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ASIAN AND PACIFIC CENTRE FOR TRANSFER OF TECHNOLOGY

Note by the secretariat

SUMMARY

The Asian and Pacific Centre for Transfer of Technology (APCTT) has increasingly used information and communications technology (ICT) in their strategies and activities for promoting technology transfer in the region.

In the present document, an historical overview of the main activities of the Centre is provided, with an emphasis on the adoption of ICT to support the provision of technology transfer support services for small and medium-sized enterprises (SMEs), the promotion of national innovation systems, green grass-roots innovations and networking, and the sharing of experiences related to technology transfer. Updates on several ICT-based programmes initiated since 2000 are provided.

The role of ICT in the effective planning and management of technology transfer processes is described, and the secretariat provides an analysis of the challenges in implementing ICT-based technology transfer initiatives in the region, especially in less developed countries.

Three new ICT-based programmes to strengthen technology transfer capacity of countries in the region are described. These programmes are aimed at: (a) strengthening innovation in R&D institutes in the region; (b) developing national expertise to provide advisory and consultancy support to SMEs for planning and implementing technology transfer projects, and (c) building capacity at the national level on national innovation systems.

The Committee may wish to consider the strategy of the Centre in promoting ICT-based technology transfer, review the implementation of its relevant activities and provide the secretariat with guidance on the future development of its programme.

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Introduction

1. The Asian and Pacific Centre for Transfer of Technology (APCTT) has the status of subsidiary body of ESCAP, which entails the same membership. It was originally established as the Regional Centre for Technology Transfer (RCTT), through resolutions 159 (XXXI) of 6 March 1975 and 164 (XXXII) of 31 March 1976. The Government of India offered host facilities for the Centre, and it was inaugurated in Bangalore, India on 16 July 1977. In its resolution 243 (XLI) of 29 March 1985, the Commission gave the Centre its current name under the terms of the Statute annexed to that resolution. APCTT was relocated from Bangalore to New Delhi on 1 July 1993.
2. The objective of APCTT is to assist ESCAP members and associate members by strengthening their capacities to: (a) develop and manage national innovation systems; (b) develop, transfer, adapt and apply technology; (c) improve the terms of technology transfer; and (d) identify and promote the development and transfer of technologies relevant to the region. In fulfilling its mandate, APCTT places an emphasis on South-South cooperation, and maintains close linkages with key producers and users of technology as well as with centres involved in managing technology development, transfer and utilization. The Centre also maintains active linkages with national focal points to ensure effective delivery of its services.
3. The Centre has a Technical Committee consisting of experts from members and associate members of ESCAP and from intergovernmental and non-governmental organizations. The Technical Committee is responsible for advising the director of APCTT on the formulation of the programme of work and on other technical matters concerning the Centre's operations. Reports of the meetings of the Technical Committee are submitted to the Governing Council for endorsement.
4. The APCTT Governing Council consists of representatives nominated by members and associate members of ESCAP. They are elected by the Commission for a period of three years and are eligible for re-election. The members of the Governing Council for the period 2008-2011 are: Bangladesh, China, Fiji, India, Indonesia, Iran (Islamic Republic of), Malaysia, Pakistan, Sri Lanka, Thailand, Vanuatu and Viet Nam. The Council meets at least once a year to review the administration and financial status of APCTT and the implementation of its programme of work. The Executive Secretary submits an annual report, as adopted by the Governing Council, to the Commission at its annual sessions.

I. ASIAN AND PACIFIC CENTRE FOR TRANSFER OF TECHNOLOGY INITIATIVES IN DEPLOYING INFORMATION AND COMMUNICATIONS TECHNOLOGY FOR DEVELOPMENT

5. During its initial phase of operation (1977-1984), APCTT functioned mainly as a technology information centre. From 1985 to 1989, the Centre implemented programmes in broader areas, such as technology management and technology utilization. The programme on technology management was funded by the Government of Japan and the United Nations Development Programme.

Under these programmes, the Centre created awareness among policymakers regarding the importance of technology in national development. APCTT also formulated and widely disseminated methodologies, orientations and schemes to enhance technology development, transfer and utilization in the region. The Centre published books and monographs on the management of technology transfer, technology development and industrial research, as well as country studies on technology policies and planning, reference manuals and analyses for formulating technology development initiatives and policies. The idea was to help policymakers avoid the pitfalls of a fragmented and uncoordinated approach to technology development.

6. The APCTT technology utilization programme, also funded by the United Nations Development Programme, aimed at demonstrating the usefulness of mechanisms that directly link potential users to suppliers of relevant technologies (for example, technology expositions, missions, workshops and individual syndication). The emphasis was on the promotion, transfer and utilization of commercially viable technologies in priority sectors, including agro-based industries, low-cost construction, renewable energy, energy conservation, biotechnology, and microelectronics.

7. In the late 1980s and through the 1990s, the Centre began to focus increasingly on capacity-building at both the institutional and firm levels. Emphasis was placed on capacity-building for small and medium-sized enterprises (SMEs) in technology transfer and in the promotion of environmentally sound technologies, through access to information on technology transfer and its dissemination through networks.

8. During this period, with support from the Government of Germany through the German Agency for Technical Cooperation, the Centre focused increasingly on technology capacity-building of SMEs, the promotion of research and development (R&D) and enterprise cooperation. The evolution of the “new economy” and “new ways of doing business” also took place in the 1990s, thanks to the explosive growth of affordable information and communications technology (ICT)¹ applications.

9. A major interest, especially among SMEs, was in reducing technology transfer costs. Empirical evidence in more developed nations suggested that the smart deployment of ICT tools could lead to cost reduction. Shorter technology life cycles and frequent changes in the marketplace made it imperative for SMEs to complete the technology transfer process quickly so that a larger window of opportunity would be available to realize the benefits of the new technology before it was replaced by an even newer one. ICTs reduce the time taken for technology sourcing, selection, negotiation, transfer scheduling, implementation and commissioning.

10. Since 2000, the Centre has initiated several ICT-based programmes in the Asia-Pacific region for facilitating initiatives on SME technology transfer. In consultation with its members, APCTT has

¹ The term “information and communications technology”, as used in the present document, should be understood to include space-based technology, as appropriate.

developed the comprehensive website Technology4sme (www.technology4sme.net) to facilitate technology transfer in the region. This website has a database of technology offers and requests, thus facilitating an online technology market that could speed up the sourcing stage of any technology transfer project. In addition, the website also provides information on new technologies, market, technology transfer partner links, and basic and practical knowledge on technology transfer.

11. Another website, called Business-Asia (www.business-asia.net), has been developed by APCTT to supplement Technology4sme. This website was designed to bring together ideas, information and resources concerning technology-based businesses in the Asia-Pacific region, particularly for SMEs. The design and launching of these websites were funded by the Government of Germany through German Agency for Technical Cooperation.

12. As of July 2008, the Technology4sme website had about 500 current offers and 270 requests. The database also contained valuable information on technologies for disaster preparedness, mitigation and recovery. The technologies featured range from construction of earthquake-proof housing and wireless networks for aiding in disaster rescue operations to cookers run by solar energy and water purification systems for use in disaster management camps. A guidebook on technologies for disaster preparedness and mitigation has been prepared and will be widely disseminated in the region through APCTT websites (www.apctt.org and www.technology4sme.net). APCTT will also share such information with concerned government departments and non-governmental organizations in India through the vulnerability reduction cluster of the United Nations Development Assistance Framework.

13. The database also featured over 50 technologies in various areas of renewable energy, such as solar, wind, geothermal and tidal energy, hydropower and biomass. In such areas, several examples of technology transfer facilitation can be cited. An SME from Maharashtra, India, has initiated discussions with a firm in Moscow to obtain technology to manufacture rice-straw-based gasifiers and fuel briquettes using municipal wastewater and organic waste. A large Indian firm based in Mumbai, seeking technology to generate power from rice-husk fly ash, was introduced to a firm in Baroda, India. An SME from Haryana, India, contacted a university based in Bangkok to gain access to biogas-based technology for power generation. An SME based in Chittagong, Bangladesh, initiated work with a leading agency of the Government of India to obtain technology to manufacture solar-power-based inverters for running water pumps. Negotiations were also initiated between an SME from Haryana specialized in welding technology and a French start-up, with a view to manufacturing wind turbines for the wind energy market in India. The websites have also provided opportunities for SMEs to improve their competitiveness through enhanced access to information on innovative technologies and best practices for SME business operations in the region.

14. Another ICT-based initiative introduced by APCTT, with the cooperation of the Hubei Provincial Science and Technology Department in Wuhan, China, and the Ministry of Science and

Technology of China, is the Asia-Pacific Traditional Medicine and Herbal Technology Network. This network (www.apctt-tm.net) links 14 countries in the region (Bangladesh, China, India, Indonesia, Iran (the Islamic Republic of), Malaysia, Mongolia, Nepal, Pakistan, Philippines, Republic of Korea, Sri Lanka, Thailand and Viet Nam). The objective of this ICT-based network is to help member countries develop traditional medicine and promote industrial and technical cooperation in this area, as well as the dissemination of information.

15. In accordance with the request of members at the fifty-eighth session of the Commission,² another ICT-based initiative launched by APCTT, with support from the Korea Research Institute of Bioscience and Biotechnology, is the Biotechnology Information Network for Asia, which has 13 members: Bangladesh, China, India, Indonesia, Malaysia, Mongolia, Nepal, Pakistan, Philippines, Republic of Korea, Sri Lanka, Thailand and Viet Nam. The network aims at facilitating knowledge sharing, technology development, technology transfer and promotion of biotech industries through an ICT-driven mechanism by linking players in the biotech community. It provides biotechnology professionals with easy access to the network and information, promoting international R&D collaboration for technology development, and creating opportunities for technology transfer.

16. To strengthen such initiatives, APCTT has, over the past three years, held a stakeholders' meeting, two consultative meetings and 15 training programmes on technology transfer and the use of ICT. More than 850 persons from 14 member countries participated in such programmes.

17. Of those involved, over 250 persons were from national technology transfer intermediaries, SME development agencies, SMEs, universities or R&D institutes. These participants were trained in the use of the Technology4sme and Business-Asia websites. APCTT developed two training manuals entitled *Technology Market* and *Business Asia Network* to help member countries independently continue training local SMEs and technology intermediaries in the use of these two websites. These manuals not only showcase the website architecture but also provide simple explanations for users and website administrators.

18. These websites are now used extensively in the region, and several countries have expressed an interest in developing and linking their own technology transfer facilitation websites to the APCTT portal. China and India have already developed their own websites based on the Technology4sme model. These are the Technology Bureau for Small Enterprises, which was developed in partnership with the Small Industries Development Bank of India, and, in China, the Shanghai Technology Transfer and Exchange and the Nanjing International Technology Transfer Centre.

19. Member countries have indicated that the twin websites are useful and that they plan to use them to train SMEs. For example, the Ministry of Science and Technology of the Government of Thailand, along with the country's Office of Small and Medium Enterprises Promotion, has conducted

² See *Official Records of the Economic and Social Council, 2002, Supplement No. 19 (E/2002/39-E/ESCAP/1264)*, para. 174.

national training programmes in the local language on the use of these websites. The programmes were led by local resource persons who had been trained by APCTT. In Sri Lanka, the National Engineering, Research and Development Centre and the Industrial Technology Institute will also train SMEs to make effective use of the websites.

20. APCTT also implemented activities in strengthening the technology transfer capabilities of SME intermediaries which had contributed to shaping the structures for technology transfer in the region. Comprehensive training events on planning and implementing international technology transfer in a global business setting were held alongside hands-on training on the development of websites to foster technology capacity-building. Bangladesh has sought APCTT assistance in setting up a national technology transfer centre (see E/ESCAP/64/23), APCTT has provided the required advisory assistance and will continue to provide this service until the Bangladesh Centre is up and functioning.

21. Another ICT initiative introduced by APCTT is the Asia-Pacific Technology Information Tracking and Unified Data Extraction search engine (also known as APTITUDE). This tool has been developed to enable buyers and sellers of technology to reach the APCTT database and other related databases (in public domain) from member countries. It is different from other popular web-based search engines in terms of the specificity of the results it generates. This search engine is programmed to search a list of web-based technology databases in the Asia-Pacific region. It further narrows the search to defined target pages in the specified website rather than retrieving the complete website. Such methodology results in the generation of specific information that is relevant to users. At present, in addition to the APCTT Technology4sme database, one database from India, two from China, and one from Japan are searched by the Asia-Pacific Technology Information Tracking and Unified Data Extraction. More public domain databases from the region will be added gradually.

22. APCTT has continued to promote the core concept, policy measures and support mechanisms of national innovation systems. More than one thousand participants, including representatives from Governments, industries, academia and R&D institutes, have been trained in the core concept and policy framework of a national innovation system and its linkages with the sectoral and subnational innovation systems. An important component of this initiative was the development of the Asia-Pacific National Innovation Systems Online Resource Centre (www.nis.apctt.org) and its integration into the APCTT website. The Resource Centre has information on national innovation systems practices and related reference material on policy frameworks and support mechanisms in the region. Its website is currently being updated with background information and best practices related to scouting, documentation and dissemination of grass-roots innovations. Through projects funded by the Government of India, APCTT has been promoting such methodologies for use in fostering inclusive development and social entrepreneurship.

23. The flagship APCTT periodical, the *Asia Pacific Tech Monitor*, is published bimonthly as a guide to the new innovation-driven, globalizing economy. Each issue has a theme. For example, May-June 2008 issue focused on ICT industry innovation and intellectual property rights. The Yellow Pages, the business section of the *Asia Pacific Tech Monitor*, contains a Business Coach section with guidelines covering topics such as start-up venture creation, venture financing, innovation management, technology transfer and green productivity. It also has a section on technology opportunities that lists technology offers and technology requests, which facilitates and promotes the technology transfer services of APCTT.

24. Under the Value Added Technology Information Service, the Centre puts out five bimonthly periodicals, namely: *Non-conventional Energy*, *Waste Management* (formerly *Waste Technology*), *Biotechnology*, *Food Processing* and *Ozone Layer Protection*. The key feature of the service is the compilation of information from the print media, relevant websites and electronic mail services. Three of the above-mentioned periodicals are published with the support and cooperation of specialized institutions. The Ozone Layer Protection periodical is financially supported by the Ozone Cell of the Ministry of Environment and Forests of India. The Biotechnology Consortium India Limited and German Agency for Technical Cooperation-Advisory Services in Environmental Management are co-publishers of the periodicals on biotechnology and waste management, respectively.

25. The web versions of the Centre's technology-oriented periodicals are available at www.techmonitor.net. The information in back-issues of various APCTT publications, particularly periodicals, is available free of charge. By the end of 2008, these publications will all become completely web-based.

II. APPLICATIONS OF ICT FOR THE EFFECTIVE MANAGEMENT OF TECHNOLOGY TRANSFER

26. ICT has several useful roles to play in the effective planning and management of technology transfer processes, which include: (a) capturing process information for purposes of understanding (informational); (b) changing process sequence or enabling parallelism (sequential); (c) monitoring

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