

Asian and Pacific Centre for Transfer of Technology
Governing Council

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Report on the activities of the Centre for the period December 2020 to November 2021

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I. Introduction

1. The Asian and Pacific Centre for Transfer of Technology promotes regional cooperation in science, technology and innovation to achieve the Sustainable Development Goals by 2030.

2. As per the revised statute adopted by the 72nd session of ESCAP held in 2016¹, the Centre assists member States to strengthen their capabilities to develop and manage national innovation systems; develop, transfer, adapt and commercialize technologies; improve the terms of transfer of technologies; and identify and promote the development and transfer of technologies relevant to the region.

3. The Centre has been fostering inclusive partnerships between governments, research and development institutions, academia, international organizations, private sector and civil society for transfer, dissemination and diffusion of technologies for achievement of sustainable development goals in the Asia-Pacific Region.

4. The Centre supports creation of enabling environment for innovation and technology transfer in the Asia-Pacific region. The activities of the Centre not only contribute towards the Sustainable Development Goal 9 (Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation) and Sustainable Development Goal 17 (Strengthen the means of implementation and revitalize the global partnership for sustainable development), but also support the other Sustainable Development Goals related to the Centre's programme of work.

5. This report covers the activities carried out by the Centre during the period December 2020 to November 2021.

6. The Centre's primary focus areas in the reporting period were as follows:

(a) Enhancing technology transfer and science, technology and

¹ Resolution adopted by the Economic and Social Commission for Asia and the Pacific 72/3, Statute of the Asia and Pacific Centre for Transfer of Technology (E/ESCAP/RES/72/3) dated 19 May 2016.

* ESCAP/APCTT/GC/2021/L.1

innovation capacity to harness technology innovations for sustainable development;

(b) Capacity building and enhance knowledge on science, technology and innovation policy, technology cooperation and transfer, intellectual property management with focus on emerging technologies, climate change adaptation and mitigation technologies, and technologies to combat the COVID-19 pandemic;

(c) Enhancing technology intelligence through production and dissemination of knowledge products on science, technology and innovation policy, technology transfer and commercialization, intellectual property management, new and emerging technologies and other related areas; and

(d) Facilitating regional cooperation and networking in science, technology and innovation, and cross-border technology transfer, particularly focussing on the technologies and innovations to address the challenges of COVID-19 pandemic and climate change.

7. During the reporting period, the Centre delivered and actively contributed to 6 demand-driven capacity building activities in 4 member States (China, India, Islamic Republic of Iran and Uzbekistan) in close collaboration with 52 partner institutions. The list of partner institutions, who worked with the Centre in delivering activities, is provided as Annex I. The activities included international conferences, regional capacity building workshops and technology facilitation consultative meeting.

8. The Centre reached out to over 500 target participants comprising representatives from governments, technology promotion agencies, technology transfer intermediaries, academia, research and development institutions, industrial enterprises and start-ups and financial institutions.

9. The Centre benefited from participation of experts from 24 Asia-Pacific member States namely Azerbaijan, Bangladesh, Bhutan, Cambodia, Fiji, India, Indonesia, Islamic Republic of Iran, Kazakhstan, Lao People's Democratic Republic, Philippines, Malaysia, Nepal, Pakistan, Papua New Guinea, People's Republic of China, Philippines, Republic of Korea, Republic of Uzbekistan, Singapore, Sri Lanka, Thailand, Turkey and Viet Nam. The experts shared their domain knowledge, experiences, and best practices with the target participants. The Centre's activities also benefited from participation of experts from several organizations including Asian Development Bank, Association of Southeast Asian Nations Centre for Energy, Economic Research Institute for ASEAN and East Asia, International Solar Alliance and World Economic Forum.

10. The Centre's online periodical 'Asia-Pacific Tech Monitor' provided latest information on: technology trends and developments; science, technology and innovation policies; technology market; technology transfer and commercialization; intellectual property management; technologies for climate change adaptation and mitigation; and new and emerging technologies including the fourth industrial revolution technologies. The Centre also brought out a guidebook on intellectual property management, and three theme papers related to innovation, transfer and diffusion of fourth industrial revolution technologies for sustainable development, healthcare, and climate change mitigation (Annex II).

11. During the reporting period, the Centre contributed to strengthening the capabilities of stakeholders from countries with special needs such as Bangladesh, Bhutan, Cambodia, Lao People's Democratic Republic and Nepal.

II. Activities carried out by the Centre during the reporting period (December 2020 - November 2021)

A. Technology transfer and science technology and innovation capacity enhanced

12. The Centre provided capacity building support to strengthen national innovations systems of the member States. Following are the key activities carried out and/or contributed by the Centre:

(a) International Conference on Emerging Fourth Industrial Revolution Technologies for Sustainable Development, 22 July 2021, Guangzhou, China (virtual event): The Centre organized this international conference jointly with the Ministry of Science and Technology, People's Republic of China. It was hosted by the Asia-Pacific Regional Innovation Knowledge Network for 4th Industrial Revolution Technologies and the Secretariat Office at Guangzhou University, People's Republic of China. The conference deliberated on the challenges, opportunities and strategies for harnessing fourth industrial revolution technology innovations for sustainable development; collaborative research, innovation and transfer of fourth industrial revolution technologies in the Asia-Pacific; and regional cooperation to promote development and innovations of such technologies. Key recommendations of the conference deliberations include: development of enabling policy frameworks to promote research and innovation of fourth industrial revolution technologies, research collaboration between universities and industry, re-skilling and upscaling of workforce, promotion of public-private partnership models, and adoption of fourth industrial revolution technologies in harmony with socio-economic conditions of countries. The conference brought together 135 participants from 15 member States, namely Afghanistan, Azerbaijan, Bangladesh, Bhutan, Cambodia, India, Islamic Republic of Iran, Malaysia, Nepal, People's Republic of China, Pakistan, Philippines, Republic of Korea, Sri Lanka, and Uzbekistan. The participants included government officials, policymakers and representatives from research and development institutions, universities, private sector, technology intermediaries, small and medium enterprises and other relevant stakeholders involved in emerging technologies, innovation and technology transfer.

(b) 3rd International Congress on Water Desalination, Application of Advanced Technologies in Unconventional Water Treatment for Zones under Water Stress, 14-16 September 2021, Tehran, Islamic Republic of Iran (virtual event): The Centre supported this conference organized by the Iranian Research Organization for Science and Technology, Islamic Republic of Iran. The international congress deliberated on the treatment of unconventional waters including reclamation of wastewater, brackish and seawater desalination, wastewater, water loss reduction, deep groundwater uptake, rainwater/stormwater collection and treatment, as well as the related technologies for supplying clean water to the water-deprived zones. The Centre facilitated sharing of experience and good practices from India in technology applications for rainfall and stormwater collection and treatment with the case study of Bangalore city in India.

(c) Regional Workshop on Emerging Technologies to respond to Climate Change, 14 September 2021, Kunming, China (virtual event): The

Centre organized this regional workshop jointly with Yunnan Academy of Scientific and Technical Information, People's Republic of China. Twelve policymakers and experts from India, Islamic Republic of Iran, Nepal, People's Republic of China, Sri Lanka, Asian Development Bank, and Association of Southeast Asian Nations Centre for Energy, and Economic Research Institute for ASEAN and East Asia, discussed on the key enablers that can catalyze the promotion, development and deployment of emerging technologies to combat climate change. Role of digital innovations, stimulating policy options, access to finance and mechanisms for cross border transfer of climate technologies were discussed. The participating representatives from member States and international experts shared their views and experiences on the policy tools, strategies and best practices from the Asia-Pacific region that have proved successful towards promotion of emerging technologies for climate change adaptation and mitigation and sharing of ideas for regional cooperation for promotion of such technologies. Key outcomes of the workshop include policy recommendations such as strengthening of south-south collaboration, dissemination of innovative business models and success stories of emerging technology applications to address climate change, Increase of awareness about energy conservation measures and practices and clean energy options, and infrastructure support like charging stations for electric vehicles. The workshop contributed to enhancing the knowledge, skill and capabilities of 126 participants from 14 member States, namely Fiji, India, Indonesia, Islamic Republic of Iran, Lao People's Democratic Republic, Malaysia, Nepal, Pakistan, Papua New Guinea, People's Republic of China, Republic of Korea, Sri Lanka, Thailand and Viet Nam. The participants included policymakers, government officials and regulators, research scientists, private sector representatives, technology intermediaries, small and medium enterprises, and other relevant stakeholders from various sectors.

(d) Regional Workshop on Innovative Strategies for Research Commercialization and Technology Transfer, 24 November 2021, Tashkent, Uzbekistan (hybrid event): This regional workshop was jointly organized with the Ministry of Innovative Development, Republic of Uzbekistan. The regional workshop deliberated on new and emerging policy frameworks and tools, issues related to intellectual property management and technology licensing, opportunities for industry-academia-government collaboration and regional collaboration networks for technology transfer and commercialization. The workshop brought together international and national experts to deliberate on key challenges, opportunities, strategies, and good practices that are critical for technology transfer and commercialization. About 130 participants (comprising of policymakers, government officials, managers of technology licensing/transfer offices and technology-based enterprises, technology intermediaries, universities, research and development institutions, academia, innovators, private sector representatives and other relevant stakeholders) attended the regional workshop. The regional workshop was held in conjunction with the virtual InnoWeek.uz 2021 expo, organized by the Ministry of Innovative Development, Uzbekistan.

(e) International Conference on Fourth Industrial Revolution Technologies for Sustainable Development, 30 November 2021, New Delhi, India (virtual event): The international conference is jointly organized with the Department of Scientific and Industrial Research, Ministry of Science and Technology, Government of India. The conference aims to facilitate awareness on the development and utilization of fourth industrial revolution technologies for sustainable development, particularly in the post COVID-19 era. The conference will provide a platform to foster collaboration among policymakers in Asia and the Pacific region, representatives from public and private sector

organizations, research and development institutions, academia, and experts involved in various aspects of fourth industrial revolution technologies. The conference will deliberate on the role of fourth industrial revolution technologies to address the challenges of sustainable development with focus on issues of digital divide and intellectual property management. The conference will discuss on the policies, strategies, innovations, and applications of will deliberate on the policies, strategies, innovations, and applications of 4IR technologies in healthcare, climate change mitigation as well as sustainable production and resilient economic recovery from the COVID-19 pandemic. The conference would enhance the knowledge and understanding of over 150 participants including senior Government officials and experts from Bangladesh, China, India, Indonesia, Islamic Republic of Iran, Malaysia, Nepal, Pakistan, Philippines, Republic of Korea, Singapore, Sri Lanka, Thailand, Uzbekistan and other member States.

B. Regional technology cooperation strengthened

13. During the reporting period, the Centre organized the following capacity-building activities:

(a) **Technology Facilitation Consultative Meeting to address the Challenges of COVID-19 Pandemic, 23 August 2021, New Delhi, India (virtual event):** The Centre organized this regional consultative meeting jointly with the Department of Scientific and Industrial Research, Ministry of Science and Technology, Government of India. The meeting deliberated on the needs and availability of reliable and cost-effective healthcare technologies for responding to the pandemic. It provided a platform for member States to identify opportunities of collaboration and explore modalities to share their technology, expertise and experiences. The meeting brought together 54 participants from 8 member States, namely Bangladesh, India, Indonesia, Malaysia, Nepal, Philippines, Sri Lanka and Thailand. The participants included the Centre's national focal points, representatives from government agencies, research and development institutions, experts from medical associations and other relevant stakeholders nominated by the participating member States. The consultative meeting highlighted the needs and availability of reliable and cost-effective healthcare technologies (such as nanotechnology solutions, sterilization products and ventilators, among others) for responding to the pandemic; and potential opportunities for collaboration between the participating countries to combat COVID-19. The member States were encouraged to explore modalities of gainful collaborations among themselves in the identified sectors and areas to collectively address the challenges of the pandemic.

(b) **Project component under the 'Eleventh Tranche of the UN Development Account' to promote inclusive technologies and innovations and development of roadmap for a technology database for 3 member States (Bangladesh, Bhutan and Nepal):** The Centre, along with the Trade, Investment and Innovation Division of ESCAP, has been jointly implementing the project titled "Evidence-based innovation policy for effective implementation of 2030 Agenda for Sustainable Development in the Asia-Pacific region". The Centre commenced a project component aimed at strengthening the capacity of three countries in South Asia, namely Bangladesh, Bhutan and Nepal, to promote inclusive technologies and innovations and development of roadmap for a technology database. The project component aims to assist the three member States through interventions such as analytical assessment/ study of the technology needs and mapping of available technologies as per Sustainable Development Goals categories; creation of a

strategic roadmap, including blueprint, for development of database on inclusive innovations and technologies; and dissemination of the knowledge products (report on technology needs and mapping, and strategic roadmap for database) among relevant policymakers and stakeholders and promote regional cooperation through cross-border learning and networking. The project deliverables will be completed and shared with member States by end of December 2021.

C. Technology intelligence enhanced through knowledge products

14. The Centre brings out knowledge products including periodicals, reports and publications to enhance the knowledge and awareness of stakeholders from member states on relevant areas and issues covered by its work programme. The list of the Centre's periodicals and publications during the reporting period is provided as Annex II.

15. The Centre disseminated information on recent technological trends and developments through its online periodical *Asia-Pacific Tech Monitor* (<https://www.apcct.org/techmonitor>). The 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.

16. During the reporting period, the Centre published 4 issues of Asia-Pacific Tech Monitor focussing on special themes such as Sustainable energy development – Innovative business models and best practices (Oct-Dec 2020), Science technology and innovation for Sustainable and resilient recovery from COVID-19 crisis (Jan-Mar 2021), Fourth industrial revolution technologies for inclusive and sustainable development (Apr- Jun 2021), and Technologies for adaptation to climate change in Asia-Pacific – Enabling mechanisms and best practices (Jul-Sep 2021) (Annex II). The Tech Monitor issues featured 13 special articles contributed by 21 authors and experts from member States such as Bangladesh, China, India, Indonesia, Nepal, Thailand, Singapore, and organizations such as Asian Development Bank, and Research Institute for ASEAN and East Asia, Indonesia. The articles presented data and analysis on critical issues related to the respective 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 start-ups and small and medium enterprises; and 43 selected technology offers and requests from eight countries, namely Bangladesh, China, Germany, India, Indonesia, Hungary, Sri Lanka, and Thailand.

17. The Centre shared its online Asia-Pacific Tech Monitor with readers from the member countries and outside the region as well. During the reporting period, the web-version of the Tech Monitor was distributed to 1489 key stakeholders and e-subscribers from the member States. The Centre also disseminated the e-periodicals through social media platforms such as Twitter and Facebook.

18. The Centre developed a publication titled "*Intellectual Property Management and Technology Licensing - Guide for Policymakers and Managers of Research and Development Institutes*". The publication covers key topics such as: identification and protection of intellectual property assets, intellectual property strategy and management tools, intellectual property commercialization, technology transfer, enforcement strategy and dispute resolution, and intellectual property policy options and recommendations for research and development organizations. The target users of the publication and the training manual are policymakers, managers of technology licensing and

transfer offices of research and development institutes, and the private sector enterprises.

19. The Centre brought out three theme papers related to innovation, transfer and diffusion of fourth industrial revolution technologies for sustainable development, healthcare, and climate change mitigation, for circulation at the international conference on fourth industrial revolution technologies for sustainable development, 30 November 2021.

D. Support to inter-governmental meetings of ESCAP

20. **Seventy Seventh Commission Session of ESCAP, 26-29 April 2021, Bangkok, Thailand:** The Centre provided substantive support and submitted the report on the sixteenth session of its Governing Council, held in China. The following are the outcomes of the 77th Commission session on the Centre's work programme:

(a) The Commission endorsed the report of the Governing Council of the Asian and Pacific Centre for Transfer of Technology on its sixteenth session (ESCAP/77/10). (Decision 77/5)

(b) The Commission took note of the overview of partnerships, extrabudgetary contributions and capacity development (ESCAP/77/23) and expressed its appreciation for the following contributions pledged by members and associate members for 2021. They are Bangladesh - \$7,000, India - \$870,000, People's Republic of China - \$27,000, Macao, China - \$5000, Republic of Korea - \$26202 and Thailand - \$15000. (Decision 77/11)

(c) The representative of India noted his government's support for the Asian and Pacific Centre for Transfer of Technology and encouraged member States to increase voluntary contributions to the Centre. (ESCAP/77/29)

E. Cooperation with international organizations and other partners

21. During this reporting period, the Centre jointly delivered activities/ worked closely with international organizations including Asian Development Bank, Association of Southeast Asian Nations Centre for Energy, Economic Research Institute for ASEAN and East Asia, International Solar Alliance, World Economic Forum while implementing capacity-building activities in the Member States.

F. Digital outreach

22. The Centre continued to extend its outreach to stakeholders, policy makers and institutions through digital tools (e.g., website, Technology4SME and Renewable Energy Technology Bank databases), and social media including Facebook ([facebook.com/UNAPCTT](https://www.facebook.com/UNAPCTT)) and Twitter. The Centre coordinated with Communications and Knowledge Management Section of ESCAP to disseminate information about its activities and outputs through ESCAP website, newsletters and twitter updates.

Annex I – List of Partner Institutions

1. All India Institute of Medical Sciences, New Delhi, India
2. Anand and Anand Intellectual Property Law Firm, India
3. Asia-Europe Institute, University of Malaya, Malaysia
4. Asian Development Bank
5. Association of Southeast Asian Nations Centre for Energy
6. Asia-Pacific Regional Innovation Knowledge Network for 4th Industrial Revolution Technologies
7. Azman Hashim International Business School, Universiti Teknologi, Malaysia
8. Bangladesh Council of Scientific and Industrial Research Laboratories, Bangladesh
9. Centre for Analysis and Coordination of the 4th Industrial Revolution, Ministry of Economy, Republic of Azerbaijan
10. Centre for the Fourth Industrial Revolution India, World Economic Forum, India
11. Centre for Rural Development and Technology, Indian Institute of Technology Delhi, India
12. Chinese Academy of Sciences Innovation Cooperation Center, Bangkok, Thailand
13. Council of Scientific and Industrial Research, Government of India
14. Council of Scientific and Industrial Research – Central Glass and Ceramic Research Institute, India
15. Council of Scientific and Industrial Research – Institute of Genomics and Integrative Biology, New Delhi, India
16. Council of Scientific and Industrial Research – National Environmental Engineering Research Institute, India
17. Council of Scientific and Industrial Research – National Institute of Science Communication and Policy Research, New Delhi, India
18. Deloitte & Touche, South Africa
19. Department of Economic Affairs, Ministry of Finance, Government of India
20. Department of Industry, Ministry of Industry Commerce & Supplies, Government of Nepal
21. Department of International Cooperation, Ministry of Science and Technology, People’s Republic of China
22. Department of International Cooperation, Ministry of Science and Technology, Viet Nam
23. Economic Research Institute for ASEAN and East Asia, Indonesia
24. Faculty of Technology, Eastern University, Sri Lanka
25. Guangzhou Institute of Energy, Chinese Academy of Sciences, People’s Republic of China
26. Guangzhou University, People’s Republic of China
27. Indian Institute of Science, Bangalore, India
28. Indonesian Institute of Sciences, Indonesia
29. Indian Institute of Technology Bombay, Mumbai, India
30. Indian Institute of Technology, Kanpur, New Delhi, India
31. Inha University, Tashkent, Republic of Uzbekistan
32. International Solar Alliance, India

33. Iranian Research Organization for Science and Technology, Islamic Republic of Iran
34. Kunming Institute of Botany, Chinese Academy of Sciences
35. Korea Institute of Public Administration, Seoul, Republic of Korea
36. Korea Policy Center for the Fourth Industrial Revolution, Korea Advanced Institute of Science and Technology, Republic of Korea
37. NanoMalaysia Berhad, Malaysia
38. National Engineering Research & Development Centre, Government of Sri Lanka
39. National Institute of Technology, Arunachal Pradesh, India
40. National Office for the Implementation of Innovations and Transfer of Technology, Ministry of Innovative Development, Republic of Uzbekistan National Research Foundation, Singapore
41. Philippine Council for Health Research and Development, Department of Science and Technology, Government of Philippines, Philippines
42. Regain Paradise, Singapore
43. Research and Information System for Developing Countries, New Delhi, India
44. School of communication Arts, Sukhothai Thammathirat Open University, Thailand
45. School of Engineering, Macquarie University, Australia
46. Smart Cities Network, Singapore
47. South Centre, Geneva, Switzerland
48. Sri Lanka Sustainable Energy Authority, Sri Lanka
49. Technology Application and Promotion Institute, Department of Science and Technology, Philippines
50. Thailand Institute of Scientific and Technological Research, Thailand
51. University of Tehran, Islamic Republic of Iran
52. Yunnan Academy of Scientific and Technical Information, People's Republic of China

Annex II – List of Publications of the Centre (December 2020-November 2021)

Publication title	Focus area	Periodicity	Target audience
Asia-Pacific Tech Monitor	Sustainable energy development – Innovative business models and best practices (Oct-Dec 2020)	Quarterly	Science technology and innovation policymakers, small and medium enterprises, research and development institutions, academia, technology transfer intermediaries
	Science technology and innovation for Sustainable and resilient recovery from COVID-19 crisis (Jan-Mar 2021) in support to the theme of the 77 th ESCAP Commission Session held in May 2021	Quarterly	
	Fourth industrial revolution technologies for inclusive and sustainable development (Apr-Jun 2021)	Quarterly	

	Technologies for adaptation to climate change in Asia-Pacific – Enabling mechanisms and best practices (Jul-Sep 2021)	Quarterly	
Publication on Intellectual Property Management and Technology Licensing	Intellectual Property Management and Technology Licensing – Guide for Policymakers and Managers of Research and Development Institutes (In press)	One-time publication	Policymakers, managers of technology licensing and transfer offices of research and development institutes, and the private sector enterprises
Three theme papers on innovation, transfer and diffusion of fourth industrial revolution technologies for (i) sustainable development, (ii) healthcare, and (iii) climate change mitigation	Fourth industrial revolution technologies for sustainable development, healthcare, and climate change mitigation	One-time reports	Policy makers and Government officials, technology promotion agencies, public, private as well as non-governmental organizations, research and development institutions and academia