Promoting ICTs for Development

- Japan's Cooperation -

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1. The Global Trend in the Utilization of ICTs for Development Assistance.

1-1. Beyond the Digital Divide

Since the Information and Communication Technologies (ICTs) revolution at the end of the twentieth century, ICTs have been expected to play an important role in improving the quality of citizens' lives, by facilitating the promotion of economic, social, and human development.

During the "Asian Regional Conference for the World Summit on the Information Society" (WSIS) held in January 2003, it was emphasized that development in regional economy, society, culture, and technology is accelerated and improved in an information society, and that ICTs should be fully utilized at every level of society, to allow all human beings to share the benefit gained from the utilization of information networks, while at the same time nurturing diversification and placing importance on cultural heritage.

Developing countries will most likely receive significant benefit from the introduction and utilization of ICTs, which facilitate growth through effective utilization of potential resources. In reality however, there are various cost, technology, and human resources barriers which developing countries face when introducing and utilizing ICTs. As a result, a gap, referred to as the "digital divide" arises between those countries that can utilize ICTs and those that cannot. Bridging the global digital divide requires an urgent collaborative response from the international community.

The international community is working together on the implementation and utilization of ICTs in developing countries with the view that prevalent use of ICTs will potentially provide "digital opportunity".

1-2. The Trend in Japan's Development Assistance.

In July 2000, the Japanese Government announced "Japan's Comprehensive Cooperation Package to Address the International Digital Divide," prior to the Kyushu-Okinawa Summit. The announcement maintained as a fundamental principle that private sector leads the development of ICTs, while the public sector plays a supporting role to the private sector's proactive efforts through policy measures and capacity building. Based on this principle, the Japanese government announced a comprehensive cooperation package for bridging the international digital divide, which consists of ODA and other official funding, with the view to extending a total of US$ 15 billion over the five years from 2000. The four pillars in this comprehensive cooperation package are as follows:

a) Raising awareness of ICTs opportunities and contributing intellectually to policy and institution-building;
b) Developing and training human resources;
c) Building ICTs infrastructure and providing assistance for network establishment; and
d) Promoting the use of ICTs in development assistance.

The "Okinawa Charter on Global Information Society (IT Charter)," adopted by G8 countries at the Kyushu-Okinawa Summit in July 2000, stressed the importance of solving the global digital divide. It was followed by a series of Japanese Government initiatives, which aim to address the global digital divide. These include the "Basic IT Law" in 2000, "e-Japan strategy" and "e-Japan Priority Policy Plan" formulated in 2001, and the "e-Japan 2002 program." These initiatives highlighted cooperation in the area of technology in developing countries, as well as facilitation of international cooperation and contribution. Furthermore, "e-Japan Strategy II" and "e-Japan Priority Policy Program-2003" formulated in 2003 clearly state that ICTs will be the axis in the establishment of new international relations.

1-3. The Trend in ICTs Capacity Building and Utilization of ICTs in Other Fields.

International assistance in the ICTs field has so far focused mainly on developing and strengthening information and communication infrastructure in developing countries. In addition to these efforts, the need for capacity building, necessary to effectively utilize ICTs infrastructure and to develop software and content that can extend the potentiality of ICTs, has been attracting further attention.

Japan places importance on these points, and is providing effective and efficient international assistance through the utilization of ICTs.

2. JICA's Cooperation in the ICTs Field.

2-1. Strategic Goals in Development Projects to Facilitate the Utilization of ICTs.

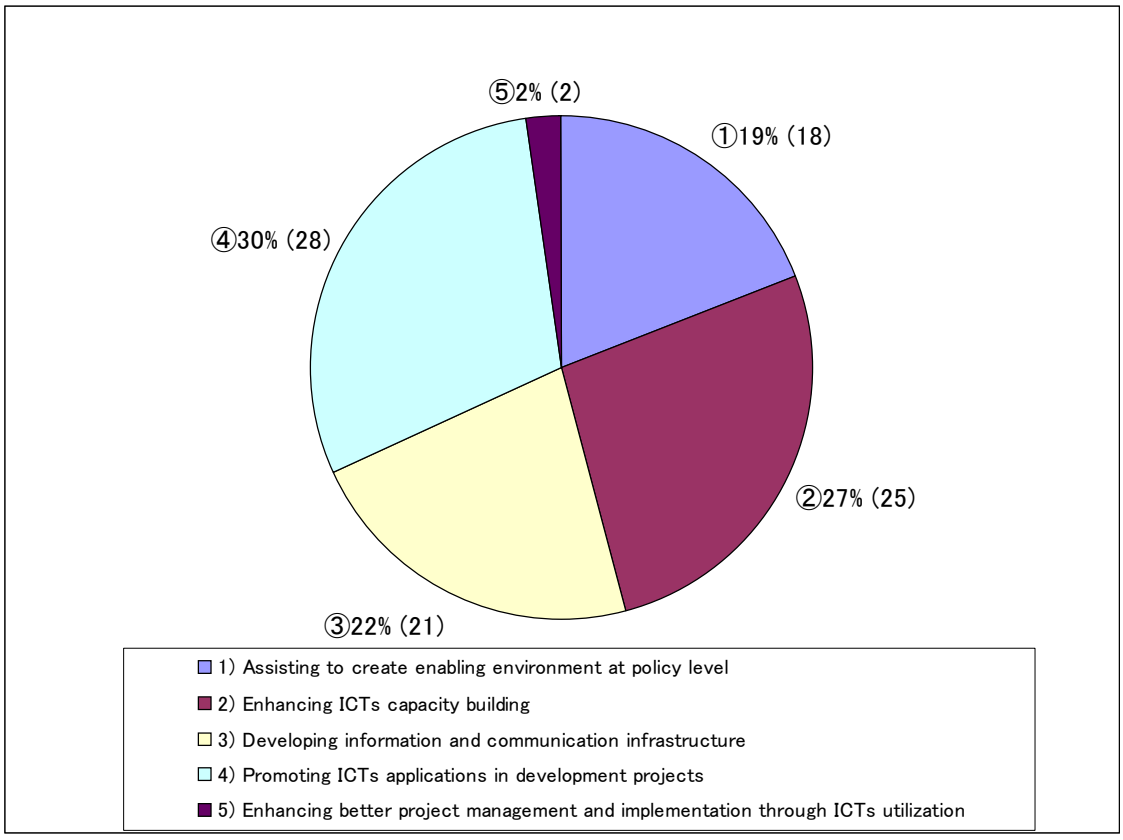
The Japanese government has actively extended international cooperation in the ICT field. Japan International Cooperation Agency (JICA), the main implementing agency of Japan's ODA, has progressed technical cooperation in the ICTs field under the following five strategies formulated on the four pillars in the Comprehensive Cooperation Policy described above.

1) Assisting to create enabling environment at policy level;
2) Enhancing ICTs capacity building;

3) Developing information and communication infrastructure;
4) Promoting ICTs applications in development projects; and
5) Enhancing better project management and implementation through ICTs utilization.

The actual ICTs themselves are the main focus in goals 1) through 3) and directly contribute towards bridging the digital divide and to the provision of "digital opportunity", whereas goals 4) through 5) involve the utilization of ICTs in various areas. JICA has so far implemented a total of 94 ICTs related assistance projects. Such projects involve the dispatch of policy advisor experts for mid-term and long term periods, assistance in the capacity of building of training institutions and improvement of training system, support for infrastructure development, and application of ICTs in various fields in development projects. JICA also utilizes JICA-net (a distance technical cooperation system) to support conventional projects.

Figure 1. JICA's ICTs related assistance projects.



2-2. JICA's Track Record – ICTs Related Capacity Building and the Application of ICTs in Development Projects.

JICA provides assistance worldwide for various capacity building projects designed for policymakers, ICTs professionals from entry-level to advanced, researchers and instructors in colleges and research institutes, as well as for the establishment and enhancement of organizations that develop such capacity. In addition, JICA has promoted the utilization of ICTs in its cooperation projects, in such areas as poverty reduction, medical care, education, and the environment, with the aim of enhancing the efficiency and effectiveness of these projects.

JICA has a proven track record in the field of assistance to enhance ICTs capacity building and to improve the efficiency and effectiveness of development projects through the utilization of ICTs. Examples of these projects are described as follows:

2-3. The Development of ICTs Capacity Building.

ICTs capacity building is JICA's major ICTs focus area, and is also the area in which developing countries' need is significant. A total of 25 projects have been implemented in this area to date.

In these projects, JICA has focused on establishing and strengthening the mechanism for ICTs capacity building in developing countries so that each country can develop ICT key persons and progress their own ongoing development of IT resources. To achieve this objective, JICA provides training for leaders including policymakers, ICTs engineers, researchers, and instructors in Japan as well as in developing countries. In addition, JICA assists in development of ICTs training centres in developing countries by establishing training systems as well as improving training curriculums and training methods. To do so, JICA dispatches Japanese experts and provides training equipment.

JICA intends to assist countries in improving their citizens' level of ICTs literacy and raising the level of ICTs professionals so that coherent policies can be established. JICA also intends to further promote its successful achievements by disseminating information on success stories to be used as case models.

JICA has implemented a number of capacity-building projects in line with the recipient country's needs level and the current technology. Development projects for ICTs professionals, which bring immediate benefit to industries, have been in high demand. Hence, JICA has offered a variety of projects in this category since the 1980's in cooperation with government affiliated research institutions, training organizations, and universities in developing countries. For example, in the "Vietnam Information Technology Training (VITT)" project, to respond the industry's needs in

information technology, JICA contributed to the design of training curriculums, assisted in the management of courses and institutes, and provided training and facilities. This project was carried out together with the Vietnam National University from 1997 to 2002, during which time a total of 96 courses in seven categories related to information technology were developed、the number of trainees grew and exceeded 3,000. The trainees also received certification upon completion of the course. In addition, JICA offered many special seminars and training courses for corporations in response to specific needs raised by industries. A variety of organizations including governments, universities, public, and private enterprises participated in the program, which has contributed to the development of ICTs professional experts in Vietnam.

** Photograph from the "Vietnam Information and Communication Technology Training" project in Vietnam*

Japanese experts give a lecture on Internet/Intranet.

The trainees received certificates in the Web-base Client/Server System Training Course.

JICA has introduced a pioneering approach to capacity building in its projects. E-Learning was implemented on a trial basis long before it recently began attracting worldwide attention. E-learning is recognized as a useful training method to enhance training opportunities by reusing training content, improve the quality of the training through the utilization of ICTs tools, and reduce training cost.

During the "Philippines Software Development Institute（PSDI）" project which ran from 1995 to 2000, wireless LAN technology was used in lectures on a trail basis from 1997 to 1998. Through this project, JICA contributed to the development of four courses, trained experts, and provided facilities in cooperation with the National Computer Center (NCC). NCC was then able to develop a further 5 courses based on these experiences.

In addition, e-Learning was introduced and utilized in projects such as the "Informatics Training Center Project" carried out in the Republic of Argentina from 1991 to 1996, and the "Information

Technology Upgrading Project" carried out in the Hashemite Kingdom of Jordan from 1999 to 2002.

Through these projects, the training centers and institutions were strengthened in the capacity of instruction, management, and facilities to enable further dissemination of knowledge and skills in this field.

** Photograph from the "Information Technology Upgrading Project" in Jordan.*

Japanese expert giving a lecture on LAN and WAN.

In addition to training programs for working level ICTs professionals, JICA implements more sophisticated and specific projects to assist in the planning of ICTs and electronic engineering curriculums for higher education. An example of these is the "Polish – Japanese Institute of Information and Communication Technology" project carried out in the Republic of Poland. The aim of the project was to respond to the needs to bring up leading engineers who contribute to development of ICTs technology. JICA provided comprehensive assistance to the Polish-Japan Institute0 of Information. JICA assisted in designing, managing and implementing various ICT courses.

Similarly in the "King Mongkut's Institute of Technology Ladkrabang (KMITL)" project which was carried out in the kingdom of Thailand, JICA provided assistance in fourteen advanced ICT fields with the university, to improve the university's curriculum and raise it's academic research capacity to international levels. Through this project, the university's international research level was successfully raised, and partnerships between Thai and Japanese universities were established and have continued even after completion of the projects.

JICA has also accepted many trainees for ICTs' technical training courses in Japan. For example, the Okinawa International Centre (OIC), one of JICA's eleven training centers in Japan, provides

many ICTs related training courses. In 2002, the OIC accepted over 180 trainees in 16 ICTs training courses. Since the OIC began offering ICTs' related training courses, the number of the trainees has reached nearly 3,000.

From the lessons learned through JICA's experiences in ICTs capacity building, it has been recognized that ICTs capacity building projects require a flexible approach to implementation due to rapid and frequent technological changes and innovation. Based on these lessons learned, JICA use not only long-term experts but also experts on a short-term basis to introduce new technologies and methods based on needs arising out of technological changes in technical collaborative projects, which run for three to five years .

2-4. Improving Efficiency and Effectiveness in Various Projects Through the Utilization of ICTs.

In recent years, JICA has proactively utilized ICTs in various assistance projects. Such ICTs implementations have lead to an improvement in the efficiency and effectiveness of these projects. In addition, it has been recognized that the benefit from using ICTs in these projects reaches not only direct beneficiaries of the project, but also the whole region in the scope of the projects, as well as regions outside the project's original scope.

Utilization of ICTs in projects comprises in such areas as 1) education and training, 2) health and medical care, 3) poverty alleviation, 4) environment and disaster prevention. Below is an example from each area, which sums up the efforts of JICA in the utilization of ICTs in various assistance projects, and the potential for future ICTs implementations.

2-4-1. Education and Training.

The "Information and Communication Technologies Capacity Building at the University of South Pacific" project currently underway at the University of the South Pacific (USP) in the Republic of Fiji, is described as an example of ICTs utilization in education and training projects.

Background, Purpose of the Project and the Utilization of ICTs.

There was a high demand for a top class tertiary institution in the twelve island states. USP, founded in 1969, originally provided correspondence courses via postal mail and audio tutorials via HF radio, but its effect was limited. In 1998, USP constructed a satellite based interactive intra-net (USP-net) between the Fiji main school (hub station) and branch schools (eleven remote stations) in member countries with assistance from Japan, Australia and New Zealand.

However, due to a relative lack of technical capability and experience, the correspondence education content, which made use of high quality multimedia technology, had not been sufficiently developed.

In this project, JICA dispatched experts who gave lectures with the aim of helping staff improve their ICTs skills. JICA also offered training designed to provide LINUX instructor certification. In addition, JICA provided upgraded computers and other devices for remote learning with the aim of upgrading the USP-net system and solving the problems. USP-net is to be extended and will be connected with JICA-net in the near future.

Improvement in Effectiveness and Efficiency Through the Utilization of ICTs.

We see students better utilize ICTs technology in those locations where computer equipment has already been implemented. Furthermore, the university's staff members better utilize multimedia equipment in their preparation of educational materials.

Potential for the Utilization of ICTs in Education and Training, and Lessons Learned.

It can so far be said that ICTs have been effectively implemented in the form of creation of contents, and remote education equipment. The key issue is how to upgrade ICTs skills at the USP site in the future in order to adjust to new state-of-the-art technology and ensure the success of the project.

2-4-2. Health and Medical Care.

The "Project for the Improvement of Health In-service Training System and Program" in the Republic of Ghana is an example of the utilization of ICTs in health and medical care assistance projects.

Background, Purpose of the Project and the Utilization of ICTs.

Since Ghana proclaimed independence, life expectancy at birth has improved from 45 years old to 55 years old. However, improvement to Ghana's infant mortality rate has been too slow. In light of this, the development of medical staff in the field of maternity and child health has been an important issue. Ghana's Ministry of Health had already provided medical staff with In-service Training (IST) to improve health and medical care services. However, such efforts failed to deliver sufficient results due to the lack of comprehensive policies and programs, a training registration and record system, and a shortage of facilities and equipment.

This project conducted surveys on IST needs, the construction of an information system, the preparation of an IST Logbook to record training provided, categorization of training courses, and the construction of Regional Training Centers in the three focusing regions to enable medical staff in

Ghana to provide appropriate services in the field of maternity and child health. The IST information system was positioned as the main focus area of this program, as well as development and implementation of IST Logbook. The IST information system was built specifically to organize and store individual's training records for every stage of their In-Service training, with the aim of improving maternity, child health, and medical services in Ghana.

Improvement in Effectiveness and Efficiency Through the Utilization of ICTs.

Actual records of In-Service Training provided at the region and district levels are being accumulated as data. The data will be scientifically analyzed and will be used to improve the quality of health services in the future.

In the three focusing regions, a systematic IST system now functions as a part of day-to-day operations. This system is gradually gaining a good reputation among other donors and countries in Africa. In regions other than the three prioritized, the importance of the IST system is gaining more awareness, and some regions have started to operate the IST system through their own efforts.

The Potential for Utilization of ICTs in the Field of Health and Medical Care, and Lessons Learned.

The utilization of ICTs in health and medical care projects can be further implemented through statistical analysis using accumulated data, followed by the next step of constructing training designed to achieve various levels of goals. However for this stage there will be challenges relating to the balance between protection of privacy and access to information.

2-4-3. Poverty Alleviation

The "Project on Strengthening Sulawesi Rural Community Development to Support Poverty Alleviation Programs" in Indonesia is an example of the utilization of ICTs in alleviating poverty.

Background, Purpose of the Project and the Utilization of ICTs.

In Indonesia, there is a growing disparity in wealth among the people, as well as between geographical regions such as urban and rural areas, and Java and other islands due to economic development and growth. In light of this, the government is dealing with the problem of poverty as its central goal in national development which aims to achieve "equality and poverty alleviation", as well as the "improvement of quality of human resources" and "economic development and economic structural adjustment."

Under this project, the provincial PMD (Pembangunan Masyarkat Desa, or village development

bureau) of South Sulawesi Province and the district PMD (prefecture development bureau) of Takalar District were designated as our counterpart entities. The purpose of this project was to enhance the ability to prepare and manage residents' participatory village development projects, thus the project focused on constructing a system for alleviating poverty. Under this framework, ICTs were introduced as the tool called *Desa Maju*, information interface, to provide village residents with easy access to various information, which is closely related to their lives, including agriculture; fishery, health, and medical care information. ICTs were used to transmit voice data via servers and telephone lines to public phones or special terminals.

Improvement in Effectiveness and Efficiency Through the Utilization of ICTs.

ICTs provided villagers with a variety of means and better opportunity to access useful information outside the village. Villagers are now able to compare their lives with those outside the village. Thanks to this system, small and mid-sized businesses can better undertake marketing efforts. In addition to this, they have access to a wider market, which in turn stimulates economic activities. Specifically, this project allowed small businesses to identify markets and access market price information. This in turn enables the businesses to become independent of brokers.

Potential for the Utilization of ICTs in Alleviating Poverty, and Lessons Learned

The cost of providing the services for *Desa Maju* is incurred by the sponsors of this project, so that those facing financial hardship can use the system without financial constraint. This means that the villagers can use the services free of charge. Furthermore, terminals use symbols instead of numerical numbers so that illiterate villagers may utilize these systems without difficulty.

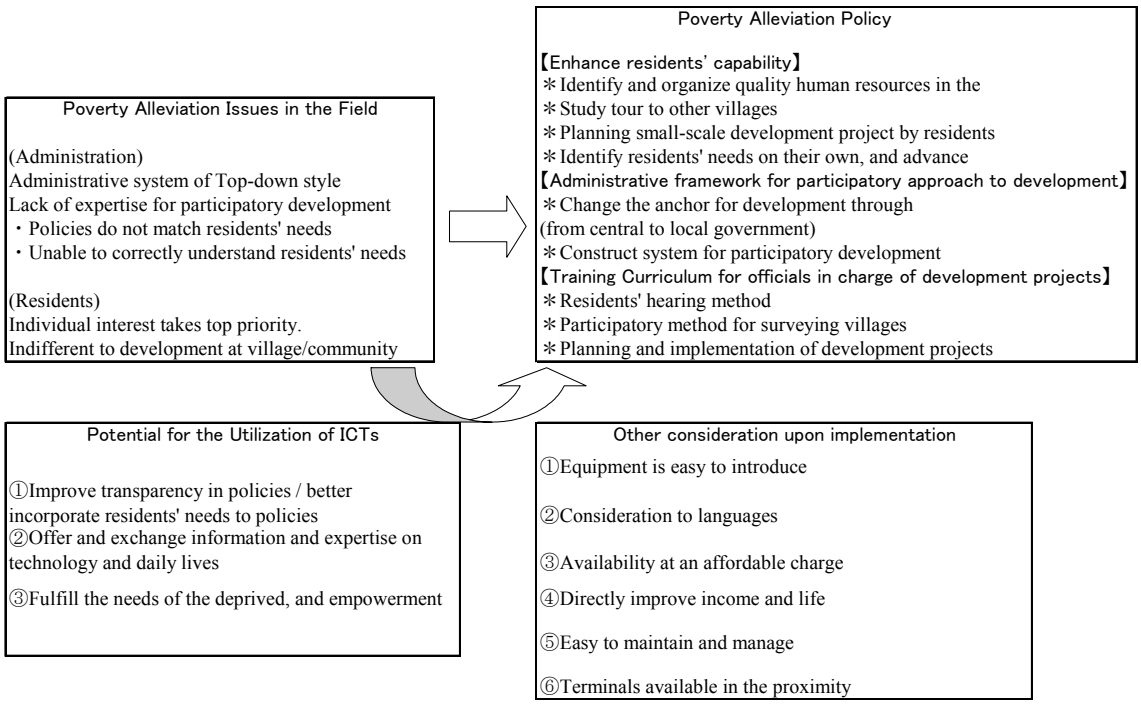
** Photograph from "Project on Strengthening Sulawesi Rural Community Development to Support Poverty Alleviation Programs" in Indonesia*

Desa Maju terminal: Functions are symbolized as a picture.

A person using the Desa Maju System (right)

Potential for utilization of ICTs in poverty alleviation area, using this example, is depicted as follows:

Figure2. Poverty measures and ICTs



Source, P229- JICA(June 2001)
JICA(June 2001), *Information Revolution in Development Assistance*

2-4-4. Protection of the Environment, and Disaster Prevention.

The "Forest Fire Prevention Management Project" in the Republic of Indonesia is an example of the utilization of ICTs in the area of environment. Phase I of the project has been completed and is progressing to Phase II.

Background, Purpose of the Project and the Utilization of ICTs.

Forests in Indonesia are damaged by uncontrollable fire during the dry season every four to five years. Smoke from forest fires reaches not only Indonesian boarders, but also to Malaysia and Singapore. These forest fires have become an international concern to neighboring countries as they affect flight schedules and cause health problems. Putting in place effective measure to manage forest fires is a matter of urgency for Indonesia, and this called for a multifaceted and comprehensive project.

JICA implemented "Forest Fire Prevention Plan I". The aim was to improve the management methods used by the central authorities and regional bureaus for the prevention of forest fire and the extinguishing of such fires in their early stages. ICTs are used as a means to receive and

disseminate forest fire related information via the Internet, as well as through the use of forest fire monitoring systems that receive satellite information.

Improvement in Effectiveness and Efficiency Through the Utilization of ICTs.

An early warning and detection system was constructed using satellite based ICT technology. Specifically, a detection system was constructed which regularly provides hot spot information that is transmitted from the State Forestry and Farm Bureau to state regional forest offices and concession owners. This provides an effective tool to enable fires to be extinguished in their early stages. In addition, residents at the project's site, particularly elementary and junior-high school students, are gaining an awareness of the importance of forest fire prevention and extinguishing fires in their early stages.

Potential for the Utilization of ICTs in the Protection of Environmental Areas, and Lessons Learned.

Potential for the utilization of ICTs in the area of environment and disaster preventing has been recognized in the realization of effective monitoring systems, statistical analysis systems, and disaster warning systems. ICTs can also be a timesaving instrument for disaster prevention and promote inter-regional information exchange.

However, in order to further develop the systems, meteorological, pedological, and land use related information which is sufficient enough for early warning systems to function properly, needs to be sufficiently accumulated and stored by local authorities. In addition, back-up functions (sub-system) are required in case of system-shut down. User-friendly devices in the system make it more effective, however further development of human resource is also required. Furthermore, guidance outside the ICTs area is required if ICTs are to be effectively utilized. This includes changing the residents' traditional life-style, which includes the slash-and-burn style of farming.

3. Prospects: Assisting in the Introduction of ICTs, Facilitating Further Utilization of ICTs, and Promoting Information and Knowledge Sharing.

ICTs have an immense impact on virtually all aspects of our lives. Thus, providing an environment in which every human being can use ICTs at an affordable cost, is an important challenge. As is stipulated in a series of "e-Japan" programs, Japan is promoting initiatives to solve the digital divide through international cooperation, including technical assistance to developing countries. In the e-Japan Strategy II (2003), Japan aims to construct network infrastructure, promote e-commerce, and

establish digital content distribution mechanisms for further cooperation under the global partnership. Examples of such initiatives in the Asian region are “Asia Broadband Program” for enhancing network infrastructure and “Asia IT Initiative” for ICTs capacity building.

Along with such initiatives by the Japanese Government, JICA makes efforts to make its cooperation more effective. For this purpose, in 2003, JICA elaborated its cooperation strategies in the field of ICTs and set mid-term objectives based upon five strategic goals. JICA intends to further enhance its assistance to achieve those mid-term objectives.

Strategic Goals	Mid-term objectives
1) Assisting to create enabling environment at policy level.	1-1) Establishment of telecommunication policy. 1-2) Establishment of IT industry development policy. 1-3) Establishment of policy to solve the internal digital divide. 1-4) Establishment of policy to protect ICT users.
2) Enhancing ICTs capacity building in Japan and developing countries.	2-1) Capacity building of engineers and instructors. 2-2) Capacity building of policy makers.
3) Developing information and communication infrastructure.	3-1) Development of telecommunication infrastructure. 3-2) Establishment of telecommunication hub.
4) Promoting ICTs applications in development projects.	4-1) Establishment of e-government. 4-2) Promotion of ICTs applications in various sectors.
5) Enhancing better project management and implementation through ICTs utilization.	5-1) Dissemination and transfer of existing knowledge. 5-2) Share and creation of knowledge based on experiences.

For example, JICA recognizes the effectiveness of cooperation in the field of distance learning technologies, and takes a proactive approach in the implementation of distance learning and e-Learning methods, and developing contents and methods. Thus, JICA has recently introduced distance learning training using JICA-net and is cooperating with World Bank Institute to link JICA-net and the World Bank’s Global Development Learning Network together so as to enhance JICA’s training capacity worldwide. The important challenge in the future is to provide an arrangement so that the contents and methods developed will be shared among many projects.

JICA also acknowledges that education, knowledge, information, and communication are a core factor in human progress, and capacity building in ICTs literacy and universal education is indispensable in gaining the benefit offered by the information society. Thus, JICA will focus more on people with disabilities, the needy, and gender equality.

The utilization of ICTs relates to all fields of development activities. JICA intends to further promote effective and efficient utilization of ICTs in its cooperation in various sectors. To do so, it is essential to share what we learn from our collaborative efforts in the utilization of ICTs, by systematically arranging our expertise. JICA, therefore, attaches importance to enhance knowledge sharing with people in developing countries and related organizations.

To strengthen the efforts to utilize ICTs to build an inclusive Information Society, JICA recognizes that a new forms of solidarity, partnership, and cooperation among governments, the academic sector, industry, and NGOs is indispensable. JICA's projects have been participated and supported by various organizations in government, industry, and academic sector who have contributed to the dispatch of experts as well as acceptance of trainees in Japan. It is important to note that human networking has been built through JICA's projects and maintained or extended even after completion of the projects. ICTs can contribute by creating opportunities to create and strengthen such global partnerships and human networking with the aim of realizing an information society.

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Japan International Cooperation Agency
Office of Evaluation
Planning and Evaluation Department
Shinjuku Maynds Tower 1-1, Yoyogi
2-chome,
Shibuya-ku, Tokyo 151-8558, Japan
Tel: +81-3-5352-5064 Fax:
+81-3-5352-5490
Email: jicapve@jica.go.jp

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