

CHAPTER-3

Asian Pacific Centre For Transfer Of Technology (APCTT)

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ASIAN PACIFIC CENTRE FOR TRANSFER OF TECHNOLOGY (APCTT)

1.0 PREAMBLE

The Department of Scientific and Industrial Research (DSIR), Ministry of Science and Technology (MOST), Government of India has been the national focal point of Asian and Pacific Centre for Transfer of Technology (APCTT) for India since its inception in 1977. Matters pertaining to APCTT and UNESCAP are dealt with in cooperation with the Ministry of Commerce and Industry and the Ministry of External Affairs, Government of India. DSIR also plays an active role in APCTT's functioning, particularly relating to its policies and programmes. India being the host country has been providing institutional support to APCTT since its inception.

APCTT receives annual institutional support of US\$ 200,000 in Indian Rupees (to meet the local costs) from DSIR in addition to funding for building repairs, renovation work, and municipal taxes. DSIR also extended programme support towards the APCTT project entitled, "Promotion of National Innovation Systems (NIS) in Countries of the Asia-Pacific Region – Phase II" which concluded in 2016. The residual fund of this completed project has been reprogrammed under a new project "Promotion of Regional Cooperation between India and ESCAP member States to Strengthen National Innovation Systems". Activities under this project are under implementation during 2018-2019.

2.0 INTRODUCTION

1. The 2030 Agenda for Sustainable Development, unanimously adopted in 2015 calls upon the member States of the United Nations to strive for a more secure and sustainable world by 2030. Science, technology and innovation have been identified as key catalysts to achieve the

Sustainable Development Goals that are an integral part of the Agenda 2030.

2. APCTT assists member countries to strengthen 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. The Centre's activities directly support the Sustainable Development Goal 9 (Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation), and 17 (Strengthen the means of implementation and revitalize the global partnership for sustainable development), among other goals.
3. APCTT's primary focus in the reporting period were as follows:
 - i. Development and management of sound national innovation systems;
 - ii. Capacity Building support to develop, transfer, commercialize and adopt new and emerging technologies that have the transformative potential to achieve the Sustainable Development Goals;
 - iii. Dissemination of information related to science, technology and innovation policy, technological innovations, market developments and events;
 - iv. Production of publications and knowledge products on science, technology and innovation policy, new and emerging technologies and other related areas; and
 - v. Facilitation of regional cooperation and networking in science, technology and innovation, cross-border trade and technology transfer.



4. In 2018, APCTT delivered and/or actively contributed to 13 demand-driven capacity building activities organized in 7 member countries (China, India, Indonesia, Kazakhstan, Malaysia, the Philippines, and Thailand) in close collaboration with 17 partner institutions (**Annexure 14**). The activities include international workshops and conferences, regional consultations and training workshops. The Centre reached out to about 2,600 target participants such as science, technology and innovation policy makers, and representatives from small and medium enterprises, academia, research and development institutions, technology promotion agencies and technology transfer intermediaries.
5. APCTT benefited from expert participants from Asia-Pacific member countries namely Afghanistan, Bangladesh, Bhutan, China, Fiji, India, Indonesia, Islamic Republic of Iran, Japan, Kazakhstan, Kyrgyzstan, Lao People's Democratic Republic, Malaysia, Myanmar, Nepal, Pakistan, the Philippines, Republic of Korea, Uzbekistan, Singapore, Sri Lanka, Tajikistan, Thailand and Turkey, who had shared their domain knowledge, experiences and best practices with other target participants. The Centre's activities were also benefited from the expertise shared by other United Nations entities and international organizations such as United Nations Economic Commission for Europe, United Nations Conference on Trade and Development, Association of Southeast Asian Nations, Asian Development Bank, Indian Ocean Rim Association, and Non-Aligned Movement Centre for South-South Technical Cooperation.
6. APCTT's online periodical *Asia-Pacific Tech Monitor* delivered latest information on: technology trends and developments; science, technology and innovation policies; technology market; innovation management; and technology transfer.
7. During this period, APCTT extended its capacity-building activities on technology transfer and commercialization to Central Asian countries such as Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan.

3.0 Major Results In Capacity-Building Activities In 2018

A. Strengthening of National Innovation Systems (NIS)

APCTT provided capacity building support to foster technology innovation, technology-based entrepreneurship and competitiveness of small and medium enterprises. Following are the key activities carried out and/or contributed by the Centre:

- (a) **Regional Consultation on Achieving Sustainable Development Goals through Science, Technology and Innovation, Bangkok, Thailand, 20 March 2018:** The Centre supported the regional consultation, organized by the Thailand Institute of Scientific and Technological Research of Ministry of Science and Technology of the Royal Thai Government. The objective was to share best practices, experiences and lessons learnt in the areas of science, technology and innovation for achieving the Sustainable Development Goals. The regional consultation discussed how enhanced cross-border cooperation among these countries would benefit the region in achieving the Sustainable Development Goals. 97 participants, including experts from the Republic of Korea, Japan, the Philippines, Myanmar and Singapore shared their perspectives on science, technology and innovation policy interventions and the role of science, technology and innovation in achieving the Sustainable Development Goals.
- (b) **Third Forum on China-South Asia Technology Transfer and Collaborative Innovation, Kunming, China, 14 – 16 June 2018:** The Centre supported this event at the occasion of the 5th China-South Asia Expo. The event was organized by the Ministry of Science and Technology of China and the People's Government of Yunnan Province of China. The Forum aimed at strengthening regional cooperation in science, technology and innovation for sustainable development. It also organized one-on-one business matchmaking, facilitating concrete technology transfers among participating institutes and enterprises. The Forum brought together about 800 participants from government departments, science and

technology authorities, technology transfer agencies, industrial associations, businesses, academia, and institutions in China and South Asian countries such as Afghanistan, India, Myanmar, Nepal, Pakistan and Sri-Lanka.

(c) **Regional Forum on Strategies to Enhance Innovation and Management Capacities of Start-ups and Small and Medium Enterprises, Manila, the Philippines, 18-19 July 2018:**

The Centre jointly organized the regional forum with Technology Application and Promotion Institute of the Department of Science and Technology, the Philippines. The Forum deliberated on the new and emerging policy frameworks and tools, institutional/infrastructural support systems, national/regional collaboration networks and platforms, and innovative financing models. Case studies and best practices for the promotion of technology-based start-ups and small and medium enterprises were shared and concrete recommendations were made. 81 participants including experts from India, Malaysia, the Philippines, Republic of Korea, and Asian Development Bank participated and contributed to the deliberations of the Regional Forum.

(d) **6th Forum on China- ASEAN Technology Transfer and Collaborative Innovation, Nanning, China, 11 September 2018:**

The Centre contributed to this forum which was organized by the Ministry of Science and Technology of the People's Republic of China and the People's Government of Guangxi Zhuang Autonomous Region; and co-organized by Guangxi Science and Technology Department, and China-ASEAN Technology Transfer Centre. The Forum aimed to facilitate technology transfers in the region, and to strengthen cooperation among the participating Science and Technology Parks. One-on-one business matchmaking were also organized to facilitate concrete discussions on technology transfer among participating institutes and enterprises. The Forum was participated by over 800 science, technology and innovation stakeholders from China, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Thailand, and Viet Nam.

(e) **International Conference on Technology Transfer and Internationalization of Technology-based Businesses, Tangerang, Indonesia, 1-2 November 2018:**

The Centre jointly organized this conference with Indonesian Institute of Sciences, in cooperation with the Indian Ocean Rim Association, Japan-ASEAN Science, Technology and Innovation Platform, and Non-Aligned Movement Center for South-South Technical Cooperation at the occasion of the Innovation Summit. The conference deliberated on the challenges and opportunities for technology transfer and internalization of technology-based small and medium enterprises and start-ups. The conference was attended by 143 participants including senior officials, experts, and industry managers from India, Indonesia, Japan, Republic of Korea, Sri Lanka and Tunisia.

B. Promotion of new and emerging technologies such as renewable energy, information and communication technologies

APCTT organized/or contributed to the following capacity building activities for promotion of new and emerging technologies during the reporting period:

(a) **Regional Consultation on Achieving Sustainable Development Goals through Sector-focused Science, Technology and Innovation Policies, Bangkok, Thailand, 27-28 August 2018:**

The regional consultation was jointly organized with Thailand Institute of Scientific and Technological Research (TISTR) and Ministry of Science and Technology (MOST) of the Royal Thai Government. The consultation brought together 95 participants including experts from India, Islamic Republic of Iran, Japan, Malaysia, the Philippines, Republic of Korea, Singapore, Sri Lanka, and Thailand. The experts deliberated on the principles and methodologies for innovation strategy development; multi-sectoral policy coordination; policy, regulatory, technological and business perspectives in renewable energy and ICT sectors.

(b) **Fourth Industrial Revolution Conference 2018 "New and Emerging Technologies in Achieving Sustainable Development Goals", Putrajaya, Malaysia, 23-24 October 2018:**

The Centre



jointly organized this conference with Ministry of Energy, Science, Technology, Environment & Climate Change, Malaysia and MIMOS Berhad, Malaysia. The conference deliberated on the policy, regulatory, technological and business aspects of Fourth Industrial Revolution technologies such as Internet of Things (IoT), artificial intelligence, augmented reality, big data, additive manufacturing, cloud computing and cyber security. The conference brought together 254 participants including international experts, and senior government officials from Japan, China, India, Fiji, Malaysia, and Russian Federation. One of the key recommendations of the conference was to launch an Asia-Pacific Regional Information and Communication Technology Knowledge Network for Fourth Industrial Revolution Technologies (APRIKNET-4IR) to support cross-border collaboration on innovative information and communication technology applications for achieving the Sustainable Development Goals.

- (c) **International Conference on Inclusive Science Technology and Innovation Policies for Promoting the Transfer of New and Emerging Technologies in Water and Energy Sectors, Bangkok, Thailand, 27 November 2018:** The International Conference was jointly organized with Ministry of Science and Technology of the Royal Thai Government, and Thailand Institute of Scientific and Technological Research. The conference deliberated on the challenges and opportunities for the development, deployment, accessibility and affordability of innovative technologies in the closely related water and energy sectors. The conference brought together 74 participants including senior government officials and experts from Bangladesh, China, India, Indonesia, Islamic Republic of Iran, Kazakhstan, Malaysia, Pakistan, the Philippines, Republic of Korea, and Thailand. Policy recommendations developed at the conference were presented to the 14th Session of APCTT Governing Council held from 28 to 29 November 2018 to assist the Centre in developing focused programme activities to support member states in harnessing new and emerging technologies in the water and energy

sectors. As part of the international conference and Governing Council session, a study visit was organized for the member country representatives to Lamtakong Research Station (LRS), and Sakaerat Environmental Research Station (SERS) in NakhonRatchasima province, Thailand. The study visit covered several research installations such as Tropical Insect Sanctuary, Plant Museum, Renewable Energy Demonstration Plant, and Sakaerat Biosphere Reserve.

C. Support technology transfer capacity building

APCTT has contributed to strengthening the technology transfer capacity of member countries' STI stakeholders through "Training of Trainers (ToT)" methodologies. The areas of cooperation included: planning and managing technology transfer projects; technology transfer support services for SMEs and entrepreneurs as well as capacity building on technology transfer and commercialization. During the reporting period, the Centre organized the following capacity building activities:

- (a) **Workshop on Strengthening Technology Transfer and Technology Commercialization Capacities of Countries in Central Asia, Astana, Kazakhstan, 30-31 May 2018:** The Centre jointly organized this regional workshop with United Nations Economic Commission for Europe (ECE), and National Agency for Technological Development (NATD), Kazakhstan. The workshop aimed at strengthening capacities of countries in promoting cross-border transfer of technologies and innovations. The workshop deliberated on critical aspects of policy, regulatory and institutional ecosystems for facilitating cross-border technology transfer among the countries in Central Asia. The workshop was attended by 171 participants from Kazakhstan and other Central Asian countries including senior policy makers, private sector representatives and experts from Kyrgyzstan, Tajikistan, Turkey, and Uzbekistan.
- (b) **Training Programme on Technology and Innovation Management, Ghaziabad, India, 26 June 2018:** The Centre supported to this training workshop organized by Human Resource Development

Centre of the Council of Scientific and Industrial Research, Ministry of Science and Technology, Government of India. The workshop provided a platform for senior scientists and researchers of India's public-funded research laboratories to enhance their knowledge, understanding, and best practices in technology innovation management. The workshop deliberated on the technology commercialization aspects, and how to effectively manage commercialization of innovations emerging from research laboratories. The workshop was attended by 25 senior scientists and business development heads of premiere research laboratories from all over India.

(c) **Workshop on Rural Industries: Establishment, Sustainability and Challenges, Sonipat, India, 27-29 June 2018:** The Centre co-organized this workshop with Centre for Rural Development and Technology, Indian Institute of Technology Delhi, India. The workshop deliberated on the challenges, good practices and strategies related to: skill development for rural industries; market efficiency improvement; rural industry start-ups; social and digital safeguards for technology transfer in the rural value chain; and agro-based (mushroom) and non-agro-based (leather) rural industries. 30 participants from various engineering colleges, technical institutes and the private sector in India participated in the programme.

(d) **International Training Programme on Skill Development and Employment Generation, New Delhi, India, 25 September 2018:** The Centre contributed to this training programme organized by V.V. Giri National Labor Institute (VGNLI), Ministry of Labour, Government of India. The programme was supported by the Ministry of External Affairs of Government of India under the Indian Technical and Economic Cooperation/ Special Commonwealth Assistance for Africa Programme. 25 government officers from Bhutan, Botswana, Ethiopia, Kenya, Madagascar, Mauritius, Namibia, Niger, Oman, South Sudan, Sri Lanka, Tanzania, Zambia, and Zimbabwe participated in this programme. The training covered topics such as web-based platforms and tools for technology

transfer and market linkages, technology transfer facilitation mechanisms, knowledge networks for innovation and technology transfer, university-industry partnerships, and technology-based entrepreneurship and start-ups.

(e) **Training on Innovation, Technology Transfer and Technology-based Entrepreneurship for Senior Officials from Royal Government of Bhutan, 26 September 2018, New Delhi, India:** The Centre organized this tailor-made training for 2 senior officials from the Department of Cottage and Small Industry of the Ministry of Economic Affairs, Royal Government of Bhutan. The training focused on regional technology cooperation and collaborative networks, the Centre's online Technology4SME database for technology transfer, knowledge networks for innovation and technology transfer, university-industry partnerships, and technology-based entrepreneurship and start-ups. Upon completion of the training, the Centre received an official request from the Royal Government of Bhutan to assist in developing a national technology database for cottage and small industries as well as to organize a more comprehensive training on planning and managing technology transfer projects during July 2019 in Bhutan.

D. Providing technology intelligence through publications

- (a) The Centre has been disseminating information on recent technological trends and developments through its technology intelligence programme to help policy makers, institutions, and technology transfer intermediaries to address the challenges of business and technology cooperation in the region. The online periodical (www.techmonitor.net) Asia-Pacific Tech Monitor features articles on the latest technology trends and developments, technology policies, technology market, innovation management, technology transfer and new products and processes. The **Annexure 15** provides a list of the Centre's publications during the reporting period.
- (b) The Centre published 4 issues of Tech Monitor focusing on special themes such as: Big data



innovation for sustainable development and humanitarian action (Oct – Dec 2017); Enhancing technology access to reduce inequality (Jan-March 2018) in support to the theme of the 74th ESCAP Commission Session held in May 2018; Technology-based entrepreneurship and innovative start-ups (April-June 2018) and Financing innovation in the Asia Pacific (July-Sep 2018) (**Annexure 15**). The Tech Monitor issues featured 15 articles contributed by authors/experts from Australia, Austria, Bangladesh, India, Japan, Malaysia, Nepal, Republic of Korea and the United Kingdom. The articles presented data and analysis with respect to critical issues related to the special themes and included case studies and best practices from the region and outside. The periodical also disseminated short articles on useful guides, best practices for startups and small and medium enterprises, and selected technology offers and requests from countries such as China, Hungary, India, Poland, Sri Lanka, Thailand, and the United Kingdom.

- (c) The Centre shared its online periodicals with readers from member countries and outside the region as well. During this period, the online Tech Monitor periodical has 11,063 pages views. Countries with top viewership were India, France, the United States, China, the Philippines, Indonesia, Thailand, Japan, Italy, Germany, Australia, Malaysia, Nepal, Canada and the United Kingdom among others. The Centre also disseminated the e-periodicals through social media platforms such as Facebook and twitter. Printed copies of Tech monitor were also distributed among participants in the capacity building workshops and conferences.

E. Cooperation with ESCAP programmes and divisions

APCTT participated and provided substantive contributions to the following ESCAP meetings:

- (a) **Seventy Fourth Commission Session of ESCAP, 11-16 May 2018, Bangkok, Thailand:** The Centre made a report on the thirteenth session of the Governing Council, held in Manila to the Commission. The Commission recognized the

importance of the capacity-building work carried out by the Asian and Pacific Centre for Transfer of Technology (APCTT) for policymakers in areas of policymaking on science, technology and innovation; the development, adoption and adaptation of new and emerging technologies; and technology transfer and commercialization. The Commission expressed its appreciation for the work carried out by the Centre.

- (b) **Second session of ESCAP Committee on Information and Communications Technology, 29-31 August 2018, Bangkok, Thailand:** The Centre made a report on its work programme to the Committee in the session on Regional Mechanisms for Technology Transfer for Sustainable Development. The Committee recommended the continuation of the current work of the APCTT in addition to the emerging areas on information and communications technology, big data, artificial intelligence and the Internet of Things. During the Committee session, member states expressed appreciation to the work of the Centre.

F. Cooperation with UN organizations, international organizations and other partners

During this reporting period, APCTT jointly delivered activities/closely worked with United Nations agencies and international organizations including United Nations Economic Commission for Europe, World Intellectual Property Organization, World Trade Organization and Asian Development Bank while implementing capacity-building activities in the Member States.

G. Evaluation of the Asian and Pacific Centre for Transfer of Technology

- (a) In line with Commission resolutions 66/15 and 71/1, ESCAP conducted an evaluation of the Centre which was carried out by an independent consultant. The specific objectives of evaluation were:
- (i) To assess the substantive relevance of the Centre's mandate in the context of the ongoing reform of ESCAP and 2030 Agenda for Sustainable Development; sustainability of the Centre in

terms of its financial and human resources; and results and efficiency of the Centre's delivery of its capacity building activities.

- (ii) To recommend specific actions for improving the results-orientation, relevance, sustainability and efficiency of the Centre.
- (b) The Centre fully supported the evaluation exercise by providing full and comprehensive background documents, arranging stakeholder interviews and providing comments as one of the ESCAP's reference group members.
- (c) The report was discussed at the occasion of the fourteenth session of the Centre's Governing Council on 28 November 2018.

H. Resource mobilization activities

APCTT made the following resource mobilization efforts during the reporting period:

- (a) **Host country contribution:** ESCAP is actively in discussion with the Department of Scientific and Industrial Research, Ministry of Science and Technology, Ministry of Commerce and Industry, and Ministry of External Affairs, Government of India for enhancement of institutional support to the Centre.
- (b) **Project on "Evidence-based innovation policy for effective implementation of 2030 Agenda for Sustainable Development in the Asia-Pacific region":** The Centre successfully developed the project with the Trade, Investment and Innovation Division of ESCAP, and secured funding of US 500,000 dollars from the United Nations Development Account (11th Tranche). The Centre will implement this project with the Division during the period 2018 to 2021. The main objective of the project is to strengthen the capacity of developing countries, in particular Least-Developed Countries in South Asia, Southeast Asia and the Small Island Developing States in the Pacific, to formulate

evidence-based, integrated and inclusive innovation and technology policies. Through such policies, the countries should be able to use science technology and innovation as an effective means of implementation for the achievement of the Sustainable Development Goals.

- (c) **Section 23: Regular Programme of Technical Cooperation fund of the United Nations:** The Centre is discussing with Strategy and Programme Management Division of ESCAP to secure funds from Section 23, Regular Programme of Technical Cooperation fund of the United Nations to develop a blue print for a national technology transfer database as well as to deliver a capacity building activity in Bhutan in 2019, focusing on technology transfer and commercialization for enhancing the capacity of cottage and small industries in Bhutan.
- (d) **In-kind contribution from member States:** The Centre successfully secured in-kind support and contributions from member states (namely China, India, Indonesia, Kazakhstan, Malaysia, the Philippines and Thailand) for organizing programme activities during the reporting period.
- (e) **Secondment of national officer:** Discussions are currently at an advanced stage between ESCAP and Ministry of Science and Technology of Royal Thai Government to send a national officer to work at the Centre for a limited duration.

I. Digital Outreach

APCTT continued to extend its outreach to stakeholders, policy makers and institutions through digital tools including twitter (twitter.com/UNAPCTT), Facebook (facebook.com/UNAPCTT) and LinkedIn (RE Mapping in Asia and the Pacific). The Centre also coordinated with Strategic Communications and Advocacy Section of ESCAP for disseminating information about its activities and programme outputs through ESCAP newsletters and twitter updates.

