

Chapter 1 Overview of Information and Communication Technology

1-1 Current State of IT and its Importance

The rapid development and spread of information and communication technology in the 1990s contributed to advancing industries and improving economic productivity of the countries and regions that embraced it. As computers became connected across national borders through networks such as the Internet, economic activity became globalized, costs dropped, and the time required for distribution of information was shortened (e.g. promotion of the IT industry, digitization of industries, supply chain management, e-commerce, and international division of work).

Information and communication technology is an important tool that can improve each of the economic, administrative, and social sectors. The task at hand is to create an environment in which anyone anywhere can utilize IT at an affordable cost.

Information and communication technology is also contributing to improved public service and efficiency through the digitization of office work, creation of own websites by ministries and agencies, and the availability of applications and notifications online as IT is introduced into governments and the public sector. IT is also contributing to improving people's lives as it is also increasingly being introduced into social sectors, such as through the diffusion of e-learning (distance education and learning) in the education sector. From the perspective of Women in Development (WID), many women are employed to perform work on a computer and IT is thus also contributing to promoting employment for women. In these ways, **information and communication technology is a very important tool that can be used to achieve improvement in each of the economic, administrative, and social sectors.**

Information and communication technology is said to bring about major historical changes in society that surpass those of the industrial revolution that started in England in the 18th century. The "e-Japan 2002 Priority Policy Program" states that just as the industrial revolution transformed the world from an agricultural society to an industrial society, the use of information and communication technology will dramatically reduce the time and cost of information distribution, will facilitate the exchange of highly dense information, and will bring about rapid and significant changes in socio-economic structures on a global scale. As a result, the world will move from an industrial society to an "Advanced Information and Telecommunications Network Society," in other words, we are rapidly moving into a society in which information and knowledge generate added value.

In January 2003, at the Asia-Pacific Regional Conference for the World Summit on the Information Society (WSIS), the concept of an information

society was defined as something which would accelerate and improve regional economy, social, cultural, and technical development. It was emphasized that IT should be fully utilized at every level of society and that all people should share the benefits of using information networks while continuing to value diversity and cultural heritage.

Meanwhile, **people (or countries and regions), mainly those in developing countries, do not have enough opportunities to use or acquire IT and therefore are not able to reap the benefits offered by these technologies. Thus the gap between these and people (or countries and regions) who have access to use and acquire IT, what is called “digital divide,” has become an important issue.** The digital divide generates an economic divide, and, if the divide becomes too wide by leaving it alone, it may lead to social unrest.

Among various types of information and communication technologies progress and spread of Internet have especially significant impacts. According to NUA¹, approximately 600 million people were using the Internet as of September 2002, with 370 million or 62% of those in just the United States, Canada, and Europe and with 160 million or 26% in Japan, China, Korea, Taiwan, Hong Kong, Australia, Singapore, and New Zealand. The remainder comprising mainly developing countries in the rest of Asia-Pacific, Africa, the Middle East, and Latin America is only 74 million or only 12% of the total. The number of users in developing countries is on the rise, but the gap between those countries and industrialized nations remains great.

Information and communication technology should be viewed as an important means for achieving economic growth and for improving the public and social sectors. **The task at hand, therefore, is to create an environment in which anyone anywhere can use information and communication technology as needed at an affordable cost.**

1-2 Definition

The World Bank and other international organizations generally abbreviate “Information and Communication Technology” as “ICT,” but since the abbreviation “IT” is commonly used in Japan, this report will use “IT.”

IT includes both information technology and communication technology. It is technology for input, storage, processing, transmission, and output (display and printing) of information and is divided into hardware (such as computers and peripheral devices) and software (such as information processing systems).

The digitization of information such as text, voice, and images has reduced errors during transmission and enabled transmission at higher speeds.

IT includes both information technology and communication technology.

¹ NUA, “NUA Internet Surveys” (http://www.nua.ie/surveys/how_many_online/)

The development of the World Wide Web (WWW) system that serves as a basis for web pages has made it possible to obtain all of these types of information at the same time as they exist on the Internet.

With respect to broadcasting and postal mail services, these are issues that the World Bank includes in their definition of information and communication technology and that Japan's Ministry of Public Management, Home Affairs, Posts and Telecommunications (MPHPT) of Japan also mentions in its White Paper on Information and Communications in Japan. However, at JICA, broadcasting and postal mail services are considered to be essential underpinnings of society and are treated as separate development issues. They are therefore not included in this report.

In this report **cooperation in the field of IT refers to projects that have measures to promote the use of IT or measures to learn IT as a goal and projects that include such measures as part of their output/outcome or as a part of their activities, whether they are included as goals or not.** In terms of how to define what "part of" actually means, this can be determined while looking at the goals of a project when it comes time to create statistics or examples, and the conditions for selecting a project or not should be clarified on a case-by-case basis.

1-3 International Trends

1-3-1 Kyushu-Okinawa Summit

At the July 2000 Kyushu-Okinawa Summit, "The Okinawa Charter on Global Information Society" was adopted. At the same time, a working group called the Digital Opportunity Taskforce ("DOT Force") was established for making the best use of opportunities provided by IT (digital opportunity) and eliminating the digital divide. DOT Force membership includes stakeholders from the G8 governments as well as the governments of nine countries outside of the G8, companies, business organizations, NPOs, and international organizations, including the United Nations Development Programme (UNDP), the World Bank, the Economic and Social Council of the United Nations (ECOSOC), the International Telecommunication Union (ITU), the United Nations Educational, Scientific and Cultural Organization (UNESCO), the United Nations Conference on Trade and Development (UNCTAD), and the Organisation for Economic Co-operation and Development (OECD).

1-3-2 UN Millennium Summit

At the UN Millennium Summit that was convened in New York in September 2002, the Millennium Declaration was adopted and the Millennium Development Goals (MDGs) were summarized as common objectives.

The MDGs raised eight goals and 18 targets for achievement by the year 2015. With respect to the field of IT, one of the goals is to “Develop a global partnership for development” and a target under it is “In cooperation with the private sector, make available the benefits of new technologies – especially information and communications technologies.”

1-3-3 Genoa Plan of Action

In July 2001, the Genoa Plan of Action was presented by the DOT Force at the Genoa Summit. At the same time Implementation Teams were organized for each action point in the plan, and in June of 2002 a report on the state of implementation of the Genoa Plan of Action was presented at the Kananaskis Summit. The following are the action points on the Genoa Action Plan:

- 1) Support development of national e-strategies
- 2) Improve connectivity, increase access, and lower costs
- 3) Enhance human capacity development, knowledge creation and sharing
- 4) Foster enterprise, jobs and entrepreneurship
- 5) Strengthen universal participation in global ICT governance
- 6) Establish a dedicated LDC initiatives for ICT-inclusion
- 7) ICT for healthcare and support against disease
- 8) Support local content and application creation
- 9) Prioritize the contribution of ICTs in development assistance programs

These main action points are included in the development objectives raised in this report.

Box 1-1 Differences in Donors’ Perspectives on IT

As interest in and expectations toward IT are growing through summits and other meetings, differences in the views and perspectives of various donors toward IT are emerging. The main differences are as follows:

Organization	World Bank, IMF, World Development Forum, private sector in general	UNDP, ECOSOC, FAO, most NGOs
Views on globalization	Sees globalization primarily in economic terms as beneficial. Same applies to ITs.	Sees globalization as a complex economic, political, and social phenomenon. Emphasizes the different impact of globalization. There are winners and losers, not just winners. Same applies to ITs.
Focus for IT	Digital Opportunity	Digital Divide
	Emphasis on “opportunities” provided by utilization of IT. Access is increasing rapidly, the divide is narrowing.	Emphasis on “divide,” gaps in access and capacity due to lopsided diffusion of IT and its cause in delays. The divide will continue to increase unless pro-poor IT strategies are developed and implemented.
Important points for assistance	Emphasis on the adoption of appropriate policies in developing countries enabling them to take advantage of opportunities. Actual activities carried out by private sector.	Emphasis on the responsibility of a broad range of “partners” (donors and others) in ensuring that poorer countries and regions are not left behind.
IT that is emphasized	Emphasizes new ITs, and in particular the Internet.	Broader definition of ITs including old ITs such as radio and television.

Source: Barbara Fillip (2001) *Digital Divide*, JICA-USA

1-3-4 World Summit on the Information Society (WSIS)

The Asian Regional Conference for the World Summit on the Information Society (WSIS) was held in January of 2003 and it adopted the “WSIS Tokyo Declaration” that has as its goal the development of an “Information Society” reflecting the diverse languages and cultures of Asia. “WSIS Tokyo Declaration” was presented as the view of the Asian region at the WSIS in Geneva (Phase 1) in December 2003. Phase 2 is planned to be held in Tunis in 2005.

1-3-5 Major Donors' Activities

The assistance policies and major examples of cooperation from major donors in the field of IT are as listed in Table 1-1.

Table 1-1 Major Donors' Activities in IT

Assistance Organization	Characteristics of Assistance Policy	Major Activities
World Bank	Administration, education, health care, environment, welfare	InfoDev, WorLD, ICT for Education program, African Virtual University (AVU), GDLN, GDN, SBEM, Development Gateway
United Nations Development Programme (UNDP)	Building human capacity at the national level Efforts mainly on regional diffusion of the Internet	Info21, Internet Initiative for Africa (IIA), Asia-Pacific Development Information Programme, SDNP
Asian Development Bank (ADB)	Development of rural communication infrastructure	Village Phone (Bangladesh), Rural Telecommunications Project (India), Telecommunications Project (China)
International Telecommunication Union (ITU)	Diffusion of telecommunications technology, broadcasting technology	Assistance to e-commerce, telecommunications in health care, virtual training centers
U.S. Agency for International Development (USAID)	Revitalization of private sector investment, promotion of fair competition, flexible regulatory environment, assistance with democratization	IED Initiative, AfricaLink, Gemini Application Server, Leland Initiative (Africa), DOT-COM Alliance, South Africa Regional Telecommunications Restructuring
Canadian International Development Agency (CIDA)	ICT in regions without telephones, implementation by private sector	ICTs as sector in itself (IT sector reform, development of infrastructure), using ICTs as tools (education, healthcare, administration), using ICTs to promote knowledge sharing and networking (InfoDev, Bellanet)
International Development Research Centre – Canada (IDRC)	Closing of digital divide	ACACIA (Sub-saharan Africa), Pan Americas (Latin America), Pan Asia (Asia), Bellanet
Swedish International Development Cooperation Agency (Sida)	Use of IT in all programs Consideration to bringing benefit to the poor	IT assistance to universities and research institutions, InfoDev, Bellanet

Source: World Bank “Operational Strategy” (<http://www.worldbank.org/html/fpd/telecom/operationalstrategy.html>)
 UNDP “INFO 21: ICT for Development” (<http://www.undp.org/info21/>)
 ITU-D (<http://www.itu.int/ITU-D/>)
 USAID “Information Technology” (http://www.usaid.gov/our_work/economic_growth_and_trade/info_technology/)
 CIDA “CIDA’s Strategy on Knowledge for Development through ICT” (<http://www.acdi-cida.gc.ca/ict>)
 IDRC “Program Directions: 2000-2005” (http://www.idrc.ca/cpf/33_information.html)
 Sida “ICT in Developing Countries” (<http://www.sida.se/>)

1-4 Trends in Japan's Assistance

There is a great deal of expectation placed on information and communication technology in terms of its bringing about economic development, expansion of employment, and improvement in people's lives. However, the international digital divide in the field of information and communication is widening, as is clearly observed in facts such as that in developing countries there are approximately 30 countries in which the telephone density is less than 1 for every 100 people. Therefore, the importance of developing information and communication networks on a global scale that include developing countries is growing.

1-4-1 Comprehensive Cooperation Package

In July of 2000, the Japanese government announced its "Comprehensive Cooperation Package to Address the International Digital Divide" prior to the Kyushu-Okinawa Summit.

IT development is led by the private sector, with the role of the public sector complimenting the private sector initiative by focusing on policy, human resources development and other areas. Based on this fundamental position, in an effort to eliminate the international digital divide, the Japanese government announced the preparation of a Comprehensive Cooperation Package through public funds (ODA and non-ODA), in the amount of approximately US\$15 billion, as the target for the five year period starting in 2000.

The Comprehensive Package puts importance on the following four fields:

- 1) Raising awareness and contributing intellectually to policy and institution-building
- 2) Developing and training human resources
- 3) Building IT infrastructure and providing assistance for network establishment
- 4) Promoting the use of IT in development assistance

1-4-2 Contribution to the Digital Divide Elimination

The importance of eliminating the international digital divide has been clearly indicated in the "Comprehensive Cooperation Package to Address the International Digital Divide" that was mentioned in 1-4-1, the "Okinawa Charter on Global Information Society (IT Charter)" adopted at the Kyushu-Okinawa Summit in July 2000, and in the "Tokyo Declaration" of the APT (Asia-Pacific Telecommunity) Asia-Pacific Summit on the Information Society held in November of the same year. The IT Basic Law that was formulated in 2000 based on the above efforts and the "e-Japan Strategy," the "e-Japan Priority Policy Program," and the "e-Japan 2002 Program," all formulated in 2001, also

advocate technical cooperation for developing regions as well as the promotion of international harmonization and contribution. In these ways, Japan is continuing in its efforts to eliminate the international digital divide.

In June of 2002, the “e-Japan Priority Policy Program 2002” was announced following a review of the “e-Japan Priority Policy Program” and indicates IT strategies to enhance efforts in “promoting international harmonization and contribution” as a cross-cutting issue of the priority areas.

Table 1-2 below provides an outline of Japan’s IT strategy on the issue of the international digital divide.

Table 1-2 Japan’s IT Strategy on the International Digital Divide

Date	Details
November 2000	<u>Basic Law for Formation of an Advanced Information and Telecommunications Network Society (IT Basic Law)</u> Formulated to expeditiously and intensively promote measures for forming an advanced information and telecommunications network society. Provisions such as proactively carrying out technical and other international cooperation to developing regions are stipulated in Article 24.
January 2001	<u>e-Japan Strategy</u> The “e-Japan Strategy” was formulated by the Strategic Headquarters for the Promotion of an Advanced Information and Telecommunications Network Society (IT Strategy Headquarters) established within the Japanese Cabinet with the goal for “Japan to become the world’s most advanced IT nation in the next five years.”
March 2001	<u>e-Japan Priority Policy Program</u> The “e-Japan Priority Policy Program” gives shape to the “e-Japan Strategy” and was made to clarify all of the measures the Japanese government should take under that strategy. It places elimination of the international digital divide as an issue for the entire Japanese government and advocates the promotion of international harmonization and contribution.
June 2001	<u>e-Japan 2002 Program</u> The “e-Japan 2002 Program” was formulated as an annual program to enable each ministry to reflect the “e-Japan Strategy” and the “e-Japan Priority Policy Program” in each FY2002 policy. It states that cooperation to developing countries in Asia and elsewhere should be carried out proactively to promote international harmonization and contribution and that efforts should be made to close the international digital divide.
June 2002	<u>e-Japan Priority Policy Program 2002</u> The “e-Japan Priority Policy Program 2002” was formulated based on a revision of the “e-Japan Priority Policy Program” that included an evaluation of Japan’s achievements and international comparative rankings. It states the importance of Japan working toward making the Asian region the world’s information “hub” so that Japan and other Asian countries can enjoy the benefits of a rich IT society and can establish new technological and socioeconomic axes around which further development will revolve. It also outlines the measures for such efforts.

1-4-3 Government Ministries’ Activities

Based on the above-mentioned Comprehensive Cooperation Package, the entire Japanese government, with the Ministry of Foreign Affairs playing a central role, and in cooperation with JICA, the Japan Bank for International Cooperation (JBIC), and other organizations, has proactively been contributing to the sustainable development in the field of IT in developing countries by utilizing public funds (ODA and non-ODA).

Each relevant government ministry has also continued efforts toward measures on closing the digital divide. (See Table 1-3)

Table1-3 Major International Measures of the e-Japan Priority Policy Program 2002

Sector	Major International Measures
Formation of the world's most advanced information and telecom networks	Realization of a balanced global IT society through the development of an international Internet network <ul style="list-style-type: none"> • Asia Broadband Program (MPHPT and relevant government agencies) • Research on promoting the use of advanced IT in Asia (MPHPT) • Making Okinawa an international information and telecommunications hub (Cabinet Office, MPHPT, and METI) • Building a network to support policies and systems (MPHPT, MOFA)
Promotion of education and learning and development of human resources	Fostering and utilization of IT specialists and development of vocational skills in the IT sector <ul style="list-style-type: none"> • Standardization of certification system (METI) • Promotion of e-Learning in Asia (METI)
Promotion of e-commerce	Development of an international e-commerce environment (including METI)

Source: Barbara Phillip (2001) *Digital Divide*, JICA-USA

The Ministry of Public Management, Home Affairs, Posts and Telecommunications (MPHPT) in particular, has greatly shifted the focus of its technical cooperation toward elimination of the digital divide, and is carrying out assistance to human resources development, joint research, and broadcast program cooperation. In December 2002, the recommendations at the International Conference for Asia Broadband Strategy convened by the Minister of MPHPT included changes with respect to ODA in the IT sector such as a shift from request-based aid approach to more proactive project formulation, which indicates the prospect of future activities by MPHPT.