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Cross-border Technology Transfer for Promoting Climate-Resilient Economic Development

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Introduction

Asian and Pacific Centre for Transfer of Technology (APCTT) was established in 1977 by the member countries of the United Nations Economic and Social Commission for Asia and the Pacific (UN-ESCAP).

Located initially in Bangalore, India. It is now based in New Delhi, India since 1993.



*The APCTT building inauguration on 16th July, 1977
Bangalore.*



*The APCTT building inauguration on 18th November,
1993 New Delhi.*

Objectives

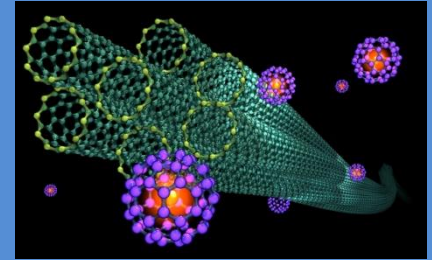
Assist member and associate member countries of United Nations ESCAP in strengthening their capabilities to:

- *Develop and manage national innovation systems;*
- *Develop, transfer, adapt and apply technology;*
- *Improve the terms of transfer of technology; and*
- *Identify and promote the development and transfer of technologies relevant to the region..*

Key Focus Areas of APCTT

Science, Technology and Innovation (STI)

Development and adoption of sound science, technology and innovation (STI) policies and support mechanisms by member countries for fostering technology innovation, technology-based entrepreneurship and competitiveness of SMEs.



Technology Transfer

Member country institutional capacity building to identify, acquire and adopt technologies and provide IT-enabled mechanisms to facilitate technology transfer and related intermediary services.



Technology Intelligence

Provide IT-enabled access to technology information services to technology stakeholders and undertake normative and analytical studies to assist member countries in STI policy making.



Sustainable Development Goals




- 2030 Agenda for Sustainable Development
- 17 Sustainable Development Goals (SDGs) and 169 Targets
- To eliminate poverty and hunger
- The new Goals are unique in that they call for action by all countries, poor, rich and middle-income to promote prosperity while protecting the planet.


Promotion of Climate Resilient Technologies

- Climate change is a key threat to the ecosystem, livelihoods and sustainable development
- Adversely affect agriculture, ecosystems, food security and economic growth
 - Severe land and environmental degradation, inherently poor soils
 - Low input affordability
 - Limited capacities amongst farmers
- Climate resilient technologies - Critical for increasing agricultural productivity, strengthening livelihoods and minimizing environmental damage


APCTT's Work Programme on Climate Resilience

Technology4SME Database

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**APCTT**
Asian and Pacific Centre
for Transfer of Technology

Asian and Pacific Centre for Transfer of Technology
of the United Nations Economic and Social Commission for Asia and the Pacific

UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific

Technology Offers (855)

[Submit Technology Offer](#)

Sectors

- Aerospace (6)
- Textile (4)
- Energy (23)
- Environment (23)
- Food Processing (40)
- Garment (1)
- Information Technology (61)
- Instrumentation (4)

Technology4SME Database

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APCTT's Work Programme on Climate Resilience

Renewable Energy Technology Bank (RET-Bank)

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of the United Nations Economic and Social Commission for Asia and the Pacific

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Renewable Energy Technology Bank (RET-Bank)

APCTT's Renewable Energy Cooperation-Network for the Asia Pacific (RECAP) is an institutional cooperation mechanism that has been set up in accordance with United Nations ESCAP Commission resolution 64/3 of 30 April 2008 on promoting renewables for energy security and sustainable development in Asia and the Pacific. APCTT received generous funding support of the Ministry of New and Renewable Energy, Government of India for establishing this institutional cooperation mechanism for promoting cross-border cooperation in the promotion of renewable energy among countries in the Asia-Pacific region. RECAP aims to strengthen the capacity of member countries to promote the utilization and development of renewable energy technologies (RETs) to meet their energy needs and foster sustainable development. As on date, there are 15 member countries, viz. Bangladesh, China, Fiji, India, Indonesia, Islamic Republic of Iran, Malaysia, Mongolia, Nepal, Pakistan, Philippines, Republic of Korea, Sri Lanka, Thailand, and Viet Nam are part of the RECAP network. This Institutional Cooperation Mechanism is in the form of a network of member countries, facilitated by APCTT, that would continue to perform four major functions, namely: (1) collection and dissemination of information on renewable energy technologies (RETs), (2) sharing of best practices on renewable energy (RE) promotion and utilization, (3) developing capacity to plan and implement RET transfer projects, and (4) promoting research and development (R&D) collaboration in renewable energy technologies. Since June 2009, APCTT planned and implemented several activities towards establishing this cooperation mechanism including the design and development of RECAP website and RECAP On-line Solution Center to cater to the need of renewable energy practitioners in member countries in the Asia-Pacific region.

The primary objective of RECAP network is to facilitate technology transfer cooperation among countries in the Asia-Pacific region in the area of renewable energy. Towards this end, APCTT has developed a "Renewable Energy Technology Bank (RET-Bank)" of tested and proven renewable energy technologies (RETs) initially in the areas of solar, biomass, wind, mini-hydro power and geothermal energy. It is envisaged that this technology bank would act as a repository of information on renewable energy technologies that are readily available for transfer and deployment. APCTT has developed this Renewable Energy Technology Bank as on-line technology database freely available for public access through its RECAP website.



APCTT's Work Programme on Climate Resilience



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Technologies And Good Practices In Sustainable Agriculture



This database contains information on sustainable agricultural technologies and good agricultural practices promoted by development practitioners and implemented by small farmers in various countries of South and South-East Asia. It is the result of research by the SATNET Asia – an open network of institutions and individuals sharing a common interest and concern in addressing the urgent need for innovative approaches to increase agricultural productivity to feed the growing population in a sustainable manner.

The Food Security Centre of the University of Hohenheim, Germany, has led the collection and analysis of technologies in this database. For more information on the experts who contributed to the database, please consult the [list of contributors](#).

APCTT's Work Programme on Climate Resilience

SATNET Asia Technology Database



TFS 11-System Of Rice Intensification (SRI)

28 Nov 2014 Cereals, System Rice Intensification, India

[Download](#)

The System of Rice Intensification (SRI) is a system of cultivation methods that combine a modified transplanting pattern and transplanting handling with modified water management and soil aeration.



TFS 10-Biointensive School Gardens: Enhancing Nutritional And Agro-Biodiversity Outcomes

31 Oct 2014

Vegetables, Sustainable Natural Resource Management, Capacity Development Methods, Philippines, Indonesia

[Download](#)

Biodiverse school gardens represent organic systems with a low carbon footprint.



TFS 09-Floating Vegetable Garden

31 Oct 2014

Vegetables, Floating Garden, Traditional Practice, Floating Cultivation, Wetlands, Bangladesh

[Download](#)

A floating bed, constructed of water hyacinth and other aquatic plants, is used for production of high-value vegetables during the monsoon season, when much arable land is flooded.



TFS 08-Integrated Pest Management For Eggplant Fruit And Shoot Borer

APCTT's Work Programme on Climate Resilience

An Integrated Rural Economic Development Programme for Livelihoods Improvement in the Dry Zone of Myanmar

- APCTT, through its knowledge partner World Vegetable Centre (AVRDC), **transferred seeds of 59 elite mung bean lines with pest and disease resistance** to the Department of Agricultural Research (DAR), Myanmar.
- Currently experimental trials are being undertaken in Myanmar **to select the best climate-resilient seed varieties** from these lines for the benefit of small holder farmers in Myanmar



Supporting Economic Diversification



Solar Conduction Dryer

Electricity - free technology to dehydrate perishable Farm and Marine products



Solar Conduction Dryer



Solar Conduction Dryer



Dried Fruits



Dried Fish



Dried Vegetables

Working principle

SCD uses patented technology, combining principles of conduction, convection and radiation to dehydrate material, thus giving one of the highest drying efficiencies in world resulting into highest productivity for given solar collector area.

Salient features

- Totally electricity free operation resulting in to zero operating cost.
- Reduction in capital cost by 3-5 times than conventional solar dryers.
- Modular system providing dryer that suits to individual farmer as well as food processing industry.
- Customizable loading capacity range from 3 kgs to 1000 kgs.
- A system that can be easily assembled and dismantled thus provides ease of transport and installation.
- Best suited to dehydrate vegetables, fruits, spices, herbs, fish and sprouts.
- Also useful in industrial drying of incense sticks, chalks etc.

Recognitions

- United Nations Environment programme (UNESCO)
- US AID
- University of Texas (U. S. A)
- Bill and Melinda Gates Foundation (U. S. A)
- Dell Foundation (U. S. A)
- Agilent Technologies (U. S. A)
- Patents (International patent no. PCT/IN2012/000843 and National patent no. 740/MUM/2011)

Technology Support



Bayer MaterialScience

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- www.scienceforsociety.co.in
- info@scienceforsociety.co.in
- +91 9960 45 97 70

Supporting Economic Diversification

Biomass Powered Bakery Oven



Supporting Economic Diversification

Solar Powered Freezers



Critical Issues in Cross-border Technology Transfer

- Barriers to the development and transfer of technologies exist at three layers (Global Climate Network, 2009):
 - ✓ **In practice**, where lack of skills to plan and implement TT projects and weaknesses in policies to direct technology flows can act as a barrier
 - ✓ **In principle**, where, historically, TT and trade have been linked in controversial debates split along developed-developing country lines
 - ✓ **In international climate law**, where, under Article 4.5 of the UNFCCC, developed nations have a legal obligation to promote, facilitate, and finance, as appropriate, the transfer of, and access to EST and know how to developing countries

Critical Issues in Cross-border Technology Transfer

- At the “practice layer” the following specific barriers are evident:
 - ✓ **Lack of capacity at the user level to make a business case** for a TT project, search for available technologies, choose from among the candidate technologies, negotiate the terms of transfer, implement the TT project, use the transferred technology effectively, and improve operations through innovation.
 - ✓ **Absence of a coherent set of supportive policies** to induce critical technologies. The policy mix needs to explicitly prioritize preferred technologies and provide targeted financial and fiscal incentives.

Critical Issues in Cross-border Technology Transfer

- At the other two layers specific barriers that have attracted attention are due to intellectual property and finance:
 - ✓ **Intellectual property (IP)** is at the core of innovation but it is also accepted that it can be a barrier for both horizontal and vertical technology transfer.
 - ✓ Many studies have suggested that **lack of access to finance** is a major barrier to technology development, and deployment. This is exacerbated by the fact that commercially useful technologies require high up-front investment when compared to other technologies

Strategic Interventions for Successful Cross-border Technology Transfer

- **Building Technology Development and TT Capacity**
 - ✓ Foster the creation of a **critical mass of skills** in the developing world to **plan and implement TT projects** (horizontal TT) with a business focus. Development of such capacity can help enhance opportunities to use promote both business partnerships and public-private partnerships as a means of accelerating the flow of technologies
 - ✓ Enhance **national R&D support** for bringing in, assimilating, and developing technologies, and for avoiding the “**valley of death**.” This should include international collaboration to adapt foreign technologies to suit local conditions.

Strategic Interventions for Successful Cross-border Technology Transfer

- Strengthen Policy Regimes for Accelerating the Cross-border Flow of Technologies
 - ✓ While many countries tend to have generic policy statements supporting cross-border TT, greater specificity is needed with respect to **promoting desired technologies**.
 - ✓ Policies are needed to introduce technologies in “**value chains**” that are critical for sustaining and enhancing economic growth.
 - ✓ **Policies must be backed by suitably designed financial, fiscal, legal, and regulatory instruments** that can provide assurance to capital investments in RETs.
 - ✓ Policies should be designed to (i) alleviate funding barriers, (ii) support science-industry links, (iii) provide knowledge services, (iv) promote commercialisation of IP, and (v) enhance education for business and entrepreneurship.

Strategic Interventions for Successful Cross-border Technology Transfer

- Enhance the use of Intellectual Property (IP)
 - ✓ The level of IP related difficulties **may not be the same** with all technologies.
 - ✓ In certain specific technologies where IP issues are hindering their effective deployment and diffusion, measures such as **guarantees for strong IP enforcement and joint collaboration** for developing locally appropriate versions could be explored (GCN 2009).
 - ✓ Regional/international “**innovation hubs**,” based on the “**open innovation**” principle, could be set up to develop technologies that have significant implications for developing nations. This could reduce the cost of IP deployment.

Strategic Interventions for Successful Cross-border Technology Transfer

- Increasing access to finance
 - ✓ This barrier has significant **international and national political implications.**
 - ✓ There can be no “**one size fits all**” approach, especially in developing countries, where there are constraints on public expenditure and a majority of the population are sensitive to price increases.
 - ✓ Suitably designed **economy-wide and market transformation incentives** are needed at the national level to attract finance.
 - ✓ Very often an existing technology gets ‘**locked-in**’ within its operational setting because of system and network externalities. The incentives must also help to overcome such “lock-in.”

Concluding Remarks

- Cross-border technology transfer is critical for countries in the Asia-Pacific region to achieve SDGs
- There is a need for greater regional cooperation in the promotion of climate-resilient and productivity enhancing technologies among countries in the Asia-Pacific region
- Being a Regional Institution of United Nations with a specific mandate to promote technology transfer, APCTT strives to be an enabling platform for knowledge sharing, regional networking and capacity building
- APCTT promotes South-South, North-South as well as Triangular cooperation modalities for supporting countries in technology-driven sustainable and inclusive development

Thank You

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