

OUR FRAMEWORK Policies and Strategies

ADB



TOWARD E-DEVELOPMENT IN ASIA AND THE PACIFIC

Asian Development Bank

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A Strategic Approach
to Information and
Communication Technology

Asian Development Bank

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Abbreviations

ADB	Asian Development Bank
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
CLICK	Center for Learning, Information, Communication, and Knowledge
DMC	developing member country
ICT	information and communication technology
IT	information technology
ITU	International Telecommunication Union
MCT	multipurpose community telecenter
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization

NOTE

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

Executive summary

Information and communication technology (ICT) has become a powerful tool in the fight against world poverty, providing developing countries with an unprecedented opportunity to meet vital development goals, such as poverty reduction, basic health care, and education, far more effectively than before. The countries that will succeed in bridging the digital divide by harnessing the potential of ICT can look forward to enhancing economic growth, and improving human welfare and good governance practices. The Asian Development Bank (ADB) is committed to helping bridge the growing digital divide and reap digital dividends within and across its developing member countries (DMCs), in line with the G8's Okinawa Charter on Global Information Society. Gains from ICT should be used in the DMCs to accelerate social and economic development, improve governance, and generally support the fight against poverty.

This paper aims to explore how ICT can be harnessed as an enabling tool to enhance the impact of ADB's overarching goal of reducing poverty in the Asia and Pacific region. The paper lays the groundwork for immediate thinking within DMCs and ADB on how to move quickly and credibly in developing ICT applications and promoting their extensive use. The strategic approach to ICT recognizes that ADB's financial and human resources are limited, thus its ICT development assistance must be selective, and encourage regional cooperation and networking to enhance local efforts at development and promote private sector participation in ICT development. The DMCs must manage their own ICT strategies and activities to achieve their development agenda. Three strategic thrusts are proposed.

- **Create an enabling environment** by fostering (i) the development of innovative sector policies, (ii) the strengthening of public institutions; and (iii) the development of ICT facilities and related infrastructure, and networks.

- **Build human resources** to improve knowledge and skills, and to promote ICT-literacy and lifelong learning of citizens through E-learning and awareness programs.
- **Develop ICT applications and information content** for ADB-supported projects/activities, e.g., poverty reduction and good governance.

The proposed action plan is expected to be implemented sequentially and will initially comprise the following main activities.

- **Undertake E-readiness assessment** in selected DMCs following the procedures for formulating ADB's country strategy and program in a DMC.
- **Integrate ICT applications in ADB's activities** to improve the flow and use of information and knowledge for the effective execution of ADB-supported projects and activities.
- **Promote strategic alliances and partnerships** with existing ICT initiatives at national, regional, and international levels, and establish principles of effective public-private sector partnerships.
- **Establish a center for learning, information, communication, and knowledge for Asia and the Pacific** to improve the dissemination and use of information and knowledge for development, as well as best practices, through ICT.

I. Introduction

1. One of the most persistent criticisms of open markets and free trade is that they increase the gap between developed and developing countries. The rapid emergence of the Internet economy is giving this argument new impetus. Many fear that the Internet will worsen the gap between rich and poor countries. The inequality debate has taken a new turn with an increasing focus on the digital divide, the gap between “information rich” and “information poor” countries.

2. Information and communication technology (ICT) is widely recognized as a potentially powerful tool in the fight against world poverty, with the capacity to provide developing countries with an unprecedented opportunity to meet vital development goals such as poverty reduction, basic health care, and education, far more effectively than before. Countries that succeed in harnessing the potential of ICT can look forward to greatly accelerating economic growth, dramatically improving human welfare, and fostering good governance practices.

3. The Asian Development Bank (ADB) recognizes that ICT is a powerful force in shaping the social and economic development of the Asia and Pacific region. ADB must help its developing member countries (DMCs) benefit from the new opportunities created by ICT and is committed to helping bridge the growing digital divide and reap digital dividends within and across its DMCs, in line with the G8’s¹ Okinawa Charter on Global Information Society.² DMCs should use gains from ICT to accelerate social and economic development, improve governance, and generally support the fight against poverty. This paper explores how ICT can be harnessed to support ADB’s poverty reduction strategy.

¹ G8 countries are Canada, France, Germany, Italy, Japan, Russian Federation, United Kingdom, and United States.

² The G8 Charter on Global Information Society is the joint statement by members of the World Economic Forum, which met in Kyushu-Okinawa, Japan on 21–23 July 2000. The charter provides the key principles and approaches that the G8 will follow and commend to others to bridge the international information and knowledge divide. For details, visit the web site at <http://www/g8kyushu-okinawa.go.jp>, and/or <http://www.g7.fed.us>.

II. The information revolution

A. What is ICT?

4. ICT is currently defined as the set of activities that facilitate by electronic means the processing, transmission, and display of information.³ ICT is at the convergence of a tripod made of three specialized domains, namely information technology, data and information, and socioeconomic issues, to fuse the capabilities and functionality of each specialized domain into a holistic yet fluid domain that works to develop a customized information system for each user. Information technology (IT) or informatics was defined in 1990 as (i) the aggregation of information-related fields, such as computer hardware and software, telecommunications networks and equipment, and information technology-based industries; and (ii) the application of these technologies in all economic sectors, publishing, broadcasting, libraries, data banks, and other information services industries. The major difference between IT and ICT is the emphasis given in the case of ICT to the communication aspect—the collaboration and connectivity that the technologies facilitate.⁴ A new vocabulary is emerging with reference to its electronic character using the prefix “E.”

B. The global information society

5. The world economy is in the midst of a profound transformation, spurred by globalization and supported by the rapid development of ICT that accelerates the transmission and use of information and knowledge. This powerful combination of forces is changing the way we live, and redefining the way companies do business in every economic sector. It is also vastly expanding the range of opportunities for entrepreneurs to create innovative products and pioneer new markets. The cumulative effect of

³ For more detailed information, see <http://www.oecd.org/dsti/sti/it/stats>.

⁴ *FID Bulletin*. 1998. New Information and Communication Technologies: Social Development and Cultural Change. 48:3-4.

these microlevel changes in firms and their markets is the macrolevel shift to an increasingly information-based global digital economy. This phenomenon, commonly referred to as the information revolution, has given birth to what is now called the global information society and the new economy, spawned by digital technologies. The current information revolution driven by ICT, without being a panacea, promises to bring enormous opportunities for growth and poverty reduction. World leaders have been looking at the potential impact of ICT and globalization on the social and economic development of poor countries.

6. The ICT issue was recently brought to the forefront of the international development agenda. ICT, which transcends national borders and makes knowledge more important than physical assets, is now acknowledged to have the potential to seriously widen the gap between people with access to the information economy and those without. For example, the digital divide issue was extensively discussed in some major international political meetings such as the G8 meeting in Okinawa, Japan, in July 2000. To narrow the divide, ICT must be equitably deployed, and knowledge and jobs brought to poor countries. However, these opportunities have to be seized quickly as changes in the world's digital economy are happening rapidly. To address the digital divide issue, the G8 meeting in Okinawa adopted the G8 Charter on Global Information Society; the charter stresses the need to ensure that ICT is used in developing countries to facilitate social development, good governance, and pro-poor growth (*Box 1*). The leaders of the G8 also established the Digital Opportunity Task Force⁵ (DOT Force) to strengthen international cooperation in implementing this charter.

C. ICT and development

7. ICT is thought to impact economic growth in the same way as other major inventions, but evidence relating to ICT's impact on the economy, although accumulating rapidly, is still incomplete. ICT and the Internet

⁵ The task force members are (i) G8 (17): one government and one private sector representative from each G8 country, and one representative from the European Commission; (ii) developing countries (9): one representative (either from the government or the private sector) from Bolivia, Brazil, People's Republic of China, Egypt, India, Indonesia, South Africa, Senegal, and Tanzania; (iii) international organizations (7): World Bank (Cosecretariat); United Nations Development Programme, Economic and Social Council of the United Nations; International Telecommunication Union; United Nations Educational, Scientific and Cultural Organization; United Nations Conference on Trade and Development; Organisation for Economic Co-operation and Development; (iv) business organizations; and (v) nongovernment organizations.

Box 1: Okinawa Charter on Global Information Society

In July 2000, the G8 countries adopted the Charter on Global Information Society at their summit meeting in Okinawa, Japan. This reflected the G8's recognition that information technology (IT) is one of the most potent forces shaping the 21st century. The charter discusses the creation of a global information society and toward this end, the host country, Japan, has committed \$15 billion.

The G8 vision of an information society is one that enables people to fulfill their potential and realize their aspirations. The charter seeks to ensure that IT serves the mutually supporting goals of creating sustainable economic growth, enhancing public welfare, and fostering social cohesion. The ancillary objectives that IT growth is expected to achieve in developing economies include increasing transparency and accountability in governance, enhancing cultural diversity, and fostering international peace and stability.

The G8 charter is a call to both public and private sectors to bridge the information and knowledge divide—the digital divide. It underscores the fact that an effective partnership of stakeholders, through policy cooperation, is key to the sound development of a truly global information society. The charter emphasizes the importance of building on the following foundations:

- economic and structural reforms to foster an environment of openness, efficiency, competition, and innovation;
- sound macroeconomic management to help economic agents plan confidently and exploit the advantages of new technology;
- development of information networks offering fast, reliable, secure, and affordable access through competitive market conditions;
- development of human resources capable of responding to the demands of the information age; and
- active utilization of IT by the public sector.

The private sector is expected to play a lead role in the development of IT networks. Governments, however, have to create a predictable, transparent, and nondiscriminatory policy and regulatory environment. They must also ensure that IT-related rules and practices are responsive to the emerging revolutionary changes in the way people conduct business using IT, while taking into account the principles of an effective public-private sector partnership.

Source: Asian Development Bank. 2000. Okinawa Charter on the Global Information Society. *Asian Development Outlook 2000 Update*. Box 1, 59. Manila.

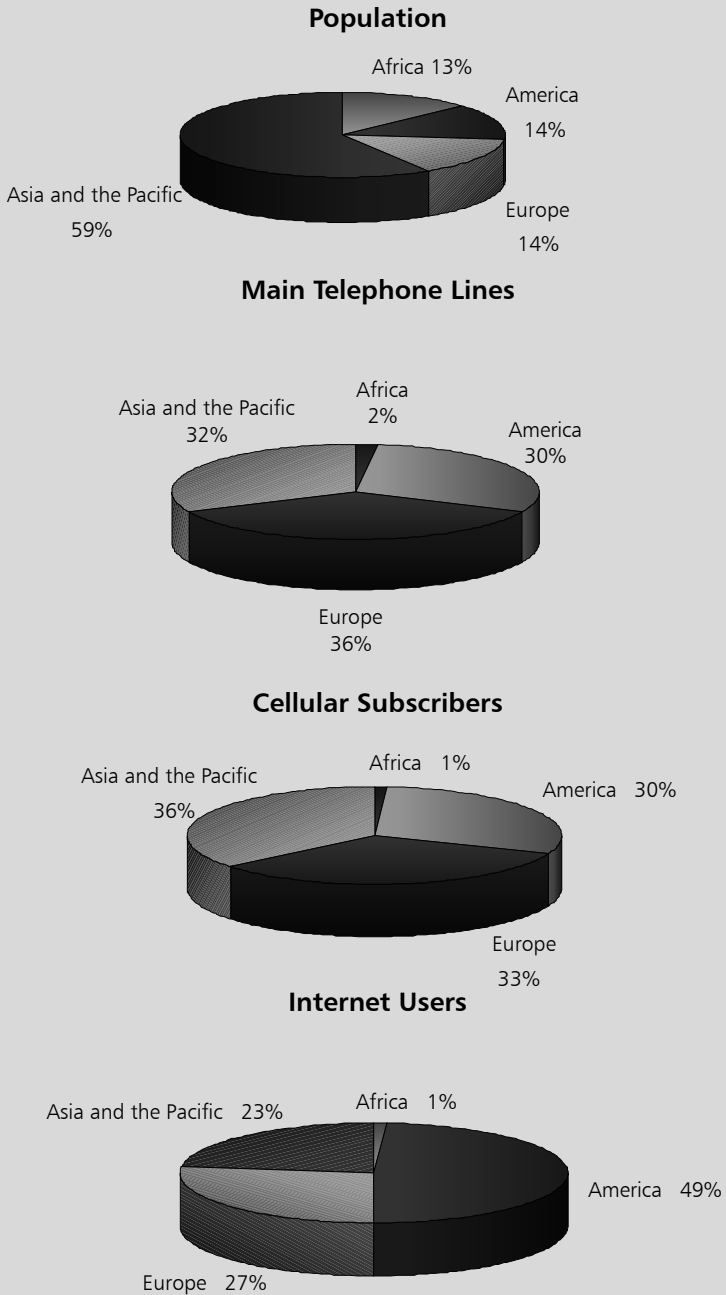
provide the means for a sweeping reorganization of business, from on-line procurement of inputs to more decentralization and outsourcing, and can boost efficiency and productivity in manufacturing and the distribution sector. By increasing rapid access to information, ICT helps make markets work more efficiently, by allowing consumers to seek the lowest price, and firms to get quotes from more suppliers. It also reduces transaction costs and barriers to entry. Farmers can, for instance, get instant information on weather, prices and crop conditions in other regions. Manufacturers can track changes in demand more closely via direct links to electronic scanners in shops.

8. In developed countries, ICT and the Internet have helped globalize production and capital markets and speed up innovation by reducing the time for designing new products, through powerful computers that make it easier and cheaper to process large amounts of data. This is not generally the case for developing countries, where the cost of computers and telecommunications remain generally high, because of insufficient liberalization and deregulation of markets, and years of chronic underinvestment. The private sector can play a lead role in ICT development but remains skeptical about the profitability of ICT investment in rural areas, especially in least-developed countries. More progressive and innovative policies and a determined leadership are required to enable the full potential of ICT to work for the benefit of developing countries.

9. Without the enabling environment, many developing countries, especially the least developed ones, will account for a smaller fraction of the global digital economy, as the vast majority of economic activity related to ICT will continue to be concentrated in the industrialized world. Concerns for these disparities between industrialized and developing countries, especially with respect to people's access and use of telecommunications and the Internet (*Figure*), have started a worldwide debate about the existence of the digital divide and the dire consequences for poor countries if it is not addressed in time. The digital divide may serve to widen the economic divide between developed (advanced) and developing countries with possible repercussions for the future stability of the international community.

10. Many examples of successful ICT applications for development have been documented in governance, education, public health, and environmental and natural resource management. Some developing countries have

Figure: Distribution of Population and Users of ICT by Region, 1998



been creating new ways to dramatically help the poor.⁶ For example, in India, one third of its software workers were tapped in programs aimed to eliminate poverty. The government of Andhra Pradesh, one of the less-developed states of India, has pursued an aggressive strategy to promote the pervasive use of ICT, especially in modernizing governance systems through E-government over the last few years. Farmers in Bangladesh are using cellular phones to bypass intermediaries and get better prices for their products. In Jordan, a nongovernment organization (NGO) reported an increase in village wealth through use of solar energy and Internet facilities for health, education, and communication. In Shanghai, People's Republic of China, Project Hope created a pediatric hospital to bring high-technology solutions to thousands of health professionals, and in some countries in Africa, village artisans are using web sites to sell their wares in Paris. In Peru, more than 1,000 telecenters⁷ or *cabinas publicas* were successfully developed as instruments for E-commerce, creating jobs and small businesses, and teaching Internet access to people who have no telephone or computer.⁸ *Box 2* describes another concrete example of an ICT success story. These examples show how diverse and powerful ICT can be—enabling the most sophisticated access to information to very basic applications. However, the digital opportunity can only be fully realized if developing country governments take enlightened and decisive action on ICT development.

11. Among multilateral development banks, the World Bank undertook a study on information technology as early as 1990.⁹ The study aimed to maximize applications of information technologies in all sectors, reorient World Bank assistance for telecommunications and information technology industries, and determine the evolving role of the World Bank in line with world development. As a result, the World Bank launched numerous initiatives, such as the Global Knowledge Conference in Canada in 1997,¹⁰ and two recent projects Global Development Gateway and Global Development Learning Network (*Box 3*). Although some progress has been reported, the

⁶ For more detailed information, see Digital Partners at <http://www.digitaldivide.org>.

⁷ A telecenter, multipurpose community telecenter (MCT), or kiosk is a location that facilitates and encourages the provision of a wide variety of public and private information-based goods and services, and supports local economic and/or social development.

⁸ For more detailed information, see <http://click.egroups.com>.

⁹ World Bank. 1990. Development in the Information Age: An Evolving Role for the World Bank. Discussion Paper, Washington, DC. Visit the World Bank web site at <http://www.worldbank.org>.

¹⁰ For more details, visit the web site at <http://www.globalknowledge.org>.

Box 2: Does Connectivity Mean Productivity: The Grameenphone Project—An ICT Success Story

The Asian Development Bank-supported Grameenphone Telecommunications Project¹ in Bangladesh proves that connectivity results in increased productivity. This is one concrete example of a success story.

Grameen Bank has microlending operations in 35,000 villages through 1,100 branches and 12,000 workers. Typically, a woman borrows \$100–\$200 without collateral from Grameen Bank to purchase a cow and produce milk. This process allows the poorest of the poor to stand on their feet. An enterprising Bangladeshi, when he approached the Grameen Bank, substituted a cellular phone as the object of business instead of a cow. A woman could borrow, say \$200 from the bank; purchase a handset; and sell telephone services by going door-to-door to villagers, thereby making a living and thus paying off her loan. In 2 years' time, he managed to establish a partnership called Grameen Phone Limited, and run a very successful commercial operation providing cellular services in both urban and rural Bangladesh.

The average daily earning of \$2 by phone operators is an indication of the phone's utility. However, more interesting is the anecdotal evidence of how people living in villages with phones began thinking of doing things differently after the phones arrived, showing the multiplier effect of the technology. For example, one lady thought of raising a large number of chickens, a business she was afraid to pursue for fear of not being able to call a veterinarian on time if the chickens developed a disease. Another man reported his plan to cultivate bananas on a large scale, because he is now able to obtain market prices on time to make the correct shipping decisions. One woman contacted the doctor on time to save her child, who was running a high fever. The migrant workers throughout the world with roots in Bangladeshi villages can now call home to know how their families are doing, and if the money they are sending is indeed reaching its destination. This success story cites many examples, but what is remarkable is the positive social impact of this digital technology in the hands of the poor: new thinking is unleashed and new business models created that could be appropriate for poor countries, as entrepreneurial skills of the poor are stimulated and catalyzed (<http://www.grameenphone.com>).

¹ Loan 1603-BAN/EI 7143-BAN: *Grameenphone Telecommunications Project*, for \$16.7 million loan and \$1.6 million equity investment, approved on 20 January 1998. The other project lenders are the Norwegian Agency for Development Cooperation, the International Finance Corporation, and the Commonwealth Development Corporation to finance a total project cost estimated at \$124.4 million equivalent.

Source: Friedman, Thomas. 2000. *The Lexus and the Olive Tree*. New York: Anchor Books, p. 360–362.

Box 3 : World Bank's ICT-Related Initiatives

The World Bank has launched four important information and communication technology (ICT)-related initiatives in its effort to assist developing countries cope with world developments in the information age.

- i. **InfoDev** was created in 1995 to promote the innovative use of ICT for economic and social development. It coordinates the efforts of various stakeholders in fostering information-based services in emerging economies through ICT-related activities (<http://www.infodev.org>).
- ii. The **Global Development Gateway** is a major collaborative initiative designed to create an Internet portal for the development community. It aims to offer access to high-quality development information; facilitate Internet access by developing member country governments, entrepreneurs, and civil society organizations; and serve as an interactive platform for local, national, and global development communities to exchange information openly. The gateway will be managed by an international board (<http://www.worldbank.org/gateway>).
- iii. The **Global Development Learning Network** connects distance-learning centers in countries around the world. It is operating several projects in Africa and Latin America, but has only four centers in Asia and none in the Central Asian republics. The Asian centers are in the People's Republic of China, Singapore, Thailand, and Viet Nam (<http://www.gdln.org>).
- iv. The **Global Development Network** aims to harness the existing knowledge on development for governments and development finance institutions, and to generate and direct research with developmental and operational relevance (bridge knowledge and policy or connect research with practice). The network seeks to facilitate networking, build research capacity, and help researchers transfer knowledge to policymakers (<http://www.gdnet.org>).

impact of these initiatives on developing countries cannot yet be realistically assessed. In 1998 the Inter-American Development Bank approved funds for creating what has become an information technology for development unit to strengthen its efforts to support ICT components in development projects, e.g., health, education, and modernization of the state through E-government.

D. ICT development in Asia and the Pacific

12. A preliminary comparative analysis of the ICT environment in some selected DMCs (*Appendix*) shows the great disparity in their ICT preparedness. Some countries have the necessary policies and legislative framework already in place, but very slow implementation progress; others have formulated their policies but are still awaiting adoption; some have IT or ICT plans that are not implemented. The following table shows an example of the E-business-readiness ranking of selected countries/areas in the Asia and Pacific region. Some have already reached a similar stage or have out-paced advanced countries, whereas others are lagging behind, mainly because of insufficient infrastructure.

13. In Asia, Singapore¹¹ is most advanced in ICT. Reports indicate that the full support and extensive preparations spearheaded by the Government of Singapore are paying off. Singapore is ranked first in Asia and eighth in the world for E-business readiness, according to the *Economist Intelligence Unit*. The *World Competitiveness Yearbook 2000* has ranked Singapore as first in Asia and fourth in the world in electronic commerce infrastructure, while the Boston Consulting Group has ranked Singapore seventh in total consumer on-line spending after Japan; Republic of Korea; Australia; Taipei, China; Hong Kong, China; People's Republic of China; and New Zealand.

14. In the Asia and Pacific region, several regional initiatives are designed to prepare countries for the information age. For example, the concern of the Association of Southeast Asian Nations (ASEAN) about ICT is demonstrated by its recently created E-ASEAN Task Force.¹² The purpose is to develop a broad and comprehensive action plan for an ASEAN E-space and to develop competencies within ASEAN to compete in the global information economy through the establishment of an ASEAN information infrastructure. In developing the infrastructure, the task force will examine the physical, legal, logistical, social, and economic infrastructure needed to create the basis for ASEAN's competitiveness in the 21st century.

¹¹ For more details on ICT development in Singapore, visit Singapore's web site at <http://www.ida.gov.sg>.

¹² For more information, visit the E-ASEAN web site at <http://e-aseantf.org>.

Table: The E-Business-Readiness Rankings: Asia and the Pacific Region

Rank	Countries/Areas	Business Environment Ranking, 2002–04	Connectivity Rating	E-Business-Readiness Ranking
8	Singapore	8.55	8	8.3
9	Hong Kong, China	8.52	8	8.3
16	Australia	8.14	8	8.1
17	New Zealand	8.10	8	8.1
21	Japan	7.43	8	7.7
24	Republic of Korea	7.30	7	7.2
27	Taipei, China	8.13	5	6.6
28	Thailand	7.27	5	6.1
32	Malaysia	6.91	5	6.0
38	Indonesia	6.16	5	5.6
46	Philippines	6.72	3	4.9
50	India	5.97	3	4.5
51	People's Republic of China	5.88	3	4.4
52	Sri Lanka	5.87	3	4.4

Source: Charmonman, Sriskadi. 2000. The Role of Internet in ASEAN Development. Paper presented to *ITU Telecom Asia 2000 Forum, Gateway to Opportunity*. Hong Kong, China. The E-commerce variables used to rank the E-business-readiness include logistics, telecommunications infrastructure, and financial systems.

15. Similarly, the Asia-Pacific Economic Cooperation (APEC)¹³ recently launched a wide-ranging action agenda for the new economy that outlines programs that will use advances in IT to boost productivity and stimulate growth, and to extend basic services to the community. The action agenda includes ways of promoting the right policy environment and build capacity to create a framework to strengthen markets, E-commerce, and knowledge and skills development, and to provide affordable and efficient access to communications and the Internet. APEC supports the development of distance learning capacity and IT as a core competency for teaching and learning. It also strongly supports the development of IT to enable networks to extend health and medical services to a wider community and to address basic health issues.

16. Other key players in the region include the International Development Research Centre (Canada), Canadian International Development Agency,

¹³ Visit APEC at <http://www.apec.org>.

United Nations Educational, Scientific and Cultural Organization (UNESCO), United Nations Development Programme (UNDP), Food and Agriculture Organization, and International Telecommunication Union (ITU). The assistance provided is focused on community-based projects, which include establishing multipurpose community telecenters, community multimedia centers,¹⁴ distance education, and skills-building courses directly aimed at improving livelihood activities in the community.

¹⁴ At its most basic version, a community multimedia center offers the simplest portable radio station, plus a single computer for Internet browsing, E-mail and basic office, library, and learning applications. At its most developed version, the center is a major infrastructure offering a full range of multimedia facilities, linking to a local hospital for telemedicine applications.

III. Need for an ADB strategic approach to ICT

A. ADB and ICT

17. ADB's Long-Term Strategic Framework recognizes the importance of supporting ICT to promote development and close the gap between the information-rich and information-poor.¹⁵ ADB is thus positioning itself to effectively assist DMCs to have "increased access to information and allow the less privileged in society, and the less-developed parts of the region to have wider options and a greater role in determining their future." Special emphasis will also be placed on regional cooperation in the context of regional sharing of knowledge and information through ICT, and learning from the experiences of other ICT key players and stakeholders.

18. A preliminary survey of ADB's ICT-related activities, conducted in August 2000, shows that most ADB assistance provided over the past 5 years has focused on informatics or IT and telecommunications and not specifically on ICT. This is not surprising, as ICT is a relatively recent development. Some exceptions are found in the education sector activities and in projects such as the Grameenphone Telecommunications Project in Bangladesh (Box 2), the geographic information system-based approach to rural development project in the Philippines,¹⁶ and the technical assistance for development of the Internet for Asian law.¹⁷ Despite these ICT initiatives, much remains to be done in view of the rapid changes in ICT and its applications.

¹⁵ ADB. 2001. *Moving the Poverty Reduction Agenda Forward in Asia and the Pacific: The Long-Term Strategic Framework of the Asian Development Bank (2001–2015)*. Manila.

¹⁶ Loan 1772-PHI: *Infrastructure for Rural Productivity Enhancement Sector*, for \$75.0 million, approved on 31 October 2000. R220-00: Grant 9001-PHI: *Supporting the Sustainable Livelihood for the Poor in Southern Philippines*, for \$2.8 million, approved on 31 October.

¹⁷ TA 5701-REG: *Small-Scale Technical Assistance—Feasibility Study for Creation of An Electronic Development Law Center*, for \$100,000, approved on 3 September 1996. TA 5820-REG: *Development of the Internet for Asian Law*, for \$600,000, approved on 17 December 1998 (<http://www.austlii.edu.au/dial>).

A. Why a strategic approach?

19. ICT can provide a great opportunity for DMCs to leapfrog stages of economic development. As the only regional multilateral development bank in the Asia and Pacific region, ADB cannot ignore the growing digital divide within and across its DMCs. Together with its DMCs, ADB must help bridge this divide. Furthermore, in May 2001, at the 34th ADB Annual Meeting, several member countries stressed the importance of ICT and the possible role of ADB in helping its DMCs fully exploit their ICT potential; Japan pledged to assist ADB in promoting ICT in its DMCs. ICT has an ever-increasing role in promoting sustainable economic growth through increases in productivity; promotion of exports, especially of services; and improved markets and quality and efficiency of government services. Provision of ICT can also help the poor access markets, demand services, receive education, and learn new skills. ICT can give a voice to the disadvantaged, a voice that enables the poor to use their own knowledge and strengths to escape poverty. ICT can provide rural populations with access to information such as crop prices, weather, and new farming techniques that can be translated into improved income.

20. A strategic approach to ICT is therefore necessary in providing the broad guidelines on how ICT can be harnessed by ADB to increase the impact and effectiveness of its poverty reduction strategy. It is not meant to be a detailed implementation plan. The strategic approach aims to assist the DMCs to seize the opportunities presented by the digital economy, and gives indications on the broad assistance areas that could be provided. It defines a more responsive but realistic role for ADB on ICT suited to respond to the DMCs' requirements. The increasing awareness of the positive and negative impact of ICT can help ADB focus its interventions, and identify how synergies with other key players and stakeholders can be built through regional cooperation and strategic partnerships.

IV. Strategic thrusts

21. The strategic approach for ICT must (i) recognize that ADB's financial and human resources are limited, so that its ICT development assistance must be selective and focused, and (ii) look for ways to enable DMCs to access additional resources from other sources. DMC ownership of managing their ICT strategy and activities is essential. The strategic approach will support DMCs in systematically developing and integrating ICT components in development projects and activities to increase their reach, efficiency, and impact. The strategic approach will encourage regional cooperation, partnerships, and networking to enhance local efforts at development, and promote private sector participation in ICT development.

22. The strategic approach to ICT will support ICT-related activities in DMCs to enhance the impact of ADB's poverty reduction strategy and other development activities through three main thrusts: create an enabling environment, build human resources, and develop ICT applications and information content.

A. Create an enabling environment

23. ADB will help create an enabling policy environment to foster (i) improvement and development of sector policies to encourage user-friendly and barrier-free technologies, including expanded provision of access to telecommunications and information systems, as well as policies on confidentiality, information security, and intellectual property rights; (ii) strengthening of public institutions in DMCs to improve their efficiency and effectiveness in achieving their development goals through ICT applications; and (iii) development of ICT facilities and related infrastructure, and networks, with priority given to more disadvantaged ICT-poor DMCs.

B. Build human resources

24. ADB will foster the development of human resources capable of responding to the demands of the information society. Education and life-long learning are important components for improving knowledge and skills,

especially at the community level, to address the rising demand for ICT workers in many DMC sectors. ICT supports distance learning and knowledge sharing, as does globalization of specialized communication and information networks. The Internet is an important component in this, providing a shared means of distributing information and knowledge, as are other newly developed powerful communication tools. ICT has particular potential for enriching and improving the quality and relevance of education provided to the poor. An awareness-building program, as well as vocational training, through an information, education, and communication component should be incorporated in ADB's future development activities to increase ICT awareness among ADB clients and project beneficiaries, as well as other segments of DMC society.

C. Develop ICT applications and information content

25. ADB recognizes that ICT applications and information content development are especially crucial to respond to specific DMC needs and demands that are not currently adequately met. Information content packages, appropriate to DMCs and relevant to beneficiaries, will be developed for ADB-supported projects and activities, e.g., poverty reduction, governance, education and specialized training, and strengthening of DMC banking and financial institutions. Developing ICT applications and information content, in local languages when necessary, and primarily based on ADB's wide-ranging development experience, will help enhance the dissemination of knowledge and best practices to enhance the impact of ADB's poverty reduction strategy.

V. Proposed action plan

26. The proposed action plan is expected to be implemented sequentially, but some activities could be developed simultaneously depending on the needs and demands of the selected DMCs. The proposed action plan will initially comprise four major activities.

A. Undertake e-readiness assessment

27. To obtain a clearer picture of the E-readiness of the selected and interested DMCs for ICT, a more detailed country analysis is needed to assess variables such as connectivity, E-leadership, information security, human capital, and E-business climate.¹⁸ The country analysis will provide the baseline information for follow-up actions at the country level. Country studies in selected DMCs, particularly the less-connected ones, will be undertaken, in cooperation with the DMCs; ADB resident missions; and other interested international, regional, and bilateral organizations.¹⁹ The results of the assessment will provide relevant and reliable information and data to assess the current status; identify the gaps and weaknesses of the existing infrastructure, policies, regulations, standards, human resources, and the actual use of ICT in DMCs; and be reflected in ADB's country strategy and program²⁰ for the selected DMC.

¹⁸ McConnell International. 2000. *Risk E-business: Seizing the Opportunity of Global Readiness*. Report by McConnell International: 17 (<http://www.mcconnellinternational.com/ereadiness/EreadinessReport.htm>).

¹⁹ For additional E-readiness studies, visit the web site at <http://www.readinessguide.org>. In February 2001, a call was made for a proposal for the infoDev ICT infrastructure and E-readiness assessments initiative. InfoDev is planning to offer 20–30 grants averaging about \$50,000 per grant to government organizations to fund a participatory analysis of a country's information infrastructure and the policy, legal, and regulatory environment for E-commerce and E-government.

²⁰ Strategy and Policy Department. 2000. *Report on the Redesign of ADB's Operational Business Processes*. Asian Development Bank, Manila.

28. Based on the results of the country analysis, a DMC national ICT development action plan can be developed and/or strengthened as a part of the country strategy and program. The results of the E-readiness assessment should also provide a basis for improving social and institutional frameworks, as well as work routines developed before the advent of ICT. In harnessing ICT, a change in mind-set and work culture, including operational business processes, may be necessary to reap full ICT benefits. Active utilization of ICT by the public sector and the promotion of on-line service delivery, which are essential to ensure improved citizens' access to government, will be encouraged.

29. The private sector plays a lead role in the development of information and communications networks in the information society. Therefore, as part of the E-readiness assessment of the DMCs, a review of what private firms and ICT industries (i.e., local, national, regional, and global private sectors) are doing, domestically and regionally in the Asia and Pacific region, should help identify potential strategic public-private sector partnerships to be developed. In several more advanced countries of the region, ICT development is spearheaded by the private sector; the public sector complements private sector initiatives by focusing on policy and human resources development. However, in many DMCs, especially the least developed, the private sector can be reluctant to invest in ICT and should be encouraged with adequate lending and/or guarantee instruments to actively participate in ICT development, especially in rural areas where business opportunities might exist but where business is considered risky.

B. Integrate ICT applications in ADB's activities

30. Some ICT applications are well suited to the development process and should be incorporated, as appropriate, in ADB's activities, e.g., geographic information systems to help protect natural resources and support land use planning, distance learning to support education and skills building in remote rural areas, and telemedicine to support health care in rural areas. Other applications can include, for example, creation and management of information sources and location tools (factual, statistical, and bibliographic databases; directories; and experts' addresses).

31. Information content for strategic program areas, e.g., poverty reduction, governance, and law and development should be developed as multimedia messages, content for web pages, press releases, video presentations,

and other forms of packaging information and data used in radio and television broadcasts. It also includes messages and technical presentations in conferences and meetings, and discussions with target groups in rural areas. Using appropriate ICT, more interesting and locally relevant messages, presentations, and packages could be prepared to fit the needs of target audiences in local languages and dialects taking into account local culture.

1. ICT applications for poverty reduction

32. A critical focus of ADB's poverty reduction strategy is on empowering the region's poor.²¹ The strategy aims to foster inclusive social development by promoting pro-poor economic growth, good governance, and social development. Improvements in human and social capital by increasing connectivity and outreach between people and communities that result from carefully targeted ICT development-oriented interventions are important elements of inclusive social development. ICT should be applied for more effective use and timely delivery of required information and data by including well-designed ICT development interventions in ADB projects and programs. Part of this process would mean that poverty partnership agreements between ADB and its DMCs should also promote pro-poor interventions through adequate use of ICT applications where appropriate. Some of these applications, especially designed at the community level—which include creation and management of information systems and services, information sources, and location tools (databases and directories)—could be ICT enabled. ICT can also be used to develop greater social content and clearer poverty reduction focus, improve the bottom-up and horizontal focus of communication, and integrate or combine old and new ICTs to ensure global information flow to the poor.

33. ICT applications for the development of rural and disadvantaged areas can also be initiated by ADB in partnership with the private sector and/or other funding agencies. For example, multipurpose community telecenter (MCT) projects can be established in some disadvantaged or underserved communities. MCTs are important for government and nongovernment organization efforts to bring ICT and access to information into rural areas, given the inability of the poor or many rural people to afford ICT equipment or the supporting infrastructure needed. MCTs have been established in some countries in Latin America, Africa, and Asia²² supported by numerous

²¹ ADB. 1999. *The Poverty Reduction Strategy of the Asian Development Bank*. Manila.

²² Visit the web site <http://www.barangay-mct.org> and <http://www.ehealth.net.ph>.

of agencies, such as the Canadian International Development Agency, International Development Research Center (Canada), UNDP, UNESCO, and ITU, in partnership with NGOs. MCTs can be used to deliver health services through telemedicine (or any of its appropriate variations depending on available infrastructure) or distance learning for local students and out-of-school youth or unemployed rural residents with no employable livelihood skills. They can also provide business services for a fee to small businesses and entrepreneurs to facilitate development of small- and medium-sized enterprises. Properly designed and implemented, with community participation, MCTs can have a great impact on the clustered communities being serviced and the financial sustainability of MCTs can be improved. They can change residents' attitudes to governments, both local and national, through better understanding and efficient delivery of government programs.

2. ICT applications for governance

34. Improving the quality and efficiency of public and private sector governance is crucial to poverty reduction. Good governance is predicated on effective institutional arrangements that promote accountability, participation, predictability, and transparency.²³ Information-openness is critical to this process. ADB should foster appropriately targeted ICT applications that can facilitate stakeholders' participation in policy formulation and ensure transparent use of public funds. Timely and wide access to relevant and reliable information and data is key to good governance. ICT can improve transparency and accountability in government and private sector operations.

35. For example, E-government is the use of ICT to promote more efficient and cost-effective government, facilitate transaction in delivery of government services, allow greater public access to information, and make government more accountable to citizens. It enables the public to give its views and comments on issues affecting their lives, and authorities or agencies concerned to provide replies and prompt government actions. If government forms, such as income tax returns, applications for passports, birth certificates, clearances from police, registration of voters, land certificates, can be made available on-line, public confidence in public administration can be increased; difficult or lack of such access is often the object of public cynicism and the reason for lack of trust in government. Such on-line services will build citizen trust and goodwill toward government. In banking systems, applications for loans, for example, could also be made available via the Internet.

²³ ADB. 1995. *Good Governance: Sound Development Management*. Manila.

36. Simultaneously, E-government initiatives should include programs for fostering ICT-literacy and lifelong learning, such as the ongoing experience in modernizing the governance systems in Andhra Pradesh. The programs will aim to enable every citizen to be adept at using ICT to reap the benefits of an enhanced E-lifestyle. ADB will promote national efforts that focus on areas, such as improving access for all (universal access), changing mind-sets, promoting on-line culture, developing on-line communities, and creating multilingual/multidialect Internet content for countries with multiethnic minorities and plural societies.

37. The benefits of E-government and Internet for the poor who live in isolated and remote areas without access to electricity, telephone, Internet, or ICT facilities could be questioned. Nevertheless, for villages without those basic facilities, appropriate technologies are available, e.g., solar energy for electricity, and satellite linkups for multimedia data access. Clustering villages around strategic Internet/networks access points is a cost-effective way of providing connectivity and access at affordable cost. Community linkages to government-run educational and information sites will be useful for providing access to information on public sector operations, e.g., job opportunities, business expertise, microcredit.

3. ICT applications for other areas

38. ICT applications can contribute to development in many other areas, aside from poverty reduction and governance, such as banking and business transactions, education, and private sector development. Providing greater access to education and learning has been made possible through innovative application of distance and E-learning, interconnected schools, virtual libraries, and laboratories. ICT applications can provide resources for teachers in poor schools and flexible learning schedules for out-of-school youth. ICT can facilitate the creation of databases useful for analyzing and identifying niche markets and investment opportunities where the private sector could benefit and play an important role. It can also assist small entrepreneurs to access financial and logistical support.

C. Promote partnerships

39. Many important ICT initiatives have already been implemented by different agencies at national, regional, and international levels in the Asia and Pacific region. ADB must forge close relationships with existing initiatives and develop strategic alliances and partnerships with them (e.g., ITU, UNDP,

UNESCO, World Bank) to share and disseminate knowledge to enhance coordination efforts for better development assistance. For example in Asia, the recently established E-ASEAN—with its three components, namely economy, society, and government—shares the ICT-related objectives and goals of ADB and can be a strategic partner. ADB can help ASEAN share information with poorer and/or isolated DMCs to assess the adequacy of ICT infrastructure, human resources, and policies; to elaborate an appropriate awareness-building program for all segments of society to promote ICT and its role in development; and to develop appropriate recommendations for promoting E-commerce and E-government. By sharing information, knowledge, and expertise, through regional and subregional cooperation, DMCs should also be able to amplify their domestic development efforts.

40. To support ICT-development and related infrastructure investments, ADB with appropriate lending mechanisms can foster a dynamic climate for entrepreneurs and help DMCs establish principles of effective public-private sector partnerships and networks. This will also facilitate access and exchange of information between government, civil society, NGOs, private sector, and ICT industries to design adequate projects, incorporating, for example, governance aspects required for E-finance and E-commerce.

D. Establish a center for learning, information, communication, and knowledge for Asia and the Pacific

41. In the knowledge economy, a premium has been added to education and intellectual capital, facilitated through ICT. Therefore, improvement in dissemination and use of information and knowledge for development through ICT, especially in Asia and the Pacific, should be one of the priorities for DMCs and ADB. To disperse such knowledge and best practices and facilitate access to existing ICT-based systems and experiments for possible replication in DMCs, a regional center for learning, information, communication, and knowledge for Asia and the Pacific (CLICK) might be established through ADB. The CLICK can be initially housed within ADB to implement a program that widely disseminates and produces value-added information products and services using ADB's reservoir of information and knowledge for development acquired in lending and technical assistance

operations. The CLICK will provide E-advisory services based on ADB's expertise through a specialized web site, and promote the use of ICT-based distance learning (E-learning) and communication systems (networks, teleconferencing), on a cost-sharing basis when possible, to improve DMC institutional and human capacity for timely access, use, and sharing of information on development.

42. Initially, information content for the CLICK will focus on development issues related to Asia and the Pacific and on an Asian perspective of world development and poverty reduction. Information content will primarily be provided and developed by ADB; ADB's comparative advantage consists of knowledge, valuable publications, and documents produced as a result of extensive technical assistance and experience in implementing projects in different development areas, as well as lessons learned in the Asia and Pacific region. ADB has also developed specialized courses, which can be on-line, for its DMCs, e.g., procurement and disbursement procedures, consulting services, and law and development. The CLICK must also establish hyperlinks to local and global ICT-based information services provided to different sectors in the DMCs, e.g., agriculture (market prices, weather forecasts for farmers and fisherfolk), health (telemedicine and health advisory), education (training opportunities, on-line courses), and governance (E-governance).

43. The proposed CLICK will establish and develop network connections, where possible, with existing initiatives (e.g., ASEAN, Global Disaster Information Network, UNDP, and World Bank Global Development Learning Network); and be a demonstration center to showcase facilitation of communication, and methods to increase learning opportunities and knowledge exchange for development practitioners within and outside the region. It will also provide a place where the use, dissemination, and adoption of ICT will be available and on display for visiting officials from DMCs and ADB-sponsored workshops and seminar participants, and will enhance the ICT-related knowledge within ADB.²⁴ CLICK implementation should provide useful experience for replication in DMCs, as well as development of partnerships with existing ICT-related initiatives.

²⁴ Over 1,000 people from DMCs visit ADB headquarters each year for loan negotiations, workshops, and projects.

VI. Implications for ADB

A. E-readiness at ADB

44. ADB's Information System and Technology Strategy (ISTS)²⁵ has four major objectives: to align, improve access to, optimize the use of, and manage ADB's information resources effectively. Under the ISTS action plan, the communications system between ADB headquarters and its resident missions and the DMCs' agencies will be upgraded to ensure ease and affordability of access and use. The ISTS will ensure information security, through ADB's E-management initiatives, specifically its human resource system, loans and technical assistance processing, and the financial management systems (INTEGRA project²⁶). The ISTS will ensure (i) ease of doing E-business with ADB, and (ii) that ADB's financial system can support secure electronic business transactions. As part of the strategy, ADB continues to develop, improve, and maintain its web site to provide more relevant and up-to-date information to its stakeholders.²⁷

B. Staff skills

45. Implementation of the strategic approach for ICT will mainly require upgrading skills of selected specialists in ADB operational units to acquire ICT knowledge to understand how ICT can be useful in facilitating their work and its applications in ADB assistance to DMCs. This proposed strategic approach recognizes ICT as a powerful tool for development and requires a systematic process within ADB to ensure that carefully targeted ICT applications are designed and implemented to support ADB's overarching goal of reducing poverty in the Asia and Pacific region. To that end, given existing resource constraints, core ICT competencies within ADB must be built.

²⁵ R144-98: *Information System and Technology Strategy and Capital Expenditure Requirement*: 1998–2002. September 1998.

²⁶ For more details on the INTEGRA project, visit its web site at <http://integra.asiandeubank.org>.

²⁷ Visit the ADB web site at <http://www.adb.org>.

46. An internal ICT network will be established, such as a multidisciplinary ICT technical working group, and its members will become the focal point in their respective units to improve coordination and support ICT applications. Network members will also assist the project specialists to lead the dialogue with governments and other stakeholders on possible ICT issues affecting projects, and review ICT developments in DMCs to identify new opportunities and niche markets that may need to be developed. These members will provide the initial core competencies that will help jump-start the process of integrating ICT considerations into ADB's operational procedures. This core group will subsequently provide direction and guidance on ICT implementation matters of strategic importance and prepare a review of the strategy after 2 years. This team approach has been successfully tested by the private sector and is in line with the recommendations of the ADB study on the redesign of ADB's operational business processes.

C. Resource requirements

47. The internal changes described will not require any new structure, or any additional administrative layer. It calls for a new work culture and efficient knowledge management, which will require more interaction and consultation among ADB staff at all levels, more exchange of information, and more active participation of subject specialists in maintaining and developing ADB's information systems and resources. The suggested multidisciplinary team approach will open the possibility of fully harnessing the qualifications and skills of current ADB staff in areas where their expertise is required, with their involvement being unhampered by rigid organizational compartmentalization. Only in cases where ADB has no expertise in the specific ICT area will additional staff, consultants, or expertise from cooperating agencies or partners be needed.

48. For the medium and long term, ADB will put more emphasis on ICT skills for staff as many staff are not ICT competent and not in a position to think creatively about possibilities offered by ICT. Operational units will be staffed with at least one specialist on ICT applications. Resources will be required to design and organize specific training courses to improve skills and knowledge of staff in using and applying ICT in their respective work and projects.

Preliminary Survey on Status of Information and Communication Technology Policies, Plans, and Projects in Selected Developing Member Countries^a

Country	National Development Plans and Programs with IT Components	National ICT-Related Development Plans, Policies, and Strategies	ADB-Assisted Programs/Projects with ICT Components	Non-ADB Funded Programs/Projects	Others
Bangladesh	<ul style="list-style-type: none"> • National IT policy being finalized • Other government support <ul style="list-style-type: none"> □ IT has been declared a thrust sector □ Waiver of all taxes and duties on import of computer hardware and software □ Decision to link to global highway through submarine cable link □ IPR passed by Parliament 	<ul style="list-style-type: none"> • Position Paper on Information Technology Sixth Five-Year Plan (result of the consultation) presented to the Government of Bangladesh • Human Resource Development <ul style="list-style-type: none"> □ Increasing computer literacy rate through education; includes computer education in secondary levels; computer education also included in 2-year courses; universities produce computer science graduates □ Training Centers, foreign franchises, local training institutes (government and private), in-house training 	<ul style="list-style-type: none"> • Railway Fiber Optic System Project financed by Norwegian Agency for International Development under a program supported by ADB—completed in 1993, intended to provide communications network for Bangladesh Railway to better control rolling stocks and human resources • Grameenphone Telecommunications Project establishing a nationwide cellular telephone system and a village pay telephone service in rural areas 	<ul style="list-style-type: none"> • State-owned company BTTB is considering proposal submitted by Singapore Telecom (Sing Tel), which also offered to provide infrastructure for transporting voice traffic over the Internet 	<ul style="list-style-type: none"> • Lowered tariffs on long-distance telephony and on the cost of leased lines • Internet connectivity <ul style="list-style-type: none"> □ Started in 1993 □ With two e-mail services using UUCP dial-up connections □ With around 25 ISPs □ Government-owned company BTTB has its own ISP catering to government entities

^a Based on preliminary survey reports submitted by Asian Development Bank (ADB) resident missions, the divisions at ADB headquarters: Education, Health and Population Division East; Water Supply, Urban Development, and Housing Division; Financial Sector and Industry Division; Environment Division; and Private Sector Group, and individual responses from the Office of the Vice-President (West), Agriculture and Social Sectors Department West, Office of Pacific Operations, Office of External Relations, and Office of Information Systems and Technology.

Country	National Development Plans and Programs with IT Components	National ICT-Related Development Plans, Policies, and Strategies	ADB-Assisted Programs/Projects with ICT Components	Non-ADB-Funded Programs/Projects	Others
India	<ul style="list-style-type: none"> • Five-Year Economic Plan (1995-2000)—support for the buildup of ICT resources both in infrastructure and human resources 	<ul style="list-style-type: none"> • Electronic Commerce Act of 1998; Semiconductor IC Design Bill of 1999; Information Technology Act of 2000; IT Policy of the Government of Andhra Pradesh, Hyderabad, India—Government Orders No. 506 (Revenue); No. 67 (Energy); No. 161 (Environment); No. 58 (Finance and Planning for ICT) 	<ul style="list-style-type: none"> • Under consideration are projects in the following areas: procurement database, low-cost/mobile access to Internet, training in Internet use, policy dialogue to stimulate the IT sector, and conference on IT development 	<ul style="list-style-type: none"> • Fifth Telecommunications Project (Loan 3904-IND) to modernize telecommunications networks (World Bank) • Information Infrastructure Development Project (Loan 4222-IND) • Encourages formulation of national plan for IT (World Bank) • Activities include <ul style="list-style-type: none"> □ improve legal and regulatory frameworks □ expand science and technology networks 	<ul style="list-style-type: none"> • E-Commerce <ul style="list-style-type: none"> □ Software companies have started developing E-commerce sites, but most are hosted out of country due to bandwidth limitation.

Country	National Development Plans and Programs with IT Components	National ICT-Related Development Plans, Policies, and Strategies	ADB-Assisted Programs/Projects with ICT Components	Non-ADB-Funded Programs/Projects	Others
India (cont'd)				<ul style="list-style-type: none"> <input type="checkbox"/> expand communication and information networks <input type="checkbox"/> provide technical assistance and training program <input type="checkbox"/> provide project management 	
				<ul style="list-style-type: none"> • Proposed projects related to standards and regulatory practices <ol style="list-style-type: none"> 1. Measurement System of Telecommunication Test House, to help regulate the flow of various telecommunication's equipment; actions include <ul style="list-style-type: none"> <input type="checkbox"/> provide equipment and laboratories for test house <input type="checkbox"/> create design engineering <input type="checkbox"/> conduct education and training for laboratory staff 	

Country	National Development Plans and Programs with IT Components	National ICT-Related Development Plans, Policies, and Strategies	ADB-Assisted Programs/Projects with ICT Components	Non-ADB-Funded Programs/Projects	Others
India (cont'd)				<p>2. Technical Assistance to the Ministry of Communications in the Field of Telecommunication Regulations</p> <ul style="list-style-type: none"> • To strengthen the policy and regulatory and supervisory capability within the Ministry of Communications and Telecommunications; activities include <ul style="list-style-type: none"> <input type="checkbox"/> improve available planning system <input type="checkbox"/> elaborate, implement, and take follow-up actions on standardization practice <input type="checkbox"/> formulate guidelines and procedures for IT <input type="checkbox"/> improve human resources development 	

Country	National Development Plans and Programs with IT Components	National ICT-Related Development Plans, Policies, and Strategies	ADB-Assisted Programs/Projects with ICT Components	Non-ADB-Funded Programs/Projects	Others
Indonesia	<ul style="list-style-type: none"> • PD No. 30/1997 on IT Development <ul style="list-style-type: none"> • Established the coordinating team for IT development in Indonesia; the plan consists of three components <ul style="list-style-type: none"> <input type="checkbox"/> IT infrastructure <input type="checkbox"/> IT application <input type="checkbox"/> IT resources <ul style="list-style-type: none"> ◆ Industrial support ◆ Standardization ◆ Human resources ◆ Laws and regulation ◆ IT culture • PD 50/200 renewed the structure and members of the IT Development Coordinating Team 	<ul style="list-style-type: none"> • IT development was prioritized in five strategic sectors <ul style="list-style-type: none"> <input type="checkbox"/> E-government for good governance <input type="checkbox"/> E-commerce to support sustainable economics <input type="checkbox"/> IT-based community <input type="checkbox"/> IT for education <input type="checkbox"/> E-democracy 	<ul style="list-style-type: none"> • Telecommunications Sector (to provide networks outside Java) <ul style="list-style-type: none"> • First Telecommunications Project (Loan 1157-INO) • Second Telecommunications Project (Loan 1233-INO) 	Non-ADB-Funded Programs/Projects	<ul style="list-style-type: none"> • Three-stage telecommunications sector project to be completed by April 2001; project to be financed by German Bank, KfW, MCTPC • Other sectors with ICT components applied in management information system, database, electronics, data communications, and geographic information system <ul style="list-style-type: none"> • Capacity Building of Water Supply Enterprises for Water Loss Reduction Sector (Loan 1527-INO) • Coral Reef Rehabilitation and Management (Loan 1613-INO) • Social Protection Sector Development Project (Loan 1623-INO)

Appendix

Country	National Development Plans and Programs with IT Components	National ICT-Related Development Plans, Policies, and Strategies	ADB-Assisted Programs/Projects with ICT Components	Non-ADB-Funded Programs/Projects	Others
Indonesia (cont'd)					<ul style="list-style-type: none"> • Health and Nutrition Sector Development Program (Loan 1676-INO) • Family Health and Nutrition Project (Loan 1471-INO) • Biodiversity Conservation in Flores and Siberut (Loan 1187-INO) • Capacity Building for Financial Governance (Loan 1620-INO) • Capacity Building Project in the Water Resources Sector (Loan 1339-INO)

Country	National Development Plans and Programs with IT Components	National ICT-Related Development Plans, Policies, and Strategies	ADB-Assisted Programs/Projects with ICT Components	Non-ADB-Funded Programs/Projects	Others
Lao People's Democratic Republic	<ul style="list-style-type: none"> Five-Year New Economic Mechanism for 1995–2000 and 2001–2005 	<ul style="list-style-type: none"> Draft regulatory framework ICT due for legislation in 2001 	<ul style="list-style-type: none"> TA for capacity building for training instructors on how to develop IT training programs 		
Nepal	<ul style="list-style-type: none"> 9th Five-Year Plan (1997–2002)—stresses that ICT will play a highly contributory role in Nepal's economic development 	<ul style="list-style-type: none"> IT policy 2000; draft of proposed cyber law; proposed spectrum policy 	<ul style="list-style-type: none"> TA 2954-NEP: Strengthening the Project Performance Management System; TA 3117-NEP: Formulating an Action Plan on Civil Service Reform 		<ul style="list-style-type: none"> Proposed TA for 2001: IT for improved financial service provision; corporate and financial governance

Country	National Dev't Plans and Programs with IT Components	National ICT-related Dev't Plans, Policies, and Strategies	ADB-Assisted Programs/Projects with ICT Components	Non-ADB Funded Programs/Projects	Others
Pakistan	<ul style="list-style-type: none"> Economic Revival Plan of 1999, explicit support for the development of IT and software industry in the country 	<ul style="list-style-type: none"> Draft policy on IT (to be finalized 2001) 	<ul style="list-style-type: none"> TA 1543-PAK: Development of Mathematics and Computer Education Programs for Grades 9–10; TA 1576-PAK: Improvement and Modernization of Securities Infrastructure; TA 1577-PAK: Development of Centralized Clearing and Settlement Systems; Loan 1681-PAK: Modernization of Customs Administration; TA 1682-PAK: Establishment of a National Accreditation System; Loan 1683-PAK: Institutional Strengthening of the Board of Investment 		

Country	National Development Plans and Programs with IT Components	National ICT-Related Development Plans, Policies, and Strategies	ADB-Assisted Programs/Projects with ICT Components	Non-ADB-Funded Programs/Projects	Others
Philippines	<ul style="list-style-type: none"> • Legislative Frameworks <ul style="list-style-type: none"> • Republic Act 8972 (E-Commerce Law) <ul style="list-style-type: none"> □ Facilitates use of digital communication within and among nations □ Promotes and validates transactions of ICT □ Promotes uniformity of laws on electronic documents • Executive Order No. 468 <ul style="list-style-type: none"> □ Created the Philippines Internet Commerce Council □ Catalyst to revolutionize trade in both goods and services over electronic networks 	<ul style="list-style-type: none"> • Department of Science and Technology in ICT <ul style="list-style-type: none"> □ Creation and strengthening of the NITC □ Adoption of the GISP □ Partnership and participation of the NITC in the Global Knowledge Plan □ Establishment of the VCTI-IT to promote technological change in key industry sectors by pooling resources and efforts of the private sector, government, and the academe 	<ul style="list-style-type: none"> • TA provided to the Department of Agriculture for a project on Development of Infrastructure for Rural Productivity Enhancement Sector, with GIS/MIS component using ESRI Arc View software package. • TA for strengthening MIS of PDIC and Insurance Commission • TA for LAN and MIS for SEC 		

Country	National Development Plans and Programs with IT Components	National ICT-Related Development Plans, Policies, and Strategies	ADB-Assisted Programs/Projects with ICT Components	Non-ADB-Funded Programs/Projects	Others
	<ul style="list-style-type: none"> <input type="checkbox"/> Enhances government and private sector partnership <input type="checkbox"/> Acknowledges the potential for transacting business over the Internet of global Internet infrastructure <input type="checkbox"/> GISP <input type="checkbox"/> Mission-critical frontline services information systems <input type="checkbox"/> Oversight and common application systems <input type="checkbox"/> Sectoral information system <input type="checkbox"/> Local government information systems • Republic Act 7925 (Public Telecommunications Act): <ul style="list-style-type: none"> <input type="checkbox"/> Interexchange carrier <input type="checkbox"/> Value-added service provider • Senate Bill 2025 (Anti-Hacking Bill) 	<ul style="list-style-type: none"> <input type="checkbox"/> Training and certification programs <input type="checkbox"/> Creation of ICT learning hubs in 15 regions <input type="checkbox"/> Creation of the Advance Science and Technology Corporation • IT21 Philippines—National IT plan for the 21st century focusing on the following <ul style="list-style-type: none"> <input type="checkbox"/> Telecommunications <input type="checkbox"/> Industry <input type="checkbox"/> Government <input type="checkbox"/> Education <input type="checkbox"/> Research and development <input type="checkbox"/> Support Structures 			

Country	National Development Plans and Programs with IT Components	National ICT-related Development Plans, Policies, and Strategies	ADB-Assisted Programs/Projects with ICT Components	Non-ADB-Funded Programs/Projects	Others
Singapore	<ul style="list-style-type: none"> 10-Year Economic Development Plan (1990–2000) explicit support for ICT to achieve better national quality and efficiency 	<ul style="list-style-type: none"> Infocomm 21; IDA Act of 1999; Telecommunications Act of 1999; Electronic Transactions Act 			
Thailand	<ul style="list-style-type: none"> NECTEC transformation; new Strategic Master Plan on Electronic, Computer, Telecommunication, and Information Technologies (ECTI-21) for 2000–2009 	<ul style="list-style-type: none"> Ministry of Public Health's Hospital Management System GINet—E-government Software park SchoolNet expansion program SchoolNet content creation and promotion campaign E-commerce initiatives IT project of HRH Princess Maha Chakri Sirindon IT laws Internet policy development Government program to improve IT 	<ul style="list-style-type: none"> TA for web site development for office of the auditor general of Thailand to improve postevaluation capability by providing public access to audit reports Loan for computer learning centers in 800 schools (proposed) TA on skills development to plan training programs for technicians in IT in collaboration with the private sector 		<ul style="list-style-type: none"> Promoting foreign investment; BOI incentives: <ul style="list-style-type: none"> Corporate income tax exemption for 8 years, regardless of zone Exemption from import duty on machinery, regardless of zone

Country	National Development Plans and Programs with IT Components	National ICT-Related Development Plans, Policies, and Strategies	ADB-Assisted Programs/Projects with ICT Components	Non-ADB Funded Programs/Projects	Others
		<p>skills of government information officers and executive officers</p> <ul style="list-style-type: none"> • Telecom research—from WLL to WAP • Low-cost PC • Microelectronics • Solar cell development project • Thailand Integrated Water Resource Management Network • Cluster computing and networked GIS clearinghouse 			
Viet Nam	<ul style="list-style-type: none"> • Proposed 10-Year Socioeconomic Development Strategy; 5-Year Plan 	<ul style="list-style-type: none"> • Resolution No. 49/1993/CP on IT Development in Viet Nam; Resolution No. 07/2000/NQ-CP on establishing and developing the software industry for 2000–2005 • Decree 21/CP Provisional Regulations on management, establishment, and 			

Country	National Development Plans and Programs with IT Components	National ICT-Related Development Plans, Policies, and Strategies	ADB-Assisted Programs/Projects with ICT Components	Non-ADB Funded Programs/Projects	Others
		<ul style="list-style-type: none"> use of Internet in Viet Nam Decision No. 136 of the PM establishing the National Internet Coordination Commission, cochaired by MOSTE and MSP 			

ADB=Asian Development Bank; BOl=Board of Investments; BTTB=Bangladesh Telegraph and Telecom Board; GIS=geographic information system; GISP= Government Information System Plan; ICT= information and communication technology; IDA= International Development Association; IND= India; INO= Indonesia; ISP=Internet service provider; IT= information technology; KfW= Kreditanstalt für Wiederaufbau; LAN= local area network; MIS=management information system; MOSTE= Ministry of Science, Technology, and Environment; NEP= Nepal; NITC= National Information Technology Council; PAK= Pakistan; PC= personal computer; PDIC= presidential decree; PDIC= Philippine Deposit and Insurance Corporation; SEC= Securities and Exchange Commission; TA= technical assistance; VCTI= Virtual Center for Technology Innovation-Information Technology