International Energy Agency

ANNUAL REPORT 2008

WORKING TOGETHER TO ACCELERATE DEVELOPMENT AND DIFFUSION OF CLIMATE-FRIENDLY TECHNOLOGIES AND PRACTICES

CTI CLIMATE TECHNOLOGY INITIATIVE

Message from the Chair

In this final year of my term, it continues to be an honor to serve as Chair of the Climate Technology Initiative. Besides being colleagues in a noble cause, we are also friends with a common purpose to fulfil the goal of the CTI. And, as we pursue that goal of accelerating the development and adoption of climate-friendly technologies and practices, we are also contributing to the ancillary benefits of technology transfer that include increased economic and social stability, domestic capacity building, jobs creation, contributing to poverty alleviation, and institutional strengthening to name a few. What makes our work so special is that we have the privilege of working closely with governments and international organizations along with a vast array of private sector entities spanning the business and financing sectors. By accessing the exceptional talent found in these public and private entities makes it possible to bring together the necessary skills and expertise, while leveraging our resources, to maximize the effectiveness of our joint efforts that build endogenous capacities and expand access to technologies.

During the year, we were extremely pleased to welcome Sweden as a member to our CTI International Energy Agency Implementing Agreement. And, as we go to press with this document, I am pleased to announce that Australia has accepted our invitation to join, bringing the membership of the CTI Implementing Agreement to eleven countries. Working in concert with our existing countries, these new members will expand our ability to execute CTI's comprehensive programme of work that includes regional training workshops, seminars and other hands-on activities that make a tangible contribution to international technology transfer. Following the unanimous direction of the Executive Committee, invitations to join the CTI have been issued to several additional countries who are considering participation.

Our contribution to technology transfer continues to be recognized and acknowledged within the UN Framework Convention on Climate Change (UNFCCC) process with whom the CTI has maintained a longstanding productive relationship. Throughout 2008 at meetings of the Subsidiary Bodies and culminating in Poznan during December at the 14th Conference of the Parties (COP14), the constructive role CTI has and continues to play in matters related to technology transfer, including the work of the Expert Group on Technology Transfer (EGTT), was formally

acknowledged in conclusions and decisions taken by the Parties. I am also pleased to report that the UNFCCC Secretariat participated in several of our activities and side events during the year and the CTI was an invited participant at many of the UNFCCC activities and side events as well.

Thanks to the steadfast and growing commitment of the CTI countries, our Private Financing Advisory Network, or PFAN, has continued to expand and scale up its activities significantly during 2008. I am pleased to report that this effort is showing results by actively bringing together project developers and investors as was done in early March 2009 in Singapore. Benefiting from the success of this gathering, several similar regional events are planned during 2009. Additionally, building on the PFAN concept, we have been requested by UNFCCC Secretariat to collaborate on outreach and training workshops to enhance the capacity among developers and other project proponents in developing countries and countries with economies in transition in the preparation of their project financing proposals to broaden access to financing, particularly from the private financing community.

As we reflect back on the past several years of CTI, we cannot help but be proud of the growth in membership as well as the growing relevance CTI continues to demonstrate to the advancement of technology transfer inside and outside the UNFCCC process. The credit for this increased relevance is properly shared by the membership at large who has continued to contribute their financial and technical resources along with their creativity to make possible our varied array of activities including our Private Financing Advisory Network. In this latter regard, I also wish to recognize the dedicated financial professionals from around the world that comprise CTI's Network led by Mr. Peter Storey for their collective commitment to the CTI PFAN.

The CTI has accomplished much over the past several years, but clearly there is more to do. In that regard, I look forward to an even more active 2009 during which we can expand our activities, membership, and associated impact on facilitating access and diffusion of climate-friendly technologies and practices.

In closing, I wish to express my sincere appreciation for the active support of those serving as vice chairs during 2008, specifically Mr. Toshihiro Mitsuhashi of Japan, and Mr. Franzjosef Schafhausen of Germany.

Further, we give special thanks to the Japanes Ministry of Economy, Trade and Industry for its generous support during the past six years of the CTI Secretariat housed at the International Center for Environmental Technology Transfer (ICETT). And finally, we recognize the extraordinary level of support and professionalism that is provided on a daily basis by Mr. Taiki Kuroda and Ms. Kaori Hayashi of the CTI Secretariat under the thoughtful leadership of Professor Morihiro Kurushima, our dedicated Programme Manager.

As a closing personal note, let me thank the Executive Committee for giving me the privilege to serve as your Chair during the past several years and the support you have given me along with the commitment and expertise you have brought to our organization. During these years and the past decade, I have watched, along with many of you, the CTI mature into a relevant activity that is recognized internationally for its positive contributions. I look forward to remaining active in the CTI and watching it continue along this pathway to even greater success.

Elmer Holt
Executive Committee Chair
Climate Technology Initiative

Recent Testimonials

"Technology is very much on the forefront of discussions on future action on climate change. We need to realize its full potential to achieve the deep cuts in greenhouse gas emissions that are needed to prevent the worst impacts and to enable people and societies to adapt to changes that will occur nevertheless. Significant reductions in greenhouse gas emissions in the long term will rely, to a large extent, on the development, deployment, diffusion and transfer of new and more efficient technologies.

I thank CTI and its member countries for their active engagement and support to the work of the Expert Group on Technology Transfer in promoting technology transfer activities under the Convention. Progress of work under CTI's pilot project on the Private Financing Advisory Network that seeks to broaden the access to private sector international financing for climate friendly technology and to further engage the private sector in our process is very encouraging. If successful, Parties to the UNFCCC may wish to build on this exercise and broaden its scope. I wish you success in continuing your work."

Yvo de Boer
Executive Secretary, UNFCCC

"Having worked with the Climate Technology Initiate for many years, I am keenly aware of the significant contribution it has made to technology transfer under the UNFCCC process. In particular, I have appreciated CTI's contributions to the preparation of the handbook on conducting technology need assessments and this handbook's expansion to include technologies for adaptation. Additionally, I commend CTI on its forward thinking in the area of innovative options to finance technology transfer through, in collaboration with the EGTT, establishing the Private Financing Advisory Network that provides assistance to project proponents in developing countries in the preparation of their project financing proposals to meet the standards of the international private finance community. This work has played an invaluable part in advancing an understanding of technology transfer and related issues under the UNFCCC. I encourage the CTI to continue its good work and offer my cooperation in that regard."

Kishan Kumarsingh
Technical Coordinator
Environmental Management Authority of Trinidad Tobago
Former Chair of the Subsidiary Body on Scientific and Technological Advice
Former Chair of the Expert Group on Technology Transfer (EGTT)

"The Private Financing Advisory Network (PFAN) initiative of the CTI provides an innovative platform for bringing to financial closure technology development and transfer projects identified by countries under their technology needs assessments. The PFAN forms part of a broad financial mechanism for technology transfer."

William Kojo Agyemang-Bonsu
Vice-President of COP12
Former Chair of the Expert Group on Technology Transfer (EGTT)
UNFCCC Focal Point for Ghana
Environmental Protection Agency of Ghana

"In order to attain sustainable development among all countries and the overall objectives of the UNFCCC, there is a need to accelerate the transfer and development of climate related technology. Many technologies have been developed in recent years that address these pressing issues. International cooperation is the key element in addressing global warming and climate change. To this end, CTI has played an important role in the promotion of climate friendly technology in the last decade. I am confident that CTI, with its capable network, will continue to share valuable experiences, know-how and good practices for the benefit of mankind."

Chow Kok Kee
Former Chair of the Subsidiary Body on Scientific and Technological Advice
Former Chair of the Expert Group on Technology Transfer (EGTT)

"When I look back to the variety of topics proposed by the organizers of the CTI Seminar, I cannot say that anything has been missed or neglected. There has been constant development of the concepts, ideas and fields to concentrate on next. This in turn means our seminars are in constant movement, well justified to current priorities of development of the world climate mitigation strategy and policy dialogue. I do very much hope we'll go forward together, all of us, and try to have a thorough look at Kyoto first commitment period and also the post-Kyoto period issues. Continuous support from the CTI has greatly added value for all participants of the seminars."

Tiit Kallaste
Director for Climate
Energy and Atmosphere Programme,
Estonian Institute for Sustainable Development

"The Climate Technology Initiative (CTI) Industry Joint Seminar in Delhi in March 2007 brought together experts and industry participants from a number of Asian countries who discussed successful cases of climate-friendly technology transfer, as well as policies and measures that have supported such technology transfer. As at other CTI seminars this seminar was too successful in helping to disseminate best practices, and in providing case studies on the effectiveness of new technologies, both to industry as well as to national economies.

The significant feature of the 2007 CTI Industry Joint seminar in Delhi was the session on financial mechanisms, which focused on Energy Service Companies (ESCOs). The seminar served as an extremely effective platform for the sharing of experience amongst various countries. In particular, the strong supportive role of ESCO associations, and the innovative use of risk guarantee mechanisms, provided useful examples of institutional and financial interventions which could enable the large scale implementation of energy efficiency projects through ESCOs.

This CTI seminar, like the many other CTI seminars which I have been associated with in the past, helped in providing industry participants with hands-on examples of successful technology transfer, and thus reduced their perception of uncertainty regarding the adoption of these new climate-friendly technologies. This reduction in perceived risk – of operating costs, performance, and of reliability – accelerates the adoption of climate-friendly technologies; a useful and direct outcome of the CTI Seminar."

Ajay Mathur
Director General
Bureau of Energy Efficiency
Government of India
Ministry of Power

"CTI's PFAN has helped us decrease development risk by targeting key risk points in the development process"

George Sorenson
Chairman
FE Clean Energy

"CTI has provided a venue for investment opportunities that would not have seen light in the traditional channels of financing."

Enrique M. Gallardo, Jr.
Project Manager
Green Machines Enterprises

"During my visit to the National Renewable Energy Laboratory last fall under the CTI Expert Exchange Program, I had the opportunity to meet a number of the scientists responsible for programs and initiatives that NREL is currently involved with to accelerate clean energy deployment. From this exchange, I learned a great deal not only about those programs but also about the difficulties found at each stage of their implementation. I also learned about the partnerships that this institution has established with other scientific and technological institutions and how important it will be to extend these partnerships to other international institutions, in particular from developing countries.

I am grateful to the CTI for having given me the chance to meet knowledgeable and passionate people at NREL that makes me feel hopeful about the future role of the US in the global efforts to combat climate change."

Gabriel Blanco
Coordinador General de la Direccion de Cambio Climatico
Secretaria de Ambiente y Desrrollo Sustentable
Government of Argentina
Member of the Expert Group on Technology Transfer (EGTT)

"The CTI 's PFAN has been helping us structure financing for our small scale bio-mass projects in South Africa and Asia and has given us unique access to an investor and support network that is proving critical in our project development and implementation. PFAN has provided much needed input and help in areas where other institutions and financing instruments are simply not active or available. They have been flexible and responsive to our requirements. There needs to be more of this sort of help to project developers like us! We can thoroughly recommend PFAN to other developers of clean energy projects and hope that the expansion of PFAN is a success."

Dennis Rogers
Managing Director
EDS Projects
South Africa

EDS (Energy Densification Systems) has developed and pioneered a densification technology which produces pellets and briquettes from bio-mass and / or coal dust tailings (dumps); these have high calorific value and can be used in traditional furnaces (sometimes requiring adaption depending on the pellet) to generate "clean" electricity. This technology has been successfully evaluated by Alstom for producing clean fuel for co-firing power stations (biomass and coal) and is also being rolled out in the UK. EDS is working with municipalities, the forest and agricultural and mining industries in South Africa and Asia to establish densification plants. PFAN is supporting EDS in project roll-out and in negotiations with off-takers of the pellets / briquettes. This is South – South / North Technology Transfer and serves to create a better and cleaner environment, employment and economic uplift in small rural communities.

Contents

Ⅰ. Introduction

The Climate Technology Initiative (CTI) was established at the first Conference of Parties to the United Nations Framework Convention on Climate Change (UNFCCC) in 1995 by 23 IEA/OECD Member Countries and the European Commission. Since July 2003, the CTI has been successfully functioning as an Implementing Agreement of the IEA. Its mission is to bring countries together to foster international co-operation in the accelerated development and diffusion of climate-friendly and environmentally sound technologies and practices. This report covers the period between 1 January and 31 December 2008.

The CTI participating countries undertake a broad range of co-operative activities in partnership with developing and transition countries and other international bodies. The CTI works closely with the UNFCCC process, including its Secretariat and the Expert Group on Technology Transfer (EGTT), relevant IEA Implementing Agreements and other international organisations and initiatives.

The CTI's activities are designed to be consistent with the UNFCCC objectives, in particular the framework for technology transfer incorporated in the Marrakech Accords and adopted at the Seventh Conference of the Parties to the UNFCCC (2001) and subsequently reaffirmed by decisions taken at the Thirteenth Conference of the Parties in Bali, Indonesia during December 2007. As an IEA Implementing Agreement, the CTI has continued to pursue relevant elements of its past programme and to extend it into new areas consistent with its overall objectives as well as the evolving needs of the affected stakeholders.

The CTI has received high praise from the UNFCCC for its contribution to technology transfer, particularly in respect of its collaboration with the EGTT, and been asked to continue its financial and in-kind support for the implementation of the EGTT work in 2009.

Ⅱ. Principal Activities

Ⅱ- 1 Technology Needs Assessments

The CTI provides technical assistance to selected countries carrying out technology needs assessments (TNA). It also collaborates with the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP) on technology needs assessment methods training, including workshops. The CTI also develops and disseminates relevant materials and information on lessons learned. The CTI's objectives include advancing the development and use of coherent, and integrated, approaches to conducting technology needs assessments among developing and transition countries. Activities in this area support the development of a flexible methodology for conducting technology needs assessments that can respond effectively to circumstances and priorities of the particular country. Such activities are carried out in partnership with multilateral organisations, country partners and the private sector.

Unique conditions in every country rule out any generic approach to technology transfer. Country circumstances differ widely, and steps, sectors and options that apply in some countries may be inappropriate in others. This diversity of circumstance is often captured in the expression 'one size does not fit all'. However, there are many steps and considerations that are common to all, and an approach can be designed, as far as is practicable, to be modified and adapted to suit a given country's circumstances.

Specific activities include:

- Capacity building for technology needs assessments (TNAs);
- Technical assistance to countries carrying out needs assessments;
- Development of methodological approaches to technology needs assessments in partnership with relevant international organisations and the private business and financial sectors;
- Exchange of experiences about successful approaches to conducting technology needs assessments; and,
- Facilitating interaction between governments, agencies and relevant public and private international organisations on TNAs.

The UNFCCC Secretariat compiled the "Synthesis report on technology needs identified by Parties not included in Annex I to the Convention" presenting information on technology needs for mitigation and adaptation to climate change contained in 23 technology needs assessments (TNAs) and 25 initial national communications submitted by Parties not included in the Annex I to the Convention (non-Annex I Parties). The paragraph 9 and 10 of the synthesis report acknowledged the important role the CTI played in supporting technology needs assessments in the past, which read:

Paragraph 9: *To help Parties conduct TNAs, UNDP developed a simplified, user-friendly handbook entitled Conducting technology needs assessments for climate change (hereinafter referred to as the TNA handbook), which provides guidance on identification of needs for technologies for mitigation of and adaptation to climate change. The TNA handbook, produced in collaboration with Climate Technology Initiative (CTI), the EGTT and the secretariat, was made available to Parties in 2004.*

Paragraph 10: *CTI, in collaboration with UNDP, organized three regional workshops to field-test and further develop the TNA handbook. The workshops provided a good opportunity to discuss regional concerns and priorities in assessing technology needs and to further assist Parties in conducting TNAs. CTI also provided support to Bolivia, Ghana, Malawi and the Southern Africa region to carry out TNAs.*

Ⅱ - 2 Seminars and Symposia

The CTI has an ongoing programme of seminars and workshops, which are organized in support of the UNFCCC process, in order to facilitate the diffusion of climate friendly and environmentally sound technologies and practices. Active participation of the private sector, international organisations and financial institutions is regularly sought.

CTI Industry Joint Seminar: Diffusion of Energy-Efficient and Renewable Energy Technologies in Asian Countries was held in Beijing, P. R. China on 21-22 February 2008 organized in cooperation with Bureau

of International Cooperation, the Chinese Academy of Sciences (CAS) and International Center for Environmental Technology Transfer (ICETT). This seminar brought together project developers, technology providers, finance providers, and policy makers to facilitate development of energy efficiency and renewable energy projects in Asian countries.

The seminar focused on the technical and financial aspects of project development to realize the full potential of existing technologies and financing opportunities. To this end, the seminar introduced successful projects and potential projects proposals developed in the region to project developers, technology providers and finance providers from abroad as well as the target region. Policy makers were also invited to participate in the seminar to be informed of effective policy options to facilitate the transfer of energy efficiency and renewable energy technologies. Key themes over the two-day seminar are summarized below.

The first day of the seminar focused on specific project examples and opportunities in the energy efficiency and renewable energy sectors including presentations on energy efficiency activities in the electricity and steel sectors, a web based tool for comprehensive life cycle assessment of targeted industries, and successful project examples from Asia in the biomass, biogas, and wind sectors. Each of the presentations was followed by questions and dialogue with many of the questions focusing on the practical issues faced in implementing these technologies, opportunities for either scaling up specific projects or applying these technology solutions to smaller scale applications. Discussion and panel comments addressed common themes presented over the first day. Key points included the value of emphasizing low cost and no cost opportunities first, particularly in the energy efficiency sector, and the need

to raise awareness of these opportunities in both the policy and finance communities. Effective and sustained policy measures were also identified as critical in both the energy efficiency and renewable energy sectors to help promote project development including fair access to the grid, appropriate tax incentives, loan guarantees, and targeted capacity building. Participants also emphasized the value of focusing on the small and medium sized enterprise sector where public/private collaboration can often have the greatest value added in making viable projects succeed.

The seminar's second day focused on the opportunities for, and barriers to, the financing of clean energy projects in Asia. Presentations included an overview by the UNFCCC Secretariat of the "Practitioner's Guidebook for Preparing Technology Transfer Projects for Financing" which is a useful tool for project developers when preparing project financing proposals. The CTI also introduced its Private Financing Advisory Network (PFAN) programme that provides coaching and technical assistance to project developers and other project proponents in developing countries and countries with economies in transition to assist them in the preparation of project financing proposals meeting the standards of the international financing community. Presentations were also provided by representatives of the project financing community including the Japan Bank for International Cooperation (JBIC), ReExCapital Asia, the Asian Development Bank (ADB), the China Development Bank, and Mitsubishi UFJ Securities on innovative financing mechanisms and approaches for clean energy projects. Targeted public sector initiatives were also introduced by representatives from the Asia Pacific Partnership and the US Agency for International Development (USAID)'s Development Credit Authority (DCA) that focus on accelerating clean energy markets and information sharing. Questions and participant dialogue focused on details of these various initiatives and how the various financing schemes potentially complement one another and how they can expanded to create new financing opportunities, particularly for small and medium sized projects.

The summary panel focused on how public-private partnerships can accelerate clean energy markets in the region and the most important roles that both private equity and international financial institutions can help in supporting these efforts. Panelists emphasized that clean energy technology transfer is indeed happening in Asia and globally, but accelerating and growing these markets to meet our common

environmental, economic development, and energy security objectives remains a key challenge. Enabling policy environments are critical elements to these markets as well as awareness of financing opportunities, technology options and trade-offs, and the true cost and benefits of energy choices including environmental impacts, contribution to economic development and job creation, and energy security. As these markets grow, they will continue to face challenges to implementation including availability of feedstocks for biomass based power and fuels and competition for technical expertise as well as capital. Increased communication across the relevant communities addressing energy and environmental issues will be fundamental to achieving success and greater emphasis needs to be placed on building the capacity of the next generation of engineering and policy experts in these fields.

The recurring themes are summarised as follows:

- Developing countries need further institutional development in order to implement energy efficiency improvement.
- Incorporation of developing countries' perspectives in the discussion of energy efficiency and renewable energy technologies contributes to the accelerated uptake of such technologies.
- International coordination through integrated (harmonized) policies and standards are effective means to advance energy efficiency market.
- Through enhanced protection of intellectual property rights, and improved support in securing finance, governments can create an enabling policy environment that encourages technology research and development as well as commercialisation and market development for renewable energy technologies. Implementation of demonstration projects, creation of tax incentives, and internalisation of environmental costs can also create an enabling policy environment that is conducive to further development of environmentally friendly projects.

Ⅱ - 3 Implementation Activities

The CTI facilitates technology implementation activities identified during the technology needs assessment process through a variety of actions, including:

- Identifying priority clean energy technology sectors in partnership with developing countries based on outcomes from the technology needs assessment process;
- Implementing targeted activities in selected priority sectors to foster market development and clean energy technology transfer;
- Evaluating activities, and disseminating lessons learned, to inform market development and country activities in other regions and sectors; and,
- Developing a strategy for eliminating any institutional, informational or other barriers to establishing the necessary enabling environment for effective and lasting technology transfer.

Ⅱ-3-(1) Technical Expert Exchange

In October of 2008, CTI organised and supported the sabbatical visit of Mr. Gabriel Blanco of the Facultad de Ingeniera, Universidad Nacional Del Centro de la Provencia de Buenos Aires of Argentina, hosted by the National Renewable Energy Laboratory (NREL) in Golden, Colorado. Mr. Blanco, who represents Argentina's climate change team, also serves on the Expert Group on Technology Transfer (EGTT) under the United Nations Framework Convention on Climate Change (UNFCCC). Mr. Blanco's respected role in a broad range of UNFCCC technology transfer activities contributed to his selection by the CTI to participate in this exchange program.

During this one-week exchange, Mr. Blanco visited with numerous NREL researchers on issues related to both renewable energy R&D as well as targeted deployment activities to accelerate technology transfer domestically and internationally. Mr. Blanco also shared his experiences

with NREL staff on clean energy activities in Argentina with an emphasis on identifying similar challenges and barriers where information exchange would be of value. In addition to working directly with technical experts at the laboratory to address questions regarding clean energy technologies, Mr. Blanco also toured a number of research facilities at NREL including the Alternative Fuels User Facility, the Field Test Laboratory, the Thermal Technologies Facility, and the National Wind Technology Center. Outside of NREL, meetings and tours were conducted at the National Center for Atmospheric Research (NCAR) on issues related to climate modeling, adaptation to climate change, and technology transfer.

In addition to activities related to clean energy technology transfer in Argentina, this sabbatical visit afforded Mr. Blanco time to work on matters related to innovative options to promote the development and transfer of technologies associated with his work under the EGTT. This included the identification of specific opportunities for future technical cooperation between counterparts at NREL and Argentina where information exchange and collaboration would be of mutual value. As a result of this visit, CTI also strengthened its constructive working relationship with Mr. Blanco and allowed for CTI to better understand and respond to the needs of both the EGTT and its developing country representatives.

Ⅱ-3-(2) Private Financing Advisory Network (PFAN)

The CTI has taken a leadership role in exploring innovative options to finance technology transfer because it had become clear that there was not enough public funding to fully address the technology needs of developing and transition countries, thus necessitating the engagement of the private sector. In 2006, the CTI initiated a pilot program called Private Financing Advisory Network (PFAN) in cooperation with the UNFCCC Expert Group on Technology Transfer (EGTT) and supported by a number of private sector companies in the financing sectors of the clean / renewable energy and energy efficiency industries (CE / RE / EE). PFAN's objectives are:

- to broaden the access to financing for climate friendly and technology transfer projects in the RE / CE sectors in developing countries / economies in transition;
- to get more renewable energy and climate friendly projects financed and thereby to accelerate technology transfer under the UNFCCC.

PFAN was established to bridge the gap, that had been established to exist, between investors / financiers / available sources of finance and project developers - to help the parties speak the same language and thereby develop and produce financially viable, bankable project and financing proposals. To achieve these aims PFAN seeks to identify projects that may be suitable for private sector finance at an early stage and then acts as a project financing coaching and consultancy service to guide such projects to bankability and financial close.

Overview of the PFAN Network and its Services

PFAN is an alliance of private sector companies, gathered under the umbrella of the CTI, all experienced in providing financing and financing services to climate friendly projects. Participants include specialist investment funds and institutional investors such as FE Clean Energy, Fiorello H. LaGuardia Foundation, E+Co and Banco Santander, as well as financing advisory consultants such as PPL International and ReEx Capital Asia. The PFAN members provide a variety of services to sponsors and developers of selected projects to assist them in securing private sector finance:

- Advice and guidance on:
  - overall project structure
  - financing structure, sourcing & procurement of financing;
  - technical and engineering aspects
  - preparation & presentation of financing / investment proposals

- Investor Matchmaking and introductions to financing sources;
- Provision of money / financing directly from members of the PFAN network.

PFAN currently targets mid-size CE / RE / EE Projects in the 1 to 50 million USD range whose developers do not otherwise have resources to access financing and advisory services. This fills an important gap in the market. Both bigger and smaller projects are eligible and about 15 % of the PFAN portfolio is allocated to SME and micro-projects.

The costs of providing PFAN services are met by funds provided to PFAN from its Funding Partners (see below). There is no direct cost to the project developer. In return however PFAN Members have the “right of first offer”

to provide financing and other services, providing always that such offers are on competitive terms.

The PFAN Review & Development Process

In order to qualify for PFAN support, a project first undergoes a rigorous, but non-bureaucratic, selection / analysis process based on an informal free-form application which however needs to include an initial project description / proposal, underlying project economics and other readily available relevant information. This first review takes about three to four weeks. Once accepted into the programme, a project is assigned a PFAN advisor or "coach" from the Network who steers the project through 3 further review stages which are designed to guide the project sponsors through the financing process to financial closure. The exact structure and content of each review stage is tailored to the individual project, but broadly speaking, the 2nd stage concentrates on the project economics and underlying viability. The 3rd stage focuses more on technical and engineering aspects, while the 4th and final stage is aimed at problem solving, fine tuning of the cash flows and commercial aspects and fulfilling the necessary conditions required by the potential lender / investor for converting financing offers into committed financing.

Each review stage is summarized in a formal written memorandum to the project sponsor which provides an analysis of the strengths and weaknesses of the project proposal, makes suggestions for future courses of action, identifies who needs to be involved, and specifies what needs to be done to take the project to the next stage and ultimately secure financing. The PFAN process requires the full commitment of project sponsors to supply information and to act on the advice provided. If this is not forthcoming CTI reserves the right to terminate PFAN support.

Experience / Results to Date

PFAN activities commenced in early 2006 and were conducted as a pilot programme up to the middle of 2008. During this period about 65 projects in total underwent initial review (or pre-review) with 10 of these projects being formally accepted for receiving PFAN support and inducted into the development pipeline. The projects cover a variety of regions and technologies. A further 10 – 15 projects would have been suitable for PFAN support had there been greater availability of resources.

Two projects have in the meantime been guided to financial close (a small run-of-river hydro-electric power station in Mexico and a bio-diesel

refinery in Brazil) raising a total of USD 35 million. A further 6 projects are at various stages of development in the pipeline while support for 2 other projects was terminated after it transpired the projects were no longer feasible.

Hydro-electric power station in Mexico

Bio-diesel refinery in Brazil

(USAID). USAID has recently made 3 funding awards available to PFAN from its Global Climate Change, Asia Pacific Partnership and Development Credit Authority Programmes. In addition the private sector PFAN Members commit matching funds and contributions (in the form of discounted service rates and fees) to the extent of roughly 100 % of the CTI and USAID funding.

Scaling-Up & Expansion

With the CTI and USAID funding (see above) PFAN now has confirmation of resources for a 3 year programme of work (up to the end of 2011) which will include significant expansion of network membership and coverage and a rapid scaling up of activities and project handling capacity:

- Establishment of 4 broad Regional Networks for Latin America, Africa, Asia and CIS / Eastern Europe, each coordinated by a dedicated Regional Coordinator;
- Establishment of dedicated country networks in India & China within the Asian Regional Network;
- Co-organisation of investor workshops and matchmaking events in Asia, China and India;
- Expansion of the development pipeline capacity to about 100 - 125 projects spread evenly over the 4 regions and within the envisaged time horizon.

Based on the proven track record and current leverage rate PFAN aims to raise between USD 500 – 700 million of investment and financing for CE / RE / EE projects in economies in transition and developing countries over the next 3 years.

Call for Proposals / New Members

PFAN is now soliciting new projects for entry into the development pipeline. Free form project proposals may be submitted to the Global Coordinator or to the Head of the CTI Secretariat at the addresses below. We would also be pleased to hear from investors and advisors interested in becoming members of the Network.

Summary

PFAN is proving to be an innovative and useful instrument in raising finance for CE / RE / EE projects in developing countries & transition economies thereby facilitating technology transfer. More information on project requirements, the application process for PFAN support and PFAN Membership is available at www.climatetech.net and / or directly from

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Ⅱ-3-(3) Energy Efficiency Intervention Program in Gujarat, India

CTI supports an on-going program which aims to reduce energy consumption and GHG emissions of Bhavnagar Rolling Mill Cluster in Gujarat state of India, through transfer and diffusion of advanced technologies, in close cooperation with International Center for Environmental Technology Transfer and Winrock International India. The cluster comprises of about 60 rolling mill units that convert steel ingots to hot rolled bar and flat products. Almost all the units in the cluster are located in either of the two concentration pockets, which are

Bhavnagar and Sihor areas, collectively called “Bhavnagar Rolling Mill Cluster”.

Thermal energy audit

Environmental audit

Supported by Indian and Japanese experts, the program conducted energy and environment audit and feasibility study to propose the best options to improve energy efficiency at demonstration units. The preliminary energy audits and studies show that there is a clear saving potential of around 20% from the baseline. The energy audit identified possible measures that can be taken in the units for energy conservation and energy efficiency improvement. The measures range from short term / low investment options to long term / investment intensive options.

Short term / low investment options

These measures include options which can be installed without any major alternation / modification in the existing systems and have investment requirement of less than USD12,000 with a payback period of less than a year.

(1) Install temperature controllers inside the furnace
(2) Control excess air inside the furnace

Medium term investment options

(1) Introduce waste heat recovery system
(2) Install combustion system with proper capacity and design
(3) Increase the length of preheating zone of the furnace

Long term / high investment options

(1) Re-design the furnace and associated systems
(2) Install coal gasification system

The plants receive technical assistance in order to upgrade or renew the

existing facilities according to the proposed improvement options. In order to verify the actual reduction in energy consumption, the operation of the upgraded or renewed equipments will be monitored.

The scope of the program encompasses the dissemination of the lessons learnt from demonstration plants to over 100 rolling units located within the cluster, and further to about 2,000 rolling mills all over India by fostering an enabling environment for sustainable development.

Ⅱ - 4 Training Courses

Training courses are organised in collaboration with relevant international organisations, with a focus on the special requirements and circumstances of the target countries/regions. Specific activities include:

- Capacity building for technology needs assessment, project planning and assessment, and establishment of institutional settings;
- Information dissemination about environmentally sound technologies and best practices appropriate to the region and circumstances of the target country;
- Identification of financing needs and alternative means of project financing;
- Exchange of experiences in the use of successful environmental and energy policy instruments (e.g. law, taxes, subsidies etc.);
- Professional education and training;
- Initiation and strengthening of networking between agencies/centres for energy saving, energy efficiency and renewable energy; and,
- Facilitating interaction between governments, agencies, and relevant international and other organisations.

Capacity-building workshop on programmatic CDM and JI

The Federal Environment Ministry of Germany held an international workshop on the project-based mechanisms of the Kyoto Protocol, JI and CDM, in Zeuthen near Berlin from 23 to 25 November 2008, organised by the German Energy Agency dena. Around 70 participants representing energy agencies, governments and multipliers from Eastern and South-Eastern Europe, Caucasus and Central Asia as well as interested investors, CER buyers and project developers from Germany, attended the workshop. The goal of the workshop was to offer broad-based training on the development of CDM and JI projects under the Programme of

Activities (PoA) focusing on renewable energies, energy efficiency in buildings, energy-efficient lighting and transport.

In recent years, PoAs have attracted attention for being an innovative development in the project-based Kyoto mechanisms. PoA approach is to support in particular the implementation of small-scale activities to reduce greenhouse gas emissions, which would not be carried out under regular CDM/JI due to prohibitively high transaction costs. The main difference between PoAs and project bundling is that additional project activities can be added to a PoA at any time, whereas the number of projects must me fixed beforehand in the case of bundling. Examples of PoAs include incentive programmes that promote the replacement of boilers in industrial plants, the replacement of domestic cookers (energy efficiency, biogas or solar cookers) and programmes for solar water heating. Five PoAs from Mexico, Bangladesh, Uganda, Brazil and South Africa are in the pipeline, but so far none has been registered with the CDM Executive Board. Through the "PoA Support Center Germany" located at the KfW bank, Germany wishes to stimulate the development of another 10 projects.

The workshop was geared toward the following subjects: incentive programmes for energy-efficient lighting, energy-efficient heating, buildings and renewable energies. Drawing on examples, experts explained step by step how to develop a PoA, while participants presented their own project ideas from their home countries and discussed the main components of a PoA with the help of the experts. It was underlined that the critical steps in the development of a PoA are the choice of proper methodology for calculating the GHG reductions, the institutional conception of the incentive programme, and the project monitoring required for measuring the emission reductions achieved. Discussing

these issues on the basis of concrete project ideas from the host countries for JI and CDM not only provided immediate learning results but also offered the host countries the opportunity to make progress in the evaluation of the feasibility of their project ideas.

The representative of the energy efficiency centre in Georgia presented a project idea for an incentive programme promoting the replacement of light bulbs with compact fluorescent lamps in 50,000 households in the densely populated area of greater Tiflis. It was noted that efficient lighting offers a huge saving potential; 16 Gt of CO2 may be avoided worldwide between 2008 and 2030 by using compact fluorescent lamps. The discussion focussed on the selection of an appropriate methodology in two different approaches. With a conservative approach, emission reductions are determined on the basis of estimates, which reduces monitoring efforts and costs, whereas the measurement approach offers the advantage of determining reductions in a more precise manner that leads potentially to higher reductions. This means that there is a direct trade-off between monitoring costs and proceeds from the sale of CERs.

The programme from Kazakhstan involved the retrofitting of boilers for electricity generation with additional steam or gas turbines in order to take advantage of combined heat and power. It was noted that the monitoring costs should be kept low by reducing the data collection requirements as much as possible.

CDM projects in the building sector have so far been limited to efficiency improvement of energy supply through replacement of heating boilers or fuel switch. It was noted that demand-side CDM projects present difficulties not only because of high investment costs but also because of the monitoring that may be complicated.

The discussion on the project proposal for Biogas plants in Kyrgyzstan focussed on practical questions such as how to store residues from livestock farming in lagoons, what the minimum temperature is to maintain the fermentation process and how to organize the decentralized electricity and heat distribution from the biogas plants.

The participants not only learned the basic requirements for the development of PoAs but also had a networking opportunity for useful exchange of experiences and ideas. The Federal Environment Ministry

will host another workshop for Eastern and South-Eastern Europe, Caucasus and Central Asia in 2009.

For further information, including the presentations, please visit the BMU website on CDM and JI: www.jiko-bmu.de

Ⅱ-5 Information Dissemination

One objective of the CTI is to facilitate information dissemination among governments, industry, academia and relevant international and other organisations, and to support the diffusion of climate-friendly and environmentally sound technologies and practices.

The CTI also provides support for UNFCCC-organised seminars and workshops, designed to better inform participants on key technology transfer issues, including enabling environments, technology needs assessment, technology information resources and capacity building.

The CTI organizes side events at UNFCCC events to share experiences and lessons learned from CTI-supported technology transfer activities in collaboration with developing and transition country partners.

The following activities were undertaken and completed in 2008:

Ⅱ-5-(1) The CTI held a side event at Bonn Climate Change Talks 2008, United Nations Framework Convention on Climate Change (UNFCCC) in Bonn, Germany on 6 June 2008 chaired by Mr. Elmer Holt, and facilitated by Mr. Martin Devine. This event entitled “Implementing and accelerating Low Carbon Technology deployment - Lessons from the work of CTI ” was well attended by over 30 participants from a broad range of stakeholders including national delegates, private sector, international organizations, and NGO representatives. The event presented the progress report of CTI’s work, and showcased lessons learned in terms of successful ways to increase the deployment of low carbon technology.

Mr. Holt opened the side event with introduction and overview of the CTI and announced that the government of Sweden is joining the CTI. He noted that the CTI’s comparative advantage is its close collaborative

relationship with business and financial sectors as well as the IEA, UNFCCC secretariat, and international organizations.

Mr. Devine underlined the importance of learning by doing in the deployment and transfer of environmentally sound technologies, whereby lies the value of CTI. He introduced the panelists and facilitated the ensuing discussions.

Ms. Wanna Tanunchaiwatana, Manager, Technology, UNFCCC secretariat, noted that the Parties extended the work of the Expert Group on Technology Transfer (EGTT) for five years with its mandate upgraded at COP13. She brought attention to the comprehensive rolling work programme of the EGTT. In particular she identified three major activities; 1) the development of a set of performance indicators to monitor and evaluate the effectiveness of the implementation of the technology transfer framework; 2) identification, analysis and assessment of existing and potential new financing resources and relevant vehicles in supporting development, deployment, diffusion and transfer of environmentally sound technologies in developing countries; and 3) a paper on a long-term strategy for the development and transfer of technologies beyond 2012. She mentioned the work of CTI in cooperation with the EGTT on innovative options for financing technology transfer, development of a guidebook on preparing project proposals for financing, and the Private Financing Advisory Network (PFAN) to facilitate project implementation.

Mr. Puneet Katyal, Group Coordinator – Energy Conservation, Winrock International India, outlined the energy efficiency intervention program in the steel rolling mill cluster in Bhavnagar, Gujarat state of India. He noted that the objective of the program is to reduce the green house gas emissions from the rolling mill cluster by upgrading the existing

inefficient and polluting system to an energy efficient, environmentally benign and economically viable system, and ultimately upscaling and diffusing the developed technology within the target cluster and to other clusters. He mentioned that 80% of the rolling mills in India fall into small and medium-sized categories, and most rolling units are highly energy intensive and inefficient with cumulative energy consumption of 1.6 MTOE per annum but have proven energy saving potential of 20-25%. He identified the absence of off-the-shelf technological solutions to suit the specific requirements of small and medium rolling units, and credible local technology suppliers as barriers to the implementation of energy efficiency measures. He stressed the need to raise awareness amongst entrepreneurs and local financial institutions that energy efficiency measures can be profitable. He noted that based on the results of diagnostic studies, possible cleaner technology options will be identified and techno-economic viability and life cycle analysis will be undertaken. He underscored the vital importance of demonstrating the improved and efficient technology, and disseminating the outcomes of the demonstration to prepare for upscaling of the technology. He noted that the program places emphasis on establishing the financial viability of the technology and the development of an effective delivery system so as to make the replication of such technology self-sustainable. He pointed out the large potential for replication does not only apply to the rolling sector but also across other sectors.

Mr. Peter Storey, the PFAN coordinator, PPL International, noted that one of the lessons learned from the workshop on innovative financing of technology transfer was that finance is available but there is a shortage of good project financing proposals that meet the standards and criteria of private sector financing communities. He further noted that the need for a tool to help project developers create bankable financing proposals and bridge the development gap to the money available led to the creation of CTI's PFAN Program. He explained that PFAN offers a free consulting service to project sponsors and developers to help them raise private sector finance by providing knowledge, technical assistance, and matchmaking service. He further explained the PFAN review process and key selection criteria, emphasising the commercial viability based on available information in proposal form. He mentioned that building on the experiences from the pilot phase, PFAN Program is ready to expand its activities by identifying new network members and projects on the ground. He stressed the importance of capacity building for financial and technical

abilities. He reported that 10 projects are formally inducted to the Programme and thirteen projects currently undergoing initial review including first projects in Asia. He underlined that PFAN can be a useful gateway to private sector finance especially for smaller / medium sized projects. He also reported that the development phase progression has been slower than anticipated and stressed the need for more local, on-the-ground network coverage. He noted that PFAN will further cooperate with UNFCCC/EGTT in support of technology needs assessment process and the training of trainers initiative utilizing the UNFCCC guidebook on preparing project financing proposals. He said the value of PFAN to the developer lies in members' knowledge base and experience, which can reduce risk through early identification of key strengths and weaknesses. He noted that PFAN can bridge the development gap and act as an interface between the public and private sectors.

The presentations were followed by a lively period of questions and discussion lead by Mr. Devine. In response to a question regarding the possible cooperation between PFAN and the energy efficiency intervention program in the steel rolling mill cluster in Bhavnagar, Mr. Storey noted that discussion is underway to set up a delivery process on financing with capacity building of local banks. In response to a question regarding barriers faced by climate-friendly projects, Mr. Storey underscored the importance of enabling environment and capacity building on the regulatory side.

Mr. Holt thanked all CTI member countries for their continuing support to the CTI programmes. He closed the meeting with appreciation to the panelists and participants for their contribution to the useful discussion that hopefully provided a better understanding of the variety of activities being pursued by the CTI related to technology transfer and how the lessons learned from those activities are leading to improved access to financing particularly private capital market to accelerate the broader diffusion of environmentally sound technologies.

Ⅱ-5-(2) The CTI held a side event at the United Nations Climate Change Conference – COP14 in Poznań, Poland on 5 December 2008 chaired and facilitated by Mr. Elmer Holt. The event entitled "Implementing and accelerating Low Carbon Technology deployment - Lessons from the work of CTI " was well attended by over 35 participants

from a broad range of stakeholders including national delegates, private sector, international organizations, and NGO representatives. The event presented the progress report of CTI's work, and showcased lessons learned in terms of successful ways to increase the deployment of low carbon technology.

Mr. Holt opened the side event with introduction and overview of the CTI, noting that the membership is open to all countries that are seeking international cooperation in the promotion of rapid development and diffusion of climate friendly and environmentally sound technologies. He underscored the important role the private sector plays in the enhancement of technology transfer activities.

Ms. Wanna Tanunchaiwatana, Manager, Technology, UNFCCC secretariat, gave an overview of the UNFCCC process leading up to the Copenhagen agreement in 2009 focusing on the technology issues. She explained that the issues for consideration at AWG-LCA are shared vision for long-term cooperative action in the enhanced national / international action on mitigation, the enhanced action on adaptation, the enhanced action on technology development and transfer to support action on mitigation and adaptation, as well as the enhanced action on the provision of financial resources and investment to support action on mitigation and adaptation and technology cooperation. She underlined the important contribution made by the Expert Group on Technology Transfer (EGTT) in drafting technical papers on; 1) performance indicators to monitor and evaluate the effectiveness of the implementation of the technology transfer framework; 2) financing resources and relevant vehicles in supporting development, deployment, diffusion and transfer of environmentally sound technologies in developing countries; and 3) a long-term strategy for the development and transfer of technologies beyond 2012. She introduced the framework

for international technology cooperation proposed by the European Union which covers four key components: 1) institutional and organizational arrangements, 2) enabling environments, 3) technology agreements, 4) financial mechanisms and tools. She reported that the UNFCCC in collaboration with the CTI and UNIDO conducted a training of trainers' workshop in September 2008 where participants received training on preparing project proposals for financing. She further noted that some of the participants will support the UNFCCC secretariat conduct regional workshops in early 2009 starting with Africa in which the CTI's Private Financing Advisory Network (PFAN) programme will play an important role of supporting project developers improve project proposals for financing.

Mr. Debajit Das, Senior Program Officer, Winrock International India, outlined the energy efficiency intervention program in the steel rolling mill cluster in Bhavnagar (Gujarat), India. He noted that the goal of the program is to reduce GHG emissions from Indian industrial sector leading to mitigation of global warming through implementation of energy conservation measures. He outlined the specific objectives as the study of existing energy consumption pattern, the upgrade of existing inefficient system to an energy efficient, environmentally benign and economically viable system, and the upscale and diffusion of the developed technology within the target cluster and to other clusters. He then reported on the investment options identified through the study ranging from short term low investment, e.g. the installation of temperature controller and the regulation of excess air inside the furnace, to long term high investment options, e.g. the redesigning of the furnace and the introduction of centralised gasification facility for the cluster. He emphasized that there exists large potential for efficiency improvement because of the unscientific manner in which the units are designed and operated.

Mr. Peter Storey, the PFAN coordinator, PPL International, noted that the need for a consultative and matchmaking service to help project developers create bankable financing proposals and bridge the development gap to the money available led to the creation of CTI PFAN Programme. He said that the PFAN is a multilateral initiative supported by the CTI with contributions from CTI member countries, USAID, ICETT, and APP, which offers a free consulting service to project sponsors and developers to help them raise private sector finance by providing knowledge, technical assistance, and matchmaking service. He noted the

endorsement the PFAN programme received in COP13 decisions (4 / CP.13), and the EGTT is investigating ways of integrating PFAN in the future framework. He mentioned that there exists considerable scope / potential to expand the programme with the additional funding made available by sponsors, which enables more local, on-the-ground network coverage and increase project handling capacity. He further noted that PFAN plans to coordinate outreach and project development activities with goals and priorities of PFAN Partners. He introduced the Asia Forum for Clean Energy Financing organised and sponsored by CTI and ICETT with support from Sustainable Energy Association of Singapore (SEAS) and ECO-Asia which entails a project development workshop culminating in live presentations in front of investors. He said the value of PFAN to investors and developers lies in risk reduction through targeting key risk points in development process. He summarized that PFAN is proving to be a successful and valuable tool with expected financing leverage of USD 500 – 700 million over the next three years.

The presentations were followed by a lively period of questions and discussion lead by Mr. Holt. In response to a question regarding the possible integration of PFAN in the UNFCCC delivering mechanism, Mr. Storey noted that the leveraging benefits PFAN delivers may be diminished unless a way around the bureaucracy of the process is devised, and suggested a hybrid solution where the administration and funding for the leveraging mechanism are within the UNFCCC but the actual work happens outside. In response to a question regarding IPR barrier, Mr. Das responded that IPR has not been an issue for the design of the new furnace, and Mr. Storey noted that IPR barrier is an issue but it is not as preventive as some people think.

Mr. Holt thanked all CTI member countries for their continuing support to the CTI activities. He closed the meeting with appreciation to the panelists and participants for their contribution to the useful discussion that hopefully provided a better understanding of the broad range of activities being pursued by the CTI in order to facilitate technology transfer and how the lessons learned from those activities are leading to improved access to financing particularly private capital market to accelerate the broader diffusion of environmentally sound technologies.

The archived UNFCCC webcast of the CTI side event can be viewed from the following link:

http://copportal1.man.poznan.pl/Archive.aspx?EventID=72&Lang=floor

Ⅱ - 6　Support Activities

Through its support activities, the CTI facilitates the efficient functioning of its Programme of Work and the dissemination of information to external stakeholders.　A key objective is the communication and publication of the CTI activities through pamphlets, documents and a well maintained website. CTI Annual Report 2007 and CDs containing information on past CTI activities were produced and distributed at the Bonn Climate Change Talks 2008, and the Fourteenth Conference of the Parties to the United Nations Framework Convention on Climate Change (COP14) in Poznan, Poland.

Ⅲ. Financing

The CTI derives all its funding from contributions of participating countries. In 2008, these contributions totalled 654,130 EUR. In addition to these financial contributions, CTI members contribute to CTI activities by sending their government officials to meetings, finding appropriate private sector experts, bridging relevant organisations such as UN bodies, and other in-kind activities.

A common fund has been established to carry out programme-wide support activities to facilitate the efficient functioning of the Programme of Work. Included among the actions supported by this common fund is the communication and publication of CTI activities through pamphlets, documents and a well maintained website. Each participating country paid a minimum core contribution of 10,000 EUR.

Ⅳ. Publications

Recent CTI publications, available on the CTI website noted below, include the following:

- Methods for Climate Change Technology Transfer Needs Assessments and Implementing Activities: Experiences of Developing and Transition Countries;
- Technology Without Borders: Case Studies of Successful Technology Transfer; and,
- Key challenges in stimulating diffusion of clean technologies in Latin America (also available in Spanish).

Ⅴ. Website

For more details on CTI activities and an up-to-date list of events, please consult the CTI website: **www.climatetech.net**

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Climate Technology Initiative

The Climate Technology Initiative is one of the International Energy Agency's Implementing Agreements, within the IEA's Framework for International Energy Technology Cooperation. The CTI's objective is to foster international co-operation for accelerated development and diffusion of climate friendly technologies and practices. For more information - see www.climatetech.net.