



Ministry of the Environment,
the Government of Japan



Department of Climate
Change and Energy
Efficiency, the Government
of Australia



Asian Development Bank



Overseas
Environmental
Cooperation Center,
Japan

The 21st Asia-Pacific Seminar on Climate Change
“Development and Transfer of Environmentally Sound Technologies in the Asia-Pacific”
Summary of Discussion

The Ministry of the Environment, Japan (MOEJ) and the Department of Climate Change and Energy Efficiency (DCCEE), Australia, supported by the Asian Development Bank (ADB), jointly organized the Twenty-first Asia-Pacific Seminar (hereinafter referred to as the “AP Seminar”) on Climate Change, in the Asian Development Bank Institute (ADBI), Tokyo, Japan on 26-27 July, 2012. The administrative service was provided by the Overseas Environmental Cooperation Center, Japan (OECC), as the Secretariat of the Seminar.

55 experts from 17 countries and 12 international organizations, research institutes and other relevant entities in the region participated in the Seminar.

Opening Remarks and Key Note Speech

The Seminar was inaugurated by Mr. Shigemoto Kajihara, Councilor, Global Environmental Bureau, MOEJ, and Ms. Alexandra Borthwick, Director, International Cooperation and Adaptation Section, International Division, DCCEE, Australia. In their opening addresses, they stressed that the 21st AP Seminar would provide participants with good opportunities to share and exchange practical information on the development and transfer of climate friendly technologies in the Asia-Pacific region, both in mitigation and adaptation, including potentials and challenges, and lessons learned. As the purpose of this Seminar was to consider how to effectively promote technology development and transfer in this region, it was hoped that discussion and exchange of views from practical perspectives in the Seminar would contribute to that purpose.

The Seminar invited a keynote speech in the Opening Session by Dr. Zou Ji, Deputy Director General of the National Center for Climate Strategy Study and International Cooperation (NCSC), China. Dr. Zou Ji introduced the current status of the development and transfer of technology in the Asia-Pacific region through different modes, including international trade, foreign direct investment, research and development and technical assistance. It was mentioned that international cooperation efforts had been made through different initiatives, with more potentials of expansion. After Dr. Zou Ji’s speech, Dr. Xiaohua Zhang, Programme Officer of the United Nations

Climate Change Secretariat provided an overview of the international negotiations on the development and transfer of technologies. It was introduced that after the adoption of the Bali Action Plan, followed by the Cancun Agreements, and the Durban decisions, the international discussion has shown a dynamic progress towards the operationalization of the technology mechanism, which consists of the Technology Executive Committee (TEC) and the Climate Technology Centre and Network (CTCN). This overview of the international negotiations framework provided a strong basis to engage in deeper and more country-specific discussions on technology development and transfer.

Structure of the Session

For the substance of the Seminar, participants discussed the following four topics, in particular, 1) the lessons learned and issues from climate (mitigation) technology development and transfer projects / programmes, 2) the lessons learned and issues from climate (adaptation) technology development and transfer projects / programmes, 3) identification of financial support necessary to realize the development and transfer of technologies in the Asia-Pacific region, and 4) possible schemes and platforms for climate technology development and transfer in the Asia-Pacific. Mr. Kunihiko Shimada, Special Advisor to the Minister, MOEJ was in charge of being the Chair of this Seminar. In addition to the above substantive topics, in Session 1 and 2, participants were invited to make presentations with a focus on lessons learned from their respective efforts, followed by "key questions" raised by the Chair. In Session 3 and 4, discussions were conducted as a panel discussion, inviting experts in substantive areas to share their views as panelists, and questions were posed by the Chair.

The Seminar contributed to exchange of views, useful information and experiences, mutual capacity strengthening of participants, and confidence-building among the countries, which aims to create an enabling environment for regional cooperation as well as domestic implementation of the development and transfer of technologies to adapt to climate change. It allowed frank discussions and relationship building opportunities among country participants, outside of the UNFCCC negotiations context.

Session I: Lessons learned and issues from climate (mitigation) technology development and transfer projects / programmes

One of the renewable energy developers and power generating corporations in the Philippines made a presentation on the efforts to promote the use of biomass energy, including the

introduction of domestic legal instruments and performance standards. A unique feature of this biomass project is empowering the entrepreneurial spirit of the rice farmers by making them shareholders of the Company who are entitled to profit sharing. This is a significant contribution of the project considering that the farmers are the most affected sector of the debilitating impact of climate change and the fact that they are a marginalized sector of the economy that renders them incapable to cope with the daunting challenges posed by climate change.

A waste management consultant of Malaysia introduced a waste management project related to semi aerobic landfill method “*Fukuoka method*” and *KitaQ* System for composting denominated “*Takakura method*”, which have been initiated by Japan. The presenter indicated that technical know-how, capacity building, money, materials and manpower could contribute to penetration of waste management technology. However, he showed that the government’s commitments, a long-term planning and coordination (duplication of projects; less than five semi aerobic landfill methods in Malaysia) are still lacking.

The Department of Meteorology, Hydrology and Climate Change, the Ministry of Natural Resources and Environment of Vietnam explained that their experience from the energy efficiency sector has demonstrated the penetration of climate friendly technologies to local private sectors (small and medium enterprises) through linkages with suppliers, experts, and businesses, which would demand technologies and necessary financial arrangements within the country. The presenter emphasized the importance of training for energy efficiency and conservation in utility equipment, rising awareness for both producers and customers, and technology transfer for producing energy efficiency products and equipment. The key lessons are a policy framework along with awareness and determination of the leaders. If there is no policy support and assistance from local governments, it will be difficult to implement multiple activities.

The Ministry of Environment of Cambodia introduced that through the TNA process, they have considered methods to conduct assessment and prioritize technology options, including the multi-criteria decision analysis (MCDA) techniques, cost and financial model, technology fact sheet and technology barrier analysis. This process is followed by preparation for the Technology Action Plan (TAP). From this experience, it has become clear that the TNA should be prepared and implemented by existing institutions, but challenges still remain in data availability, and TNA should be regularly updated to address such challenges.

Japan International Cooperation Agency (JICA) illustrated the support project which established an energy conservation center in Turkey and showcased some elements, which played a

critical role in encouraging developing countries to have strong ownership and leadership, as well as providing them with incentives for operation.

After these presentations, a general discussion was conducted by inviting the presenters of the session as the panelists, and posed the key questions prepared by the Chair as follows;

- Which of the elements (*) should be prioritized for a more efficient acceleration of technology development and transfer in mitigation?
(*: human and institutional capacities, financing, sound markets and so on)
- What would be the key to further enhance the participation of the private sectors for a more successful campaign?
- To make use of the results of “Technology Need Assessment (TNAs)”, what do we need?
(eg: sharing of outcomes, linkages to national development planning, matching with finance and so on)

In relation with the effectiveness of TNA, some participants pointed out that the lack of linkages between those in charge of TNA and those in charge of development planning and financial resource allocation was a fundamental issue to be addressed. While there are some improvements in terms of the design of the 2nd TNA process including Technology Action Plan (TAP), it was discussed that stakeholders should consider the smooth communication among related organizations.

A number of participants touched upon the importance of finance. Some suggested that a core of financial resources/budget should be covered by public funding, while such fund should be placed for leveraging private finance. Other participants mentioned that a certain level of protection for patents would enable to reduce risk of investment by financiers.

Some participants mentioned that five fundamental elements contained in the Marrakesh Accord should be recalled. Although these five are equally important, in light of the discussion highlighted in the presentations and discussion, capacity-building and creating an enabling environment are particularly critical.

Many of the panelists answered that one of the common elements of the development and transfer of technologies is government regulations. They also stressed that political leadership should be taken by governments to make an enabling environment for the private sector. It was equally recognized that technology development and transfer is entirely country specific and it is essential to recognize local considerations, political conditions and processes.

Session II: Lessons learned and issues from climate (adaptation) technology development and transfer projects / programmes

As the hub of the small Pacific islands, Fiji Meteorological Service introduced a meteorology early system to mitigate risk for tropical cyclones and support climate change adaptation. JICA (Japan) and KOICA (Korea) have provided them with technical assistance to upgrade the technologies for early warning and weather monitoring through telemetric and radar systems. The government's investment incentive, road map for improving warning system, strategy for improving infrastructure, environmental law, and procurement regulation have led to achieve an enabling environment.

Oxfam America (based in Vietnam) demonstrated that Vietnam has faced potential high risk of national food insecurity and illustrated how one of the agricultural technologies, a System for Rice Intensification (SRI), whose method can raise the productivity of the land, water, and investment capital, has been widely adopted in the community level (3,450 farmers applied SRI in 2006 to 1,070,384 farmers in 2011). To penetrate SRI technology in the community to adopt capacity to climate change impacts, the presenter emphasized the importance of promoting "a learning-centered model" by developing a "Farmer Field School" and the network of key farmers, and increasing farmers' ownership. As a result, SRI has brought benefits to local farmers by increasing crop yield, improving sustainability and living environment, while requiring less resources inputs.

The Ministry of Natural Resources and Environment of Lao PDR introduced that in relation to technology related to adaptation, water resource management is a highly prioritized area there. It was highlighted that the government policy shall be changed in order to appropriately reflect risks to be prevented, depending on the scale of intervention.

National Council on Climate Change (DNPI) of Indonesia shared that as outputs of the TNAs, areas of technology improvement were identified, according to different adaptation related sectors, such as food security, ocean and coastal management, and water resources management. Also, as another outcome of the TNA, a TAP has been developed with some project ideas. These are expected to be further developed for tangible intervention and investment.

Senior Disaster Risk Management Specialist of the World Bank (Tokyo Office) indicated that Japan's experiences from disaster risk management provide useful insights on how to apply

technologies to adapt to climate change. A methodology was proposed for climate change adaptation projects, which integrated climate change prediction and evaluation of impacts on extreme events into conventional project design and target setting process. In the case of adaptation, the presentation suggested that the transfer of technologies is mostly related to preparation for unexpected or uncertain events. In particular, highlighted aspects included that prediction and estimation technologies (climate change projection and risk assessment) are important, and it is essential to understand uncertainty and limitation of technology, and integrate and adopt a cross-sector approach.

In order to lead a discussion in a focused manner, the Chair provided a list of key questions to the participants, namely;

- Does the development of adaptation technology involve particular difficulties or advantages, compared to mitigation technology?
- In adaptation, technologies, which help to build the capacity of communities and industry to respond to climate change, would be more important rather than technologies that explore climate impacts. What do you think about this?
- To make use of the results of “Technology Need Assessment (TNAs)”, what do we need? (eg: sharing of outcomes, linkages to national development planning, matching with finance and so on)

In addition, the Chair recalled the fact that while the attention to adaptation was extremely high, fewer proposals to the GEF from developing countries were raised for support to adaptation technologies, and questioned about the background of the status.

Participants generally agreed that the wider range of activities involved in adaptation efforts and their long-term nature increased the complexity of the issue, especially in relation to the development and transfer of technologies and its finance. In practice, country or sited specific solutions in some cases have been found, yet, it might be premature to conclude general solutions to it.

However, many participants pointed out that public finance should play a key role, given the essential nature of adaptation to climate change, which reduces the risk of future loss of assets, while mitigation could offer opportunities for financial return, thus attracting more private investment, in general.

Nevertheless, there are some significant cases in adaptation efforts that have demonstrated the viability of private investments with profit margin, which was supported by the provision of regulation, activities coordinated by the public sector, or risk abatement scheme such as insurance.

Also, case specific, or technology specific risk assessment for investment may help investors in private sectors to get a clear picture. Given these important discussion points, participants noted that the further possibilities should be sought through an effective combination of public and private finance. It was put forward that this would help to reframe the discussion from catastrophe to one based on efficiency and opportunity.

Some participants argued that while there are a limited number of adaptation projects and project proposals to the GEF, there are more cases outside the UNFCCC. It was mentioned that the reason behind this should come from the discrepancy and the lack of communication between development planning agencies and environmental ministries in charge of climate change issues.

Others argued that it is important to adopt a more diverse and practical definition of adaptation technologies. It does not need to be expensive and complex technology in all cases. It is very often, particularly in the agriculture sector, that adaptation of normal cultivation practices can be led by farmers and communities themselves instead of having a complete dependence on external support.

Participants also generally agreed that in order to promote the development and transfer of technologies in adaptation and the involvement of the private sector, it would be extremely important that a long-term policy framework integrated in the national and local development planning policy should be provided by the government, which would reduce the risk of investment for adaptation related technologies.

Session III:

“Identification on financial support necessary to realize the development and transfer technologies in the Asia-Pacific” (Panel Discussion participated by finance experts)

In order to seek effective development and transfer of technologies, panelists pointed out that it would be vital to adequately reflect the cycle of technologies, which consists of 1) basic R&D, 2) applied R&D, 3) demonstration, 4) commercialization, 5) market accumulation, and 6) diffusion. It was emphasized that a careful look should be taken to identify exactly where finance is lacking and where finance is necessary. In the earlier stage of the cycle such as basic and applied R&D and demonstration, governments should play more active roles in fostering technologies, while in the latter stages such as commercialization, market accumulation and diffusion, linkages between businesses and financiers should be strengthened. In light with the cycles, the panelists highlighted

the fact that different form of finance (e.g.: loan, guarantee, collateral, equity, etc) should be matched through a careful analysis of business stages. Furthermore, some participants indicated higher expectation to the Green Investment Fund (GCF) to promote development and transfer of technologies.

Panelists also discussed the need for a better understanding and measuring the effectiveness and impacts of carbon finance in terms of the development and transfer of technologies, namely the Clean Development Mechanism (CDM). There are views to acknowledge certain achievements of the development and transfer of technologies through the CDM, while there were also limitations and actual projects which hinder the introduction of technologies with higher specification. In this regard, participants recognized problems in its schematic design, as well as the current market development.

During the discussion, it was proposed that capacity-building for local and international bankers should be conducted to understand and become familiarized with climate friendly technologies. Some participants also expressed their expectations that in order to realize the development and transfer of technologies, innovative ways should be sought to mobilize private finance, including the utilization of Joint Offset Credit Mechanism, which are being initiated by the government of Japan.

Session IV:

“Possible schemes and platforms for climate technology development and transfer in the Asia-Pacific” (Panel Discussion participated by experts who engage in related activities)

Based on the ongoing efforts and lessons learned from them, panelists pointed out the importance of establishing, strengthening and effectively utilizing related networks. Experiences through the Asia Pacific Adaptation Network (APAN) initiated by the MOEJ and the UNEP and operated by the Institute for Global Environmental Strategies (IGES) in cooperation with the ADB, show the effectiveness of five sub-regional hubs together with national focal points, and three thematic groups. APAN will work with a new Climate Technology Network and Finance Center established by ADB and UNEP, particularly for the network and knowledge dissemination function of the center.

Other panelists emphasized that international and regional efforts for the development and transfer of technologies through various networks, should be complemented by national and local

coordinators, who should facilitate interactions and communications among different stakeholders. For example, it was indicated that the Climate Innovation Center (CIC) based in India, which was initiated by the World Bank, will play a key role in matching needs of local stakeholders in the local context with specific technologies and ensuring that all elements of the innovation chain are addressed in a systematic manner.

Knowledge management was recognized as one of the essential elements of the development and transfer of technologies in the Asia-Pacific region. Most notably in the adaptation context, transfer of knowledge of science and policy framework is imperative to future decision making. The current knowledge basis developed by different players, such as TT CLEAR, TechWiki, and Technology Marketplace, should be utilized in a complementary manner. Climate projections are also quite important knowledge for planning adaptation. In this regard, participants welcomed ADB's initiative on the Regional Climate Projections Consortium and Data Facility for Asia and the Pacific. As future efforts, not only environmental ministries, but also development planning agencies and financial ministries, as well as public and private financiers, might obtain benefit from such coordinate approach in concert.

Capacity-building was also recognized as an inevitable part of the efforts. In many cases, self-sustaining environment for utilizing climate friendly technologies requires national and local capacity to absorb technology support, and arrange and replicate such benefits from climate friendly technologies to best suit to local needs and contexts. The cross-cutting nature of technology was recognized and it was noted that development and transfer of technology cannot be viewed independently but in light of other wider adaptation and mitigation issues. In this regard, participants reiterated capacity-building support for the development and transfer of technologies should be provided together with an access to hard technologies. Also, it was pointed out that the TNA may provide a useful vehicle for identifying needs and appropriate responses to support technology related capacity-building.

In relation to the situation of developing countries, in particular, small island states, some participants mentioned that there were continuous challenges for building and retaining capacities for analyzing technology related information and elaborating effective counter measures, due to high turnover of experts, and lack of systematic approach to these issues. Also in other countries, while there are significant potentials of introducing new technologies, such potentials have not been fully utilized due to the lack of effective communication and provision of information to decision makers. In this context, many participants hoped that future schemes and platforms should address such challenges by reflecting specific needs of developing countries.