



Regional Technical Assistance Report

Project Number: 41092
November 2007

Knowledge-Sharing Program Using Good Asian
Practices in Innovation and Development
(Financed by the Republic of Korea e-Asia
and Knowledge Partnership Fund)

Asian Development Bank

ABBREVIATIONS

ADB	– Asian Development Bank
DMC	– developing member country
ICT	– information and communication technology
NGO	– nongovernment organization
PRC	– People’s Republic of China
R&D	– research and development
RETA	– regional technical assistance
UNCTAD	– United Nations Conference on Trade and Development
UNESCO	– United Nations Educational, Scientific and Cultural Organization

TECHNICAL ASSISTANCE CLASSIFICATION

Targeting Classification	– General intervention
Sector	– Law, economic management, and public policy
Subsector	– Economic management
Themes	– Sustainable economic growth; capacity development
Subthemes	– Promoting economic efficiency and enabling markets; institutional development

NOTE

In this report, “\$” refers to US dollars.

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I. INTRODUCTION

1. The capability to innovate is increasingly important in a globalized, industrialized, and knowledge-based economy. Innovation is a key driver of growth, as newly industrialized and emerging economies mostly from the Asia and Pacific have proved. The experience of these economies shows that poor countries must build national capability for technological development and innovation to become richer and to sustain growth. The Asian Development Bank (ADB) has assisted its developing member countries (DMCs) in building capability for technological development and innovation¹ and has started rethinking ADB's role while reviewing its Long-Term Strategic Framework.² Along with this effort, ADB has developed a regional technical assistance (RETA) to help DMC governments become better able to make public policies that will create an enabling environment for technological development and innovation by collecting and sharing good Asian practices.³ The design and monitoring framework is in Appendix 1.

II. ISSUES

2. Global economic activities become interdependent, competitive, and knowledge-intensive. An abundant supply of low-wage unskilled labor and natural resources alone cannot provide competitive advantage. Throughout development history, technological progress—interwoven with its application in production, institutional adjustment, and socioeconomic change—has driven the increase of national wealth, productivity, and competitiveness. In view of this, the right policy changes in accordance with technological developments and in support of innovation are essential. In addition, advances in information and communication technology (ICT) are reshaping the way economic agents interact and exchange ideas, and thereby remaking the dynamics of innovation and accelerating its pace. Developing countries are therefore keen to understand better (i) how new technologies are created, adapted, applied, and harnessed; (ii) how innovations emerge and diffuse; (iii) how technologies foster production and businesses; and (iv) how the countries can effectively use ICT to innovate. The search is on for strong evidence of the social and economic consequences of innovation and its integral role in economic development.

3. The newly industrialized and emerging economies of the People's Republic of China (PRC), India, Republic of Korea, Malaysia, Taipei, China, and Thailand have achieved remarkable economic success through technological development and innovation, while following diverse development paths. The Republic of Korea, for one, has been dramatically transformed from one of the poorest countries to a vibrant and productive economy, with gross domestic product (GDP) per capita undergoing a 64-fold increase in 1970–2005, from \$254 to \$16,291. Among the crucial factors in this success are good public policies—manifest in the export-led industrialization strategy,

¹ ADB (i) facilitates and mediates the flow of the latest technologies from around the world in areas like clean and efficient energy; (ii) assists in the training and development of human resources in science and technology for careers in research and development (R&D) or other technical fields; and (iii) helps strengthen the capacity of DMCs to acquire and use modern technology through secondary and higher education as well as through technical and vocational education. For more details, see the ADB discussion paper on Knowledge and the Long-Term Strategic Framework for ADB (2007).

² ADB. 2007. *Toward A New Asian Development Bank in a New Asia. Report of the Eminent Persons Group to the President of the Asian Development Bank*. Manila. This report highlighted the importance of technological development and innovation and recommended that it be made one of ADB's five new operational priorities. It mentioned that ADB should promote collaboration between universities and technical institutions in the region; pay greater attention to higher education, especially in the pure sciences; facilitate the provisioning of risk capital to new firms; advocate innovation; and serve as a region-wide platform for periodic stocktaking.

³ The RETA first appeared in *ADB Business Opportunities* on 20 October 2007.

research and development (R&D) programs led by government research institutes in partnership with private sector organizations, and industrial parks—which enabled the country to build and use national technological and innovation capabilities for development. Other well-known examples are (i) India’s innovation policy and legislation, business process outsourcing, information technology parks, and rural ICT and local innovation initiatives; (ii) Malaysia’s multimedia super-corridor initiative to attract foreign direct investments; (iii) the PRC’s foreign investment and technology transfer strategy; (iv) Thailand’s university-industry linkage and cluster development; and (v) Taipei,China’s technology and industrial upgrading, led by small- and medium-sized enterprises.

4. The development, spread, and use of technology and innovation generate positive externalities, and thus having the right public policy in place helps a country attain the socially optimum level of technology and innovation. Compared with other traditional areas of public policy, technology and innovation policy is relatively new: the theoretical framework is yet to be firmly established and the related government policy-making capacity tends to be weak, particularly in developing countries. Therefore, good practices from successful economies can be a useful guide. However, these are generally scattered and couched in the rather academic language of case studies, research papers, presentations, and conference reports—too obscure for DMC government officials to absorb and use in developing their own policies.

5. Several leading research institutes and universities in the region provide training programs in development studies and public policy for government officials from developing countries. But their curricula and courses generally lack systematic packaging of good cases particularly from newly industrialized and emerging economies or do not give enough attention to public policy on technology and innovation. Specialized programs in science, technology, and innovation policy exist, but these are mostly in Europe or the United States, beyond the reach of most government officials from Asian developing countries. Since January 2006, the United Nations University (UNU)–Maastricht Economic and social Research and training centre on Innovation and Technology (MERIT)⁴ in the Netherlands has been exploring a broad range of policy questions relating to the national and international governance of science, technology, and innovation, particularly the creation, diffusion, and use of knowledge. The Science and Technology Policy Research unit of the University of Sussex in the United Kingdom, founded in 1966, has been providing research, consulting services, and teaching in science, technology, and innovation policy and management. The John F. Kennedy School of Government of Harvard University has been providing a 1-week executive training program in science, technology, and innovation policy for high-level decision makers in developing-country governments since 2002.

6. The international development community, recognizing the importance of technology and innovation in reducing poverty and sustaining growth, takes the subject into serious consideration as well. The United Nations Educational, Scientific and Cultural Organization (UNESCO), which has traditionally promoted science and technology for sustainable development through policy guidance and capacity building, is now stepping up its support for innovation capability building. At the World Summit on Sustainable Development organized by UNESCO in 2002, the importance of science and technology for sustainable development was reaffirmed by the participating heads of state.⁵ More than 300 policy makers and cabinet members attended the latest global forum Building Science, Technology, and Innovation Capacity for Sustainable Growth and Poverty Reduction, organized in February 2007 by the World Bank in cooperation with other regional development banks and bilateral donor agencies from the United Kingdom and Canada and with

⁴ Available: <http://www.merit.unu.edu/>

⁵ Available: <http://www.un.org/events/wssd>

agencies of the United Nations (UN).⁶ The forum recommended that, given their limited base of technical and financial resources, developing countries should focus more on the use and diffusion of existing technologies to producers and end users by enhancing innovation capabilities, than on direct formal investment in R&D.⁷ The United Nations Conference on Trade and Development (UNCTAD) has recommended, in its paper on the least-developed countries,⁸ that developing productive capacity⁹ is the key to sustained economic growth through the three closely interrelated processes of capital accumulation, technological progress, and structural change. The International Development Research Centre (IDRC) created the Innovation, Policy and Science program in 2006 to support the development of science, technology, and innovation policies and reduce poverty in developing countries. A recent UN paper on innovation stressed the significant role of science, technology, and innovation in achieving the Millennium Development Goals (MDGs) and urged policy makers to learn continuously from the global pool of lessons and international partnerships that allow mutual learning.

7. The need for region-based knowledge-sharing and capacity-building programs in technological development and innovation is urgent. Regional research institutes and universities, while generally equipped with adequate technical research and teaching capacity, lack the international partnership and knowledge-sharing platform for periodic stocktaking in technological development and innovation. The current capacity-building and training programs in Asia are not sufficient to transfer Asian good practices from successful economies to other developing countries, fine-tuned to match their problems, conditions, and needs. ADB, in partnership with regional research institutes and universities, is best positioned to meet the need. However, caution is required as good institutions, policies, and strategies are necessary but not sufficient for development. Although the settings may be similar across countries, the impact will vary depending on the specific context of the countries concerned. Good practices, rather than being transferred wholesale, should merely serve as a tool, or at least a guide, in designing and implementing homegrown institutions, policies, and strategies.

III. THE TECHNICAL ASSISTANCE

A. Impact and Outcome

8. The RETA will contribute to improving the DMCs' capacity to build and use technology and innovation for sustainable development. The envisaged outcome is the strengthened capacity of DMC policy makers, primarily government officials responsible for economic planning and policy making or specialized technology and innovation policy, to design and implement homegrown public policies on technology and innovation.

⁶ The African Development Bank, the Inter-American Development Bank, the United Nations Conference on Trade and Development (UNCTAD), and UNESCO were involved. For details go to <http://www.worldbank.org/stiglobalforum>.

⁷ According to the International Council for Science, developing countries lack an infrastructure base for exploiting technology and innovation. Low-income countries are poor in terms of the various indicators for level of technology. They spend a small proportion of GDP on R&D, usually less than 1%, compared with around 2.5% for high-income countries. Low-income countries have fewer than 50 scientists per 100,000 people, compared with more than 3,000 per 100,000 in high-income countries.

⁸ UNCTAD. 2006. *The Least Developed Countries Report 2006: Developing Productive Capacities*. United Nations. Afghanistan, Bangladesh, Bhutan, Cambodia, Lao People's Democratic Republic, Maldives, Myanmar, Nepal, Samoa, Solomon Islands, Timor-Leste, and Vanuatu are the least-developed Asian countries included in the report.

⁹ Defined as productive resources, entrepreneurial capabilities, and production linkages, which together determine the capacity of a country to produce goods and services and enable it to grow and develop.

B. Methodology and Key Activities

9. The RETA will select the partner training institute(s) through competitive bidding among universities, research institutes, nongovernment organizations (NGOs), and private institutes in the region that currently provide capacity-building and training programs for DMC government officials in public policy, economic planning and management, development economics and studies, and international economics, and that intend to develop or enhance their curricula or training courses in technology and innovation policy using good Asian practices.

10. Twenty government officials (8 junior-level and 12 senior-level) from four pilot DMCs each from the countries covered by the East Asia Department (EARD), the Central and West Asia Department (CWRD), the South Asia Department (SARD), and the Southeast Asia Department (SERD) will be included in the pilot training programs under the RETA. The selection criteria will include (in no particular order) (i) the degree of importance attached to technological development and innovation in the country poverty reduction strategy and economic development plan, or ADB's country partnership and strategy; (ii) the relevance of the training programs to the country's current and future ADB-assisted operations; and (iii) science, technology, and innovation indicators for the country according to statistics from the UNCTAD World Information Report, the UNESCO Science Report, and the World Economic Forum Report.

11. To maximize the use of existing and available case studies and researches on this subject in developing the training program and to best reflect the needs of the pilot DMCs, the partner training institute(s) will hire 30 eminent professionals in this area from universities, research institutes, NGOs, and private institutes in the PRC, India, Republic of Korea, Malaysia, Taipei,China, Thailand, and the four pilot DMCs. These resource persons will participate in six country workshops and a regional conference to develop the content of the training programs and knowledge products. All workshops, training programs, and knowledge products will be in English and will not be translated into local languages for the pilot DMCs under the RETA. The key activities of the RETA are as follows.

12. **Identification of Good Asian Practices.** The pilot DMCs will be consulted and their need for public policies on technology and innovation determined. The initial conditions and endowments in those countries, as well as their specific needs and opportunities, will be examined. From this assessment, the related case studies and researches will be reviewed and evaluated, and good Asian practices in technology and innovation will be identified in the PRC, India, Republic of Korea, Malaysia, Thailand, and Taipei,China. Three to four cases will be chosen per economy, for a total of around 20 best-practice cases. Since several studies are already available for the Republic of Korea, Malaysia, Taipei,China, and Thailand, and to a lesser degree for the PRC and India, the use of these available resources will be maximized and the work will focus more on identifying crosscutting innovation issues and developing policy implications for the different historical and development contexts.

13. **Development and Implementation of Training Programs.** Two types of training courses will be developed and implemented: (i) a 6-month certificate program for junior government officials, and (ii) a 2-week short-term executive program for senior government officials. These programs will maximize existing training content, programs, and resources, and will be designed to enable the DMC participants, in the most interactive way, to develop practical solutions for their country, given the specific constraints, and to design their own innovation policies through case studies and seminars. Knowledge products, to be disseminated to regional organizations as well as to the DMCs' universities and research institutes, will also be developed and packaged into relevant content and materials in both soft and hard formats.

14. **Evaluation of Training Program and Development of Sustainability Mechanism.** The performance of the pilot training programs will be evaluated in this component. The partner training institute(s) will be asked to implement the monitoring and evaluation framework drawn up for the training programs. Participant feedback on the pilot programs obtained through interviews and surveys will be evaluated. From this evaluation, a sustainability mechanism will be designed for the continuous and wider implementation of the training programs. At the countries' request, country-specific programs and action plans will also be formulated to ensure the sustainability of national capacity-building efforts.

C. Cost and Financing

15. The total cost of the RETA is \$500,000 equivalent. This will be financed on a grant basis from the Republic of Korea e-Asia and Knowledge Partnership Fund, which is administered by ADB. The amount will cover the consulting services, training programs, workshops, and resource persons. Details of the cost estimates and financing plan are in Appendix 2.

D. Implementation Arrangements

16. ADB will be the Executing Agency, and its Regional and Sustainable Development Department (RSDD) will administer the RETA, in close cooperation with resident missions and governments of the pilot DMCs, as well as other development partners and related NGOs. No activities will be financed under this RETA in any ADB member until a letter of no objection regarding such activity has been received from the government of such member. Within ADB, the RETA will be implemented in maximum synergy with other existing technical assistance projects that are relevant to knowledge sharing and networking in the region.¹⁰

17. An international specialist will be hired by ADB on an individual basis for four months of intermittent service, according to ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time). The specialist will (i) assess the needs of the pilot DMCs; (ii) prioritize the topics to be covered under the RETA; (iii) identify resource pools (studies, researches, and training programs) in the selected priority areas; (iv) develop a bid document for selecting the partner training institute(s) and draft the agreement(s); and (v) facilitate the development of training programs and knowledge products in cooperation with the partner training institute(s) and resource persons. The consultant must have expertise and experience in public policy (including technology and innovation), development economics and studies, and capacity-building programs. Outline terms of reference for the consultant are in Appendix 3. The RETA will be implemented for 24 months, from January 2008 to December 2009.

IV. THE PRESIDENT'S DECISION

18. The President, acting under the authority delegated by the Board, has approved ADB administering technical assistance not exceeding the equivalent of \$500,000 to be financed on a grant basis by the Republic of Korea e-Asia and Knowledge Partnership Fund for the Knowledge-Sharing Program Using Good Asian Practices in Innovation and Development, and hereby reports this action to the Board.

¹⁰ ADB. 2006. *Technical Assistance Establishment of Regional Knowledge Hubs*. Manila; Proposed RETA on Supporting Network of Research Institutes and Think Tanks in South Asia, Phase II (REG 41052-01).

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/ Reporting Mechanisms	Assumptions and Risks
Impact Improved capacity to build and use technology and innovation for sustainable development.	Significant increase in technology and innovation index of the pilot DMCs.	<ul style="list-style-type: none"> • UNESCO Science Report • World Economic Forum Report 	Assumption The pilot DMCs remain economically and politically stable.
Outcome Strengthened capacity of DMC policy makers to design and implement homegrown public policies on technology and innovation.	Significant quality improvement in technology and innovation policy and strategies or a change in government practices in line with international best practices in the pilot DMCs.	<ul style="list-style-type: none"> • Monitoring and evaluation report from the partner training institute • ADB project completion report • ADB review mission 	Assumption The pilot DMCs' government officials are strongly committed to applying the knowledge acquired through training.
Outputs 1. Good Asian practices identified. 2. Training programs developed and implemented. 3. Evaluation made and sustainability mechanism developed for the training programs.	1. At least 20 cases of good Asian practices identified and packaged. 2.1. Two types of training courses (a 6-month program and a 2-week program) developed. 2.2. At least 20 government officials from the pilot DMCs trained. 3. Evaluation report prepared and follow-up actions developed and committed to by all the concerned parties.	<ul style="list-style-type: none"> • Workshop reports • Publications as a collection of workshop products • RETA consultant reports • Progress reports from the partner training institute(s) 	Assumptions <ul style="list-style-type: none"> • The right key government officials in charge of the concerned areas are identified. • The government officials concerned are well prepared and can attend and actively contribute to the knowledge sharing and capacity development. • All the stakeholders cooperate strongly and continuously in sharing knowledge and developing knowledge-sharing programs. • The right consultants, resource speakers, and partner training institute(s) are selected.
Activities with Milestones 1. Good Asian practices identified. 1.1. Select the pilot DMCs within the first month of the RETA. 1.2. Review the institutional, policy, and strategic frameworks of the six economies (PRC, India, Republic of Korea, Malaysia, Taipei, China, and Thailand) on the basis of existing related case studies and researches, within the first 3 months. 1.3. Assess needs and prioritize the areas of focus with the pilot DMCs within the first 4 months. 1.4. Identify at least 20 good practices within the first 10 months.			Inputs 1. Republic of Korea e-Asia and Knowledge Partnership Fund administered by ADB: \$500,000 (grant) <ul style="list-style-type: none"> • 4 person-months of international consulting services (\$110,000) • Training and workshops (\$360,000) • Contingency (\$30,000)

<p>2. Training programs developed and implemented.</p> <ul style="list-style-type: none"> 2.1. Identify qualified training institute candidates and a pool of potential resource persons from the region within the first 2 months. 2.2. Design the bid document to determine the partner training institute(s), in line with the related ADB guidelines, and issue the invitation for proposals, within the first 2 months. 2.3. Select the partner training institute(s) through competitive selection within the first 4 months. 2.4. Develop customized training programs through country and regional workshops within the first 10 months. 2.5. Develop a monitoring and evaluation framework for the pilot training programs within the first 10 months. 2.6. Develop the related knowledge products within the first 12 months. 2.7. Implement the training programs for the pilot DMCs' officials within the first 18 months. <p>3. Training program evaluated and its sustainability mechanism developed.</p> <ul style="list-style-type: none"> 3.1. Evaluate feedback on the training programs from participants within the first 20 months. 3.2. Develop a sustainability mechanism for the training programs within the first 22 months. 3.3. Formulate country-specific programs in response to country requests, within the first 24 months. 	<ul style="list-style-type: none"> 2. ADB staff time 3. In-kind contribution from the partner training institute(s)
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ADB = Asian Development Bank; DMC = developing member country; PRC = People's Republic of China; RETA = regional technical assistance; UNESCO = United Nations Educational, Scientific and Cultural Organization.

COST ESTIMATES AND FINANCING PLAN

Item	Total Cost (\$)
Republic of Korea e-Asia and Knowledge Partnership Fund ^a	
1. International Consultants	
a. Remuneration and Per Diem	80,000
b. International Travel	30,000
Subtotal	110,000
2. Training and Workshops	
a. Resource Persons	60,000
b. Pilot Training Program	180,000
c. Travel	60,000
d. Country Workshops	24,000
e. Regional Conferences	30,000
f. Publication	6,000
Subtotal	360,000
3. Contingencies	30,000
Total	500,000

^a Administered by the Asian Development Bank.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

1. An international consultant with strong expertise and experience in public policy (including technology and innovation), development economics and studies, and capacity-building programs will carry out the following tasks over 4 person-months of intermittent service, from 1 January 2008 to 31 October 2008. The consultant will be based in his or her home country and visit Manila and other economies as required. Except for the country workshops and regional conferences, most of the work can be done through desk research and telecommunications or teleconferencing.

- (i) Review the institutional, policy, and strategic frameworks for technological development and innovation in six economies—the People's Republic of China, India, Republic of Korea, Malaysia, Taipei, China, and Thailand—using available related case studies and researches.
- (ii) Assess the related capacity-building needs and consult with the main concerned agencies and ministries in the four pilot developing member countries, and identify priority capacity-building areas.
- (iii) Identify candidate partner training institutes and resource persons, and develop a bid document for selecting the partner training institute(s) through tender according to the *Procurement Guidelines* (2007, as amended from time to time) of the Asian Development Bank (ADB). The bid document should cover the following requirements for bidders and the corresponding evaluation criteria: (i) the development of knowledge products on good Asian practices; (ii) the work and budget proposal, specifying the objective, scope, expected output, duration, and long-term sustainability mechanism of the two types of training programs (a 6-month certificate program for junior government officials and a 2-week short-term executive program for senior government officials); (iii) the organization of country workshops and regional conferences, together with the development of their agenda and programs; (iv) the hiring of 30 resource persons for workshops and conferences, together with the development of terms of reference for these resource persons; (v) relevant capacity and experience; and (vi) in-kind contribution.
- (iv) Identify good practices (at least 20 cases) in the six economies. The areas of focus will include, among others, technology transfer and technological upgrading strategy, research-and-development policy, national innovation system, industrial policy, cluster development, and information and communication technology and innovation.
- (v) Prepare the draft agreement(s) between the partner training institute(s) and ADB, and undertake the necessary preparatory work.
- (vi) Develop a monitoring and evaluation framework for the training programs.
- (vii) Facilitate and supervise the development of training programs and knowledge products by the partner training institute(s).
- (viii) Carry out other related tasks requested by ADB.

2. The following reports, all in the English language, will be submitted by the consultant to ADB. The final report will also be submitted in CD-ROM.

- (i) **Inception report.** The inception report, to be submitted within the first month of the services, will outline the approach and methodology and any changes in the work plan with the corresponding proposed cost adjustments as deemed necessary to fulfill the terms of reference.
- (ii) **Outputs and Reports.** The following reports should be submitted:

- (a) Bid document for items (i) and (iii) in para. 1, within the first 2 months of work.
- (b) List of qualified candidates for the partner training institute(s) and a pool of potential resource persons, for items (i) and (iii) in para. 1, within the first 2 months of work.
- (c) Needs assessment report on the four pilot DMCs, for item (ii) in para. 1, within the first 3 months of work.
- (d) Draft agreement(s) between the partner training institute(s) and ADB, for item (v) in para. 1, within the first 4 months of work.
- (e) Good Asian practices, for items (i) and (iv) in para. 1, within the first 10 months of work.
- (f) Monitoring and evaluation framework for training programs, for items (vi) and (vii) in para. 1, within the first 10 months of work.

