preparatory work on creation of a network has been initiated.

40. The first in a series of newsletters ("TNA Newsletter"), aimed at keeping countries and other stakeholders informed of the project progress and sharing experiences, was published in June 2011. The second newsletter has been finalized for release in October 2011.

c. Long-Term Implementation of the Poznan Strategic Program

Background: GEF-5 Climate Change Strategy

41. In keeping with the COP 14 decision that requested the GEF to consider the long-term implementation of the strategic program on technology transfer, the GEF has identified technology transfer as a longer-term priority in the climate change focal area for GEF-5 programming.

42. Development of the climate change focal area strategy for GEF-5 (2010-2014) drew on past experience and was guided by three principles: (i) responsiveness to Convention guidance; (ii) consideration of national circumstances of recipient countries; and (iii) cost-effectiveness in achieving global environmental benefits. GEF-5 endeavors to make a transformative impact in helping GEF-recipient countries move to a low-carbon development path through market transformation of and investment in environmentally sound, climate-friendly technologies.

43. The GEF-5 climate change strategy promotes technology transfer at various stages of the technology development cycle, from demonstration of innovative, emerging low-carbon technologies to diffusion of commercially proven, environmentally sound technologies and practices. The entire GEF climate change portfolio can be characterized as supporting technology transfer as defined by the Intergovernmental Panel on Climate Change and the technology transfer framework outlined by the COP.

44. The climate change mitigation strategy for GEF-5 consists of six objectives. The first objective focuses on innovative technologies at the stage of market demonstration or commercialization where technology push is still critical. The second to fifth objectives focus on technologies that are commercially available in the country but face barriers and require market pull to achieve widespread adoption and diffusion. The last objective is devoted to supporting enabling activities and capacity building under the UNFCCC.

Long-Term Program on Technology Transfer

45. Progress achieved under the Poznan Strategic Program on Technology Transfer, particularly in the development of pilot projects and technology needs assessments, has highlighted the need to go beyond current practices to catalyze investments in technology transfer. Similarly, the results-

based management framework for the SCCF and the LDCF includes the transfer and adoption of adaptation technology as one of the three overarching objectives of the Funds. The SCCF has a specific financing window on technology transfer (SCCF-B), which has made a contribution to the Poznan Strategic Program on Technology Transfer. In addition to SCCF-B, the transfer and adoption of adaptation technologies constitutes a strategic objective of the LDCF and the SCCF, including the SCCF adaptation program (SCCF-A).

46. The GEF submitted a Long-Term Program on Technology Transfer to COP 16, in response to decision 2/CP.14. The GEF submission included the following elements to further scale up investment in ESTs in developing countries in accordance with the GEF-5 climate change strategy, and to enhance technology transfer activities under the Convention:

- (a) Support for Climate Technology Centers and a Climate Technology Network
- (b) Piloting Priority Technology Projects to Foster Innovation and Investments
- (c) Public-Private Partnership (PPP) for Technology Transfer
- (d) Technology Needs Assessments (TNA)
- (e) GEF as a Catalytic Supporting Institution for Technology Transfer.

47. The description of the above elements, as submitted to COP 16, is shown in Annex 2.

Progress made in Long-Term Program on Technology Transfer

48. Since submission of the Long-Term Program on Technology Transfer to COP 16, the following progress has been made in the elements of the Long-Term Program.

- (a) Support for Climate Technology Centers and Climate Technology Network

49. In May 2011 the GEF Council approved a regional project titled *Pilot Asia-Pacific Climate Technology Network and Finance Center* submitted jointly by the Asian Development Bank (ADB) and UNEP. The project seeks to accelerate climate technology investments in developing countries of the Asia-Pacific region and will provide capacity building to create the necessary conditions to foster investments in climate technology transfer and mobilize appropriate financial resources from both public and private sources to catalyze investments in EST deployment. The project will pilot a regional approach to facilitating deployment of climate technologies, seeking to demonstrate the effectiveness of linking technology and finance mechanisms in catalyzing climate actions. The project is expected to generate lessons learned that could help inform the ongoing process to operationalize the Technology Mechanism, particularly the Climate Technology Centre and Network, from the Cancun Agreements. This project is also innovative, as it is one of the first multi-trust fund projects supported by the GEF, drawing resources from the GEF Trust Fund for mitigation and the SCCF for adaptation.

- (b) Piloting Priority Technology Projects to Foster Innovation and Investments

50. While each of the six GEF-5 climate change mitigation strategic objectives addresses technology transfer, objective one (to promote the demonstration, deployment, and transfer of innovative low-carbon technologies) is closely associated with technology transfer pilot project funding. During the reporting period, two projects have been approved by the GEF Council under

objective one.

- Nigeria: *Small-scale Associated Gas Utilization* implemented by the World Bank. The project will assist the Government of Nigeria to pursue its low-carbon development path by the use of associated gas which otherwise would have been flared and wasted. It will also stimulate further investment in energy efficient small-scale gas utilization technologies and practices by enhancing private sector engagement. GEF funds will be used to assess the technical and economic viability of using currently flared gas in various applications, supporting transformational scale-up of small scale utilization of associated gas. This assessment will lead to a demonstration facility to utilize flared gas.
- The *Pilot Asia-Pacific Climate Technology Network and Finance Center* project, as described in paragraph 49, has been jointly developed by ADB and UNEP to accelerate climate technology investments in developing countries of the Asia-Pacific region.

51. Demonstration of innovative technologies has also been addressed in other cross-cutting projects of the GEF-5 climate change portfolio. Key examples include the following:

- China: *China Renewable Energy Scaling-Up Program (CRESP) Phase II* implemented by the World Bank. GEF has also financed the first phase of the CRESP project. Building on achievements and lessons learned from the first phase, the objective of CRESP Phase II is to support the Chinese government's 12th Five-Year Plan to enable continued and sustainable scale-up of commercial renewable energy development through cost reduction, efficiency improvement, and smooth integration to the grid, thereby contributing to the government's target of reduction in carbon intensity. The GEF will mainly finance technical assistance activities for policy implementation support, the removal of technological barriers, and capacity building, and incremental investment for technology improvement and demonstration.
- China: *Green Energy Schemes for Low-Carbon City in Shanghai* implemented by the World Bank. The overall objective is to pilot green energy schemes for the low-carbon city of Shanghai, with a focus in Changning District, thereby reducing GHG emissions. The project will focus on four components: (1) green buildings, including retrofitting existing buildings and piloting new near zero-emission buildings (including smart metering); (2) low-carbon energy mix, including on-site distributed generation from renewable energy and natural gas and purchase of green electricity; (3) green transport with a focus on electric buses; and (4) integrating green energy schemes to achieve low-carbon objectives. If successful, the Changning model has a wide replication potential in Shanghai and across China.
- Regional, Africa: *Sahel and West Africa Program Supporting the Great Green Wall Initiative* implemented by the World Bank. This multi-trust fund program supports the implementation of a country-driven vision for integrated natural resource management for sustainable and climate-resilient development in the Sahel region. The program responds to a series of high level ministerial meetings (Ndjamena June and November 2010; Bonn 2011) through which countries in the Sahel region have consistently called for an international partnership to implement their vision. The program builds on a series of baseline investments amounting to \$1.8 billion in co-financing in 12 countries. The investments

cover agriculture, food security, disaster risk management, rural development, and watershed management. The program leverages GEF resources under the System for Transparent Allocation of Resources (STAR) according to country allocations as well as LDCF and SCCF resources according to eligibilities and the principle of equitable access under the LDCF.

(c) Public-Private Partnership (PPP) for Technology Transfer

52. At the November 2010 GEF Council meeting, the GEF Secretariat presented options for private sector engagement. The Council directed the Secretariat to develop a new private sector strategy that contained elements of the Earth Fund while extending its reach and effectiveness.

53. The GEF Secretariat presented a private sector strategy at the May 2011 GEF Council Meeting. In response to Council comments, a revised private sector strategy has been developed and submitted for Council review. In the document posted for Council review (C.41.09) the following objectives for GEF-5 private sector engagement are identified:

- a) Supporting greater access to financing for private sector companies pursuing innovative technologies and business models that yield benefits consistent with GEF focal area objectives;
- b) Stimulating the development, dissemination and implementation of new technologies.

54. The strategy highlights the importance of technology transfer and emphasizes efforts that go beyond business as usual, while remaining focused, to allow the GEF's limited resources to have maximum added value—that is the biggest-bang-for-the-buck.

55. The GEF Secretariat will present the revised private sector strategy for Council approval in November 2011. Upon approval of this strategy, discussions to develop an initiative to promote private sector engagement for technology transfer will be held.

(d) Technology Needs Assessments (TNAs)

56. The GEF is ready to support additional TNAs focusing on small and medium income countries, taking into consideration the lessons learned from the ongoing TNA project under implementation by UNEP. UNEP is conducting a mid-term review of the project to articulate such lessons learned.

57. Larger countries that need more in-depth and extensive analysis have the option to request TNAs as a national initiative, to be drawn from the STAR. The GEF did not receive any request for larger scale TNAs to be financed under STAR during the reporting period.

(e) GEF as a Catalytic Supporting Institution for Technology Transfer

58. The GEF participated in key international discussions supporting the development of technology transfer initiatives in 2011. Some examples include the following:

- *Technology Mechanism-related Meetings:* The GEF participated in the Expert Workshop on the Technology Mechanism, as requested by decision 1/CP.16, paragraph 128, held from 4

to 5 April 2011 during the Bangkok climate talks. The GEF personnel participated as a resource person. The GEF also attended the first meeting of the Technology Executive Committee (TEC), held from 1 to 3 September 2011, as an observer. The GEF also participated in the UNFCCC Technology Mechanism working group teleconferences, organized to exchange information among relevant institutions.

- *UNFCCC-related Meetings:* Several GEF Secretariat staff members participated in COP 16, UN Climate Conference in Bangkok (April 2011), and UN Climate Change Conference in Bonn (June 2011). At COP 16, the GEF reported on the progress of the Poznan Program implementation, and also made an oral report on the Poznan Program progress. The GEF also organized a side event on technology transfer at COP 16, as described in the next section. At the UN Climate Change Conference in Bonn, the GEF participated and made an oral report on the progress of the Poznan Program during SBI 34. The SBI noted the report and expressed its appreciation to the GEF and its agencies, the UNDP and the UNEP on the progress made in carrying out the Poznan strategic programme on technology transfer. The GEF also confirmed its participation in UN Climate Change Conference in Panama (October 2011).

d. Dissemination of GEF Experience and Successfully Demonstrated Environmentally Sound Technologies (ESTs)

59. The GEF launched an initiative in 2010 on the dissemination of GEF experiences and successfully demonstrated ESTs, under the Poznan Strategic Program. The objective of this initiative is two-fold: (1) to gain better, more in-depth understanding of the process of technology transfer and the role of the GEF with specific cases of technologies; and (2) to disseminate the technologies that have been successfully demonstrated through GEF support to a wider range of countries and audiences with a view to facilitating wider adoption of these technologies. This initiative is managed by the GEF Secretariat in collaboration with relevant GEF agencies and other interested parties.

60. Under this initiative, the GEF released two publications. The first booklet, published in December 2010, presents the Poznan Strategic Program on Technology Transfer and provides updates on GEF's contribution as well as progress. The document also provides a snapshot of the GEF-5 approach to promote technology transfer. The booklet is available in English, French, and Spanish. The document can be downloaded at http://www.thegef.org/gef/pubs/Tech-transfer_2010.

61. The second publication is the Booklet on Transfer of Environmentally Sound Technologies—Case Studies from GEF Climate Change Portfolio. GEF technology transfer investments have generated not only significant emissions reductions, but a body of knowledge and lessons learned that are informing today's technology transfer activities. This publication features some of the key EST supported by the GEF to date, encompassing the areas of renewable energy, energy efficiency, sustainable transport, and innovative financing. The case studies provide background information, project description, technology description, as well as results and outcomes. The common features of successful EST transfer projects are identified to inform future projects. The document can be downloaded at <http://www.thegef.org/gef/pubs/tech-transfer-case-studies-2010>.

62. *Ministerial Meeting on Technology Transfer: Challenges and Opportunities.* This meeting was organized by the GEF on 20 April 2011 in partnership with the Government of France. During the G20 presidency, France has highlighted the subject of technology transfer with a view to contribute to the on-going discussions to operationalize the key elements of the Cancun Agreements related to technology transfer. The meeting was convened in partnership with the Forum Francophone des Affaires (Francophone Business Forum). The participants included a significant number of ministers, senior level representatives from international organizations including the UNFCCC and the GEF Agencies, as well as private sector institutions. The meeting addressed technology transfer challenges and opportunities, including a presentation of a model pilot proposal for establishing and implementing the regional climate technology centres and network with the GEF support.

63. The GEF organized a COP 16 side event on 2 December 2010 titled “*From Innovation to Market Transformation; the role of the GEF in Technology Transfer.*” The event featured country-level experiences in technology transfer-related activities supported by the GEF from Egypt, Jordan, and Mexico. The presentations during the event highlighted the role played by the GEF in facilitating technology transfer to help address climate change challenges for both mitigation and adaptation. In addition, the event introduced the Long-Term Program on Technology Transfer.

64. The GEF website has been updated with specific information on technology transfer, which can be accessed from: http://www.thegef.org/gef/Technology_Transfer.

**Table 1. Summary of Technology Transfer Pilot Projects under the Poznan Strategic Program on Technology Transfer
(As of September 2011)**

Country	Project title	GEF Agency	GEF Poznan Program Funding (\$)	Total GEF Funding (\$)	Co-financing (\$)	Comment on Progress
Brazil	Renewable CO ₂ Capture and Storage from Sugar Fermentation Industry in Sao Paulo State	UNDP	2,970,000	2,970,000	At Council Work Program Approval: 7,715,000	The project was approved by GEF council in November 2009. Project preparation is underway with project scope and budget currently reassessed. Submission of CEO endorsement request is expected in November 2011.
Cambodia	Climate Change related Technology Transfer for Cambodia: Using Agricultural Residue Biomass for Sustainable Energy Solutions	UNIDO	1,947,000	1,947,000	At Council Work Program Approval: 3,965,000	The CEO endorsement request was submitted in September 2011. GEF review comments have been sent back to the Agency.
Chile	Promotion and Development of Local Solar Technologies in Chile	IDB	3,000,000	3,000,000	At Council Work Program Approval 32,400,000	Project preparation is underway. Milestone extension was approved by the CEO in September 2010 after experiencing delays due to earthquake (February 2010). Submission to the GEF for endorsement is delayed.

Country	Project title	GEF Agency	GEF Poznan Program Funding (\$)	Total GEF Funding (\$)	Co-financing (\$)	Comment on Progress
China	Green Truck Demonstration Project	World Bank	2,998,000	4,867,500	At CEO endorsement: 9,770,000	The project was endorsed by the CEO in March 2011 and approved by the World Bank Board in April 2011. The project became effective in August 2011. Project Launch will take place in China in October 2011.
Colombia, Kenya	SolarChill: Commercialization and Transfer					The project was cancelled at the request of World Bank in December 2010. It has been re-submitted by UNEP and approved by CEO in September 2011 for Work Program approval by GEF Council in November 2011.
Cote d'Ivoire	Construction of 1000 Ton per day Municipal Solid Wastes Composting Unit in Akouedo Abidjan	AfDB	2,997,500	2,997,500	At Council Work Program Approval: 36,898,500	Project preparation exercise is underway. The CEO endorsement request is to be submitted in May 2012.

Country	Project title	GEF Agency	GEF Poznan Program Funding (\$)	Total GEF Funding (\$)	Co-financing (\$)	Comment on Progress
Jamaica	Introduction of Renewable Wave Energy Technologies for the Generation of Electric Power in Small Coastal Communities	UNDP				The Agency informed the GEF about its intention to cancel the project. GEF awaits official withdrawal request.
Jordan	DHRS Irrigation Technology Pilot Project to Face Climate Change Impact	IFAD	2,365,020	2,365,020	At CEO endorsement: 5,516,000	The project was endorsed by the CEO in August 2011. Project implementation is underway.
Mexico	Promotion and Development of Local Wind Technologies in Mexico	IDB	3,000,000	5,500,000	At Council Work Program Approval: 18,600,000	The project document is prepared for resubmission to the GEF for CEO endorsement by November 2011.
Russia	Phase out of HCFCs and Promotion of HFC-free Energy Efficient Refrigeration and Air-Conditioning Systems in the Russian Federation through Technology Transfer	UNIDO	2,970,000	19,998,000	At CEO endorsement: 40,000,000	The project was endorsed by the CEO in August 2010. Project implementation is underway.

Country	Project title	GEF Agency	GEF Poznan Program Funding (\$)	Total GEF Funding (\$)	Co-financing (\$)	Comment on Progress
Senegal	Typha-based Thermal Insulation Material Production in Senegal	UNDP	2,310,000	2,310,000	At Council Work Program Approval: 3,400,000	The CEO endorsement request was submitted in June 2011 and GEF review comments have been sent back to the Agency. Re-submitted CEO endorsement request is expected by November 2011.
Sri Lanka	Bamboo Processing for Sri Lanka	UNIDO	2,700,500	2,700,500	At Council Work Program Approval: 10,700,000	The CEO endorsement request was submitted in September 2011. GEF review comments have been sent back to the Agency.
Thailand	Overcoming Policy, Market and Technological Barriers to Support Technological Innovation and South-South Technology Transfer: The Pilot Case of Ethanol Production from Cassava	UNIDO	2,970,000	2,970,000	At Council Work Program Approval: 8,340,000	The CEO endorsement request was submitted in September 2011. GEF review comments have been sent back to the Agency.

Country	Project title	GEF Agency	GEF Poznan Program Funding (\$)	Total GEF Funding (\$)	Co-financing (\$)	Comment on Progress
Turkey, Cook Islands	Realizing Hydrogen Energy Installations on Small Island through Technology Cooperation	UNIDO	3,000,000	3,000,000	At Council Work Program Approval: 3,500,000	CEO endorsement request was submitted in September 2010. GEF review comments have been sent back to the Agency. Re-submitted CEO endorsement request is expected by November 2011.
TOTAL			33,228,020	54,625,520	180,804,500	

ANNEX 1. SUMMARIES OF PILOT PROJECTS

Ongoing projects:

Brazil: Renewable CO₂ Capture and Storage from Sugar Fermentation Industry in Sao Paulo State. The objective of the project is to remove the barriers to the deployment, diffusion, and transfer of renewable CO₂ capture and storage (RCCS) technology from sugar fermentation in the production of ethanol. The main investment and technology demonstration component of this project will be accompanied by activities to create an enabling environment for RCCS technology, including streamlining of the licensing requirements for RCCS projects. The technology has the potential to mitigate and contribute to a net removal of CO₂ from the atmosphere. The project results have the potential to contribute to South-South technology transfer, as sugar cane is produced mainly in developing countries. This project is implemented by UNDP.

Cambodia: Climate Change Related Technology Transfer for Cambodia: Using Agricultural Residue Biomass for Sustainable Energy Solutions. This project aims to promote the sustained transfer to Cambodia of 3-5 MW agricultural residue biomass-fuelled power and steam generation technologies from one or more countries where these technologies are already proven. The project will address the issue of replicability by using an integrated approach that combines the technical support in the implementation, commissioning, and performance evaluation of the pilot demonstrations, with interventions at the institutional and policy levels and in the market place so as to assure the development of a technology transfer mechanism appropriate for the country. The projected private sector co-financing is \$3.4 million. This project is implemented by UNIDO.

Chile: Promotion and Development of Local Solar Technologies in Chile. The project supports the government of Chile and the National Energy Commission in the development of a solar technology industry, for both solar water heating and power generation in Chile. This will be achieved through the promotion of transfer of technology, institutional strengthening and capacity building in solar technology, the development of demonstration projects using solar technologies, and the design of incentives, financial mechanisms, and public awareness campaign to promote solar technology projects. This project is implemented by IDB.

China: Green Truck Demonstration Project. This project aims to accelerate transfer and deployment of clean transport technologies, reduce GHG emissions from freight transport, and improve urban air quality in project cities, through a pilot in Guangdong province. This well-leveraged project has significant private sector co-financing of approximately US\$9.7 million. This project is implemented by the World Bank. Some of the expected outputs based on the CEO endorsement document are: (a) more than 1,200 existing or new trucks will have energy efficiency technologies installed; (b) more than 1,200 drivers will receive training; (c) a project website promoting green freight will be established; (d) about 160 government officials and about 3,000 enterprise representatives will be trained through the project; (e) at least one green freight trade fair will be completed; (f) innovative financing mechanisms will be introduced and successfully completed; (g) policy recommendations to address critical institutional and regulatory needs for improving the energy efficiency of the sector presented to Guangdong Provincial Government for approval.

Cote d'Ivoire: Construction of 1,000 ton per day Municipal Solid Wastes Composting Unit in Akouedo Abidjan. The project aims to transfer a composting technology to improve the sustainable waste management in the agglomeration of Abidjan. It will build a 1,000 tons/day industrial composting unit contributing to the GHGs emission reduction and producing residuals that have agricultural applications. Activities to facilitate technology transfer include adaptation of the composting process to local conditions and training on the existing sites in China for the engineering and construction team. This project is implemented by the African Development Bank (AfDB).

Jordan: dHRS Irrigation Technology Pilot Project to Face Climate Change Impacts. This project aims to upscale an innovative irrigation technology, which enables the reuse of waste water for agricultural purposes. With climate change projected to significantly reduce the availability of already scarce water resources in Jordan, effective ways of reducing demand for clean fresh water will be an essential element of reducing the climate change vulnerability of the agricultural system in Jordan. The approach of this project is centered on the link between technology transfer, climate change response, and rural development. The project is articulated through two components: (a) installation of the Dutyion Root Hydration System (dHRS) irrigation technology system in pilot sites; (b) targeted training on the technology. The project is co-financed by the Agricultural Credit Corporation, which will facilitate the advancement of this technology to willing famers. This project is implemented by the International Fund for Agricultural Development (IFAD).

Mexico: Promotion and Development of Local Wind Technologies in Mexico. The project will support Mexico to become a key player in the world's wind energy market, expanding its wind generation capacity by enabling local development and implementation of wind mill technologies. It will support the local development of a national wind turbine market, by structuring a value chain for the production of goods and services at the national level, by building human and technical capacities for the manufacturing, and by testing and certification of wind turbines. This project is implemented by the Inter-American Development Bank (IDB).

Russia: Phase out of HCFCs and Promotion of HFC-free Energy Efficient Refrigeration and Air-Conditioning Systems in the Russian Federation through Technology Transfer. The objective of this project is to phase out ozone depleting substances, particularly hydrochlorofluorocarbons (HCFCs) and to promote energy efficiency in the foam and refrigeration manufacturing sectors in the Russian Federation. Project components include: (a) institutional capacity building; (b) phase out of HCFC consumption in the key consuming sectors of foam and refrigeration and development of ozone depleting substances destruction facility and supporting recovery network; (c) technology transfer for design of higher efficiency, hydrofluorocarbon (HFC)-free refrigeration and air conditioning systems, and purchase of production lines for demonstration projects; and (d) stimulation of market growth for energy efficient equipments. This project is implemented by UNIDO.

Senegal: Typha-based Thermal Insulation Material Production in Senegal. This project aims to facilitate the transfer of the technology for producing an innovative thermal insulation material out of *typha australis*, an invasive species causing serious problems for Senegal's ecosystem and economy. Typha can be harvested and used as a raw material for insulation, solving yet another problem in the country: shortage of electric power and inadequate insulation of the buildings. The

project will also include research and development, certification and patenting, establishing the local production chain through investment in a production facility for the innovative insulation material, adapting the innovative insulation material to local conditions, and showing the demonstration in a public building. This project is implemented by UNDP.

Sri Lanka: Bamboo Processing for Sri Lanka. The project supports to develop a bamboo supply chain and product industry in Sri Lanka, leading to reduced global environmental impact from GHG emissions and a sustainable industry base. This project involves the South-South transfer of bamboo processing technology from India (and possibly also China) to Sri Lanka. Development of a bamboo industry in Sri Lanka requires technology transfer from these countries for key steps in the bamboo processing chain. This project is implemented by UNIDO.

Thailand: Overcoming Policy, Market, and Technological Barriers to Support Technological Innovation and South-South Technology Transfer: The Pilot Case of Ethanol Production from Cassava. The project will remove barriers to promote technology transfer in the production of ethanol and to enhance South-South cooperation. The envisaged technology is the Simultaneous Saccharification and Fermentation (SSF), which includes improved cultural techniques, raw material preparation, and the fermentation technology and the short-cuts to the fermentation processes, together with options for net energy reduction throughout the project cycle. The project also aims to further increase fermentation efficiency and to transfer the technologies to other countries in Southeast Asia. The technology will be transferred to Viet Nam, reflecting the lessons learned from its demonstration in Thailand. The project will also support activities in Cambodia to lay foundation for technology transfer. This project is implemented by UNIDO.

Turkey and Cook Islands: Realizing Hydrogen Energy Installations on Small Island through Technology Cooperation. The main objective of this project is to transfer the installations of renewable energy in combination with hydrogen energy technologies in two islands, one in Turkey and another in the Cook Islands. This collaborative project aims to increase the share of renewable energy in the energy mix, reduce energy costs as well as provide platforms to demonstrate and assess the performance of these technology systems in remote island locations. The successful realisation of this project could contribute to the strengthening of the hydrogen energy installation concept within small island countries. This project is implemented by UNIDO.

Project awaiting GEF Council approval for re-inclusion:

Columbia, Kenya, and Swaziland: SolarChill Development, Testing, and Technology Transfer Outreach

This UNEP project is a re-submission, after the original project was cancelled by the World Bank. The purpose of the project is to commercialize and transfer the SolarChill vaccine refrigerator (SolarChill A) and to begin the process of commercializing and transferring the SolarChill light commercial refrigerator (SolarChill B). Technology transfer through large-scale field demonstrations and facilitation of manufacturing capacity improvement with the private sector are the focus of the project. The objective and the proposed budget in the new submission are identical to the original submission. Key revised elements for the re-submission include: UNEP as the Agency with a clearer comparative advantage with a long history of collaboration with the SolarChill Consortium; higher co-financing; and articulation of another country (Swaziland) for

technology transfer with manufacturing facility in addition to Colombia and Kenya. Upon clearance by the GEF Council, this project will be reinstated as one of the pilot projects supported under the Poznan Strategic Program on Technology Transfer. The proposed budget is \$2,583,000 excluding Agency fee, with co-financing of \$5.66 million.

Cancelled project:

Jamaica: Introduction of Renewable Wave Energy Technologies for the Generation of Electrical Power in Small Coastal Communities. The objective of the project was the introduction of renewable wave energy in a Small Island Developing States (SIDS), such as Jamaica, for the electrification of coastal rural communities (both on and off-grid) and to contribute to lowering the risk of high energy storm waves. UNDP informed the GEF secretariat about the cancellation of this project; however, official communication is still expected.

ANNEX 2. LONG-TERM PROGRAM ELEMENTS ON TECHNOLOGY TRANSFER

(a) Support for Climate Technology Centers and Climate Technology Network

The GEF could provide financial and technical support towards the establishment and operation of technology centers and networks at the global, regional, and national levels, as appropriate, to support and accelerate cooperative actions on technology and the diffusion of environmental technologies for mitigation and adaptation in developing countries. The types of activities to be funded by the GEF may involve technical assistance, training, information sharing, and knowledge management, taking into account the specific functions of technology centers and networks as reflected in the UNFCCC discussions

The GEF could establish a technology transfer coordination function as part of its knowledge management function, and link it with regional technology transfer centers to be established in regional development banks.

Resources could be provided from the global and regional set-aside (GRS) in the GEF climate change focal area for global and regional activities, or if the needs to be covered are more important than what the GEF Secretariat is foreseeing, complemented by new voluntary contributions to the GEF. Countries that wish to establish national centers are invited to do so utilizing their respective national allocations under the System for Transparent Allocation of Resources (STAR).

(b) Piloting Priority Technology Projects to Foster Innovation and Investments

Under the Poznan Program, 14 pilot projects in 16 countries were selected to receive assistance for technology transfer.

The GEF will step up its efforts in promoting the demonstration, deployment, and transfer of innovative low-carbon technologies. Projects supported under this window will fall under two categories. The first category targets the demonstration and deployment of innovative technologies with significant impact in the long-run reduction of carbon emissions. Demonstration of 3 to 4 innovative technologies are envisaged in 10 to 15 countries. Such support is consistent with Objective 1 of the GEF-5 climate change mitigation strategy.

The second category targets the deployment and diffusion of priority technologies (identified in Technology Needs Assessments, National Communications, and other national policy documents), addressing the need to go beyond assessments toward catalyzing investments. Priority sectors are: energy efficiency in industry and buildings; renewable energy; transport and urban systems; and sustainable management of land use, land-use change, and forestry. Such support is consistent with Objectives 2, 3, 4, and 5 of the GEF-5 climate change mitigation strategy.

Funding for both pilot project categories will come from country allocations under the STAR. Similarly, a Technology Transfer Program for Climate Adaptation is going to be developed by the GEF, drawing resources from the Special Climate Change Fund. Eligible activities will be informed by COP guidance.

(c) Public-Private Partnership (PPP) for Technology Transfer

The GEF has engaged with the private sector since the Facility was established two decades ago. The GEF Council has made it clear that the private sector must be encouraged to invest in sustainable enterprises that generate global environmental benefits. In this vision, engagement with the private sector is not an end in itself, but a means to a larger goal.

Drawing on the GEF's past experience and lessons learned, an initiative to promote Public-Private Partnerships (PPP) for Technology Transfer could be established to support private sector engagement in technology transfer in order to leverage innovative financial instruments or business models for technology deployment and diffusion in developing countries. The GEF Earth Fund is currently undergoing a review, providing an opportunity to incorporate technology transfer-related initiatives.

(d) Technology Needs Assessments (TNAs)

The Poznan Strategic Program allocated resources for 35 to 45 countries to receive targeted financial and technical support to develop and/or update their TNAs within the framework of Article 4.5 of the UNFCCC. This round of TNAs is expected to lead to the development of national technology action plans for prioritized technologies, and facilitate identification of technology transfer projects to be linked to relevant financing sources.

Similar support will be provided to another set of 35 to 45 countries, targeting low- and medium-income countries, to carry out and/or update their TNAs as a global initiative. GEF resources for the global initiative will be drawn from the GRS in the climate change focal area. Larger countries that need more in-depth and extensive analysis have the option to request TNAs as a national initiative, to be drawn from the STAR.

(e) GEF as a Catalytic Supporting Institution for Technology Transfer

The longer-term implementation plan will utilize the strengthened institutional capacity of the GEF to implement and enhance technology transfer programming. With a cadre of professionals with extensive programming and policy sectoral experiences, the GEF is well-positioned to be a catalytic global supporter for innovative approaches and address guidance on technology transfer from the UNFCCC COP. The GEF-5 programmatic enhancements, such as support for technology transfer across the six strategy objectives, addressing technology transfer elements in project reviews and incorporation of technology-related indicators in portfolio management, underscore the GEF's commitment to innovative approaches.
