Approaches for Systematic Planning of Development Projects

Information and Communication Technology

JICA

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Approaches for Systematic Planning
of Development Projects

Information and Communication Technology

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Institute for International Cooperation
Japan International Cooperation Agency

Since FY2002, the Japan International Cooperation Agency (JICA) has referred to scheme types such as Project-Type Technical Cooperation, Individual Expert Team Dispatch, and Research Cooperation collectively as Technical Cooperation Projects. However, since there is a possibility of confusion with the original names of scheme types, this report also uses the current term Technical Cooperation Projects with reference to projects that were started prior to FY2001 for consistency.

Similarly, collaborative projects with other entities such as NGOs have been collectively referred to as JICA Partnership Programs since FY2002, and this report, therefore, uses the term Partnership Program with reference to projects that were started prior to FY2001 for consistency.

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Foreword

The Japan International Cooperation Agency (JICA) has been working toward the enhancement of its country-specific and issue-specific approaches by formulating JICA Country Programs, implementing Project Request Surveys, and drafting Thematic Guidelines. At present there are significant differences between countries in terms of progress levels or categorizations of development issues and cooperation programs. To improve further JICA Country Programs and deal with important development issues requires appropriate formulation of programs and projects based on a fundamental understanding of development issue and effective approaches toward them, while recognizing that situations and issues differ from country to country. JICA must clarify the priority areas for cooperation, based on both the actual conditions of each target country and a systematic approach for each development issue.

Therefore in FY2001 as a part of an effort to promote country-specific approaches by enhancing issue-specific approaches JICA conducted the study on "Approaches for Systematic Planning of Development Projects" in four issues: Basic Education, HIV/AIDS, Rural Development, and Promotion of Small and Medium Enterprises (SMEs). The study systematized these issues and specified the indicators to be used as references in planning, monitoring and evaluating JICA's activities. Furthermore, the study reviewed JICA's previous projects and summarized their trends, matters of concern and representative cases for each issue, based on Development Objectives Charts.

Due to a growing demand for systematization of other issues as well, a further study was carried out in FY2002. Four new development issues were taken up: Poverty Reduction, Trade and Investment Promotion, Higher Education, and Information and Communication Technology. The results of this study will be adopted in the JICA Thematic Guidelines and further developed by the Agency Thematic Network.

In conducting the study and preparing this report, a task force was set up, chaired by Mr. Hiroshi Kato, JICA Director of Planning and Coordination Division, Planning and Evaluation Department, and comprising JICA staff of related departments, JICA Senior Advisors, Associate Specialists, and external consultants. A considerable number of JICA staff members, as well as external experts, further contributed by offering valuable comments on the draft report. I would like to take this opportunity to acknowledge the efforts and contribution of all of these individuals.

Finally, it is my sincere hope that this report will prove a worthwhile step in the enhancement of issue-specific approaches.

September 2003

Morimasa Kanamaru
Managing Director
Institute for International Cooperation
Japan International Cooperation Agency

Terms and Abbreviations

Terms/Abbreviations	Remarks
Information and Communication Technology	
ADSL	Asymmetric Digital Subscriber Line: Technology that makes use of existing analog telephone lines, enabling high-speed data transmission by using the high frequencies that are not used for voice transmission. ADSL uses asymmetric transmission, where the downstream bandwidth (from the telephone exchange to the user) is greater than the upstream bandwidth (from the user to the telephone exchange).
AI	Artificial Intelligence: A term used to describe a computer that can understand human language; make deductions; learn; and solve problems. It is designed as a substitute for human intellectual work. The field of Artificial Intelligence includes expert systems, machine translation systems, natural language processing, automatic programming, image comprehension systems, speech recognition systems, and theory testing. Programming languages for Artificial Intelligence include Lisp and Prolog, among others.
APT	Asia-Pacific Telecommunity
AVU	African Virtual University: A distance education program started in 1997 and supported by the World Bank. The objective of this University is to provide African students with access to higher education courses in science, technology and business. In 2001 it became independent as an NPO and has been providing courses to 34 universities in 17 countries using videos and satellite communications with the support of several donors. (http://www.avu.org/)
Backbone	A high capacity trunk communication line linking together telecommunications carriers. Lines that link connection points within a provider*, or lines that link Providers* with other providers* or to an Internet exchange*.
Barrier-free	The elimination of things that exist as obstacles (barriers) that prevent those with disabilities from having a full life in society. Originally, the term strongly implied the elimination of physical barriers such as steps (at facilities), but the broader interpretation includes the elimination of all barriers, whether concrete or abstract, that prevent people with disabilities from participating in society.
Broadband	Generally broadband refers to high-speed Internet access services provided by ADSL* or Cable TV.
C Language	A programming language developed in the 1970s at AT&T Bell Laboratories by D. M. Ritchie. It is a standard development environment in UNIX*, and this is more efficient and enables control closer to systems than previous programming languages. Currently, there are various types of extended C languages, such as the object-oriented C++*.
C++	An enhanced version of C Language*, with object-oriented features added to the language processor. Developed by Bjarne Stroustrup. A key feature is that it is very easy to make the transition from the widely-used C Language, due to its complete upward compatibility. Of the C Language packages presently being sold for personal computer users, there are very few packages that are not compatible with C++.
C/S	Client/Server: An implementation strategy in which software and/or hardware systems are separated into two types interacting subsystems: the server which provides core processing, and the client which makes use of the services provided by the server. Compared to other approaches in which all functions are carried out by a single piece of software or hardware, in this approach each of the functions are simplified through layering of the system architecture, and making system development easier.
CAD/CAM	Computer-Aided Design/Computer Aided Manufacturing: CAD is the process of using a computer in industrial design, especially architecture, electronic circuits, etc. Line and graph representations play a central role in the graphical output of CAD applications. CAM is a manufacturing method that directly feeds the output data from CAD into numerically controlled machine tools.
Development Gateway	A comprehensive information site for sharing development-related knowledge and experiences, with the objective of reducing poverty and achieving sustainable development through the use of IT. (http://www.developmentgateway.org/)
Digital Divide	The gap that arises between those who are able to access information and communication technology and enjoy its benefits, and those who cannot.
Digital Opportunity	Good opportunities presented by information and communication technology. The IT Charter states that "Information and Communications Technology (IT) is one of the most potent forces in shaping the twenty-first century, and a means to enable people to realize their potential."

Terms/Abbreviations	Remarks
Download	The process of transferring software or data from a network-connected server (computer) that is at a different location to the computer you are using. Similar to copying. When data is copied to a page on a server, such as publishing information on a website, it is known as uploading.
e-ASEAN	An initiative agreed upon in 2000 by ASEAN to promote the use of information and communication technology. Objectives include the liberalization of international trade and investment in the IT industry, development of an IT infrastructure, elimination of the digital divide*, development of legislation to facilitate e-commerce, and mutual recognition of digital signatures. One of the key characteristics of this initiative is that it aims to eliminate the digital divide in the region by having Member States that are capable of implementing the agreement by 2002 assist the less developed Member States.
e-Commerce	Business transactions where payment information is exchanged electronically on a computer network. In particular, this term is used to indicate all business that takes place through the Internet.
e-Government	Digitalization of various administrative services by applying digital technology to achieve a more efficient government. Can also refer to the organization itself.
e-Japan Strategy	An IT strategy formulated by the Headquarters for the Promotion of Advanced Information and Communications Society established by the Japanese Cabinet with the aim of making Japan the world's most advanced IT nation within five years. Emphasis is on establishing an ultra high-speed Internet network infrastructure, developing competition policies, spreading and promoting e-commerce, realizing an e-government, and reinforcing human resource development.
e-Learning	Training and education that proactively use information and communication technology and digital educational materials. In this type of educational system students can study whenever and wherever it is most convenient for them.
Fiber Optical Cable	Cables made from glass fibers, used as a transmission channel for optical communication. Compared to copper wires used for regular telephone lines, there is less signal degradation and a higher capacity of data can be transmitted at high speeds. Also less susceptible to events such as lightning.
GDLN	Global Development Learning Network: A distance learning network in order to share the knowledge and experiences of all who are involved in development, regardless of nationality or type of organization. Launched in 1997 with the support of the World Bank, as of 2003 there are more than 50 distance learning centers conducting training and dialogues. (http://www.gdln.org/)
GDN	Global Development Network: A network established to enable research and policy institutes in the field of development to share and use information. Launched in 1999 to support regional networks, with the World Bank playing a central role. In 2001, it became a nonprofit organization, and is operating with the support of several donors. (http://www.gdnet.org/)
GIS	Geographic Information System: A database that combines geographic map data with a variety of other attribute data. The various types of attribute data are stored according to their linkage to arbitrary points or finite surfaces on the topographical data thereby making it possible to search, convert, and analyze the stored data by geographical relevance. Many such databases are now being shared through the Internet.
GPS	Global Positioning System: A system that determines the position of a moving object. The location, direction of travel, and speed of a moving object are calculated using electromagnetic waves received from the 3 satellites (of 24 total) from which radio signals are most easily received. This system is commonly used in car navigation.
Hub	A device used to branch and relay cables on networks such as LANs. More devices can be connected to a network* by using hubs. By connecting hubs to the server at the center of the network, more personal computers and printers can be connected to the network*.
Internet	Generic term for a network which uses the TCP/IP transmission protocol to interconnect computers worldwide. It is called a network of networks because it is an interconnection of local area networks (LANs) and users all over the world who are on the Internet can communicate with each other.
Internet Exchange	A place where domestic Internet service providers are interconnected. Also called IX.
IP	Internet Protocol: An agreement (protocol*) for the transmission of data between hosts on the Internet*. In IP, data is broken down into small units called packets, which are then sent to their destination once they have each been assigned a tag called an IP address.
IPv6	Internet Protocol Version 6: The next-generation version of Internet Protocol*. The most significant change in IPv6 is that IP addresses have been changed to 128-bit numbers. This means that the number of computers that can be connected is approximately 1038. Other major changes in IPv6 include improved security by encrypting the packets themselves, and the addition of priority delivery of data.

Terms/Abbreviations	Remarks
IP Address	A specific sequence of numbers assigned to each computer on a network in accordance with IP*. IP is used in LANs Intranets as well as the greater Internet, so specific IP addresses assigned to computers that are directly connected to the Internet are called global IP addresses (to distinguish them from private . IP addresses on LANs or Intranets).
ISP	Internet Service Provider: A business that provides connection services to the Internet. Also called a provider*.
IT(ICT)	Information and Communication Technology
IT(ICT) Literacy	The ability to use information and communication technology.
IT Charter	The common name for the "Okinawa Charter on the Global Information Society," adopted at the Kyushu-Okinawa Summit in 2000. Given the recognition that the private sector plays a leading role in the IT industry, governments are working toward developing an appropriate environment, coordination for the establishment of international rules, protecting consumers, cyber-crime countermeasures, improving access, developing barrier-free technology, and providing opportunities for education and training to improve IT literacy. Also, in regard to developing countries, the charter emphasizes the importance of the governments of developing countries to take ownership in developing and implementing measures that meet their own needs and conditions.
InfoDev	The Information for Development Program: A financial assistance program managed by the World Bank, funded by donations from 20 governments and international institutions, and 4 companies in the private sector. With the objective of social and economic development by using IT (ICT), more than 120 projects have been supported in various fields including telecommunications, the Internet, education, the environment, and e-commerce. (http://www.infodev.org/)
JAVA	An object-oriented programming language that is platform* independent and therefore can be used under any operating system, such as Windows or Macintosh. Small applications written in JAVA (JAVA applets), can be automatically downloaded from a Web server and executed.
JICA-Net	A network system that establishes IT Centers in Japan and developing countries to carry out distance learning and remote conferencing. It enables simultaneous connection of multiple points and can also be connected and coordinated with the GDLN of the World Bank. As of January 2003, in addition to JICA Headquarters, this network has been established at the Tokyo International Centre, the Okinawa International Centre, and the Indonesia, Malaysia and Philippines Offices.
Knowledge Management	Abbreviated as KM. A broad range of interpretations of this phrase exist, but it generally refers to efforts to use all of the information and even wisdom within a company in all aspects of management, through the use of IT. In fact, although the systems, hardware, and software needed to bring knowledge management to reality do not presently exist, Lotus has started to use the term with respect to an evolving form of their groupware (Notes/Domino) and the term has now become a marketing catchphrase in the IT industry.
Linux	A free UNIX*-type operating system for personal computers. A Unix-compatible OS released as freeware, it is being improved by developers all over the world. It does not use existing OS code, can be freely adapted and redistributed, and is easier to use on low performance computers than other operating systems. It has outstanding network features and security, and is very stable. Linux is becoming more commonly used in academic institutions and is also frequently used as an Internet server in companies.
MCT	Multipurpose Community Telecenters: Mainly developed by ITU*, these are facilities with information and communication equipment that are established in the rural areas of developing countries to increase the use of IT, and which provide a variety of IT-related training and services.
Multimedia	Handling multiple formats of conveying information, such as still images, animation, audio elements and text, using digital technology. Also, devices and software used in this process.
Platform	OS (Operating System) or personal computer environment that provides the base on which software is run.
Protocol	Rules and conventions that govern the transmission of data between two computers.
Provider	A business that provides Internet connection services. Also called Internet Service Providers (ISPs*).
Remote Sensing	Technology that enables remote sensing of objects through sensor-equipped satellites, airplanes, and other equipment.
Unauthorized Access	Invasion of another network computer from the outside without following proper procedures. Includes stealing, destroying, or tampering with data, and sometimes includes changing network device configurations.

Terms/Abbreviations	Remarks
Universal Access	Access to IT* by everyone. Includes enabling everyone, including the elderly and those with disabilities, to use technology and facilities.
UNIX	Basic software (OS) used mainly in mid-sized computers called workstations. Includes software usable on personal computers such as Linux*, commonly called PC-UNIX.
USO	Universal Service Obligation: The responsibility of telecommunications carriers to provide all users with good service at a reasonable price.
VSAT	Very Small Aperture Terminal: An earth station with a very small antenna. A VSAT system is unidirectional or a two-way transmission system made up of a hub station, the network core, and a station (VSAT station) with multiple small antennas.
Waiting Applicants	Cumulative total of subscribers who cannot use their telephone even though they have completed procedures for subscribing to telephone service because the phone lines are undeveloped or do not connect.
WBT	Web Based Training: Training that uses content on the Internet (the Web) to ensure that a more uniform quality of training can be undertaken anytime, anywhere.
WSIS	World Summit on the Information Society
WWW	World Wide Web: A document system developed by the European Center for Nuclear Research (CERN). Links (a jump command) to other documents can be inserted in the document, and through these commands, it is possible to jump to any document located on a WWW server anywhere in the world that participates in the Internet.
xDSL	x Digital Subscriber Line: Generic term for technology that enables high-speed transmission through a twisted-pair cable. Speeds comparable to digital lines can be achieved through the existing telephone lines just by installing the hardware at both the telephone exchange station and the subscriber location. A typical example is ADSL*, a system with an accelerated downstream transmission speed.
Development Assistance	
Capacity Building	Enhancing ability to implement and manage capacity in response to institution building. Establishment of self-reliance in implementing parties.
DAC New Development Strategy	A long-term DAC* development strategy for the 21st century, adopted at a high-level meeting in 1996, that focuses on: ownership and partnership; and setting specific development goals (such as halving the proportion of the population in extreme poverty in the world by 2015). The strategy increases the expenditure ratio for social infrastructure and seeks to rationalize and decentralize implementing institutions in recipient countries.
Local Cost	The cost of implementing and managing a project that should be borne by the recipient country.
Medium-term Policy on Official Development Assistance	A systematic and specific five-year guideline on Japan's ODA* since 1999, aiming for effective and efficient implementation of assistance.
MDGs	Millennium Development Goals: Based on the DAC New Development Strategy*, it was agreed at the United Nations General Assembly (Millennium Summit) in September 2000. Goals to be achieved by 2015 are: (1) eradication of extreme poverty and starvation; (2) universal extension of primary education; (3) gender equality and women's empowerment; (4) reduction of the infant mortality rate; (5) improvement of the health of pregnant women; (6) prevention of epidemical diseases such as HIV/AIDS and malaria; (7) creation of a sustainable environment; and (8) establishment of global development partnership.
NGO	Nongovernmental Organization
ODA	Official Development Assistance
Official Development Assistance Charter	This charter established by the government of Japan in 1992 garners broader support for Japan's ODA through better understanding both at home and abroad and to implement it more effectively and efficiently. Japan attaches central importance to the support for the self-help efforts of developing countries toward economic take-off based on the idea that assistance was part of Japan's foreign strategy in the post-Cold War period.
OOF	Other Official Flows: Economic cooperation for developing countries based on the governmental resources but not included in ODA*.
Ownership	Self-help efforts by developing countries for their own economic and social development.

Terms/Abbreviations	Remarks
PRSP	Poverty Reduction Strategy Paper: Strategy paper for debt relief of the Heavily Indebted Poor Countries (HIPCs). Concept introduced and agreed on at the annual meeting of the World Bank and IMF in 1999. Aims for the effective application of financial resources generated by debt relief measures for appropriate development activities and poverty alleviation.
R & D	Research and Development
Sector Program	A sectoral or sub-sectoral program coordinated by relevant parties in development, including donors, under the ownership of the recipient countries.
Organizations	
ADB	Asian Development Bank
CIDA	Canadian International Development Agency
DAC	Development Assistance Committee: Coordinates the assistance policy of the OECD* to developing countries. One of three major committees of the OECD, along with the Trade Committee and the Economic Policy Committee. As of 2003 membership is 23 countries.
DAC High Level Meeting	A meeting held once a year in which high-level assistance officials from each DAC* country attend to discuss and adopt recommendations on particularly important development issues. In the 1996 DAC High Level Meeting of the OECD*, the meeting adopted the goal of halving the 1990 ratio of people living in extreme poverty by 2015.
DFID	Department for International Development (UK)
IDB	Inter-American Development Bank
IDRC	International Development Research Centre (Canada)
IMF	International Monetary Fund: Established in 1944. An organization that has supported post-war international finance along with the World Bank. While the World Bank has provided funding for reconstruction and development, the IMF has served to provide funds necessary for the fixed exchange rate system and for stabilizing currencies.
ITU (ITU-D)	International Telecommunication Union (Telecommunication Development Sector)
JBIC	Japan Bank for International Cooperation: Established in 1999 through the integration of the Export-Import Bank of Japan and the Overseas Economic Cooperation Fund.
JICA	Japan International Cooperation Agency
OECD	Organisation for Economic Cooperation and Development: Established in 1961 as a reorganized version of the Organisation for European Economic Co-operation (OEEC, established in 1948) to rebuild the European economy. Goals are economic growth, assistance to developing countries, and the expansion of multidirectional free trade. 30 member countries at present.
Sida	Swedish International Development Agency
UNCTAD	United Nations Conference on Trade and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNDP	United Nations Development Programme
USAID	The United States Agency for International Development
World Bank	Generally refers to the two organizations, the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA). The World Bank Group includes the above two organizations and the International Finance Corporation (IFC), the Multilateral Investment Guarantee Agency (MIGA), and the International Center for Settlement of Investment Disputes (ICSID).
JICA Terminology	
Community Empowerment Program	Started in FY1997. Support related to maternal and child health, welfare of the elderly, the disabled and children, and poverty alleviation measures are commissioned by JICA for local NGOs. Carried out as a part of Technical Cooperation Projects* from FY2002.
Development Studies	Small-scale studies that involve the formulation of simple basic development plans and the analysis of various types of basic data related to those plans, as well as surveys to make up for deficiencies in official statistics. Performed under the initiative and direction of overseas offices.
Grant Assistance for Grassroots Projects	A form of grant aid cooperation executed through Japan's overseas diplomatic offices to support small-scale projects that are not suitable to be undertaken through usual Grant Aid cooperation. Implemented in response to requests from local governments and non-governmental organizations (NGOs) in developing countries.

Terms/Abbreviations	Remarks
Grassroots Partnership Program	JICA's entrusting of cooperation on NGOs, local governments, and universities to provide more tailored and swift assistance. The maximum implementation period is for one year with less than 10 million yen. Carried out as a part of JICA Partnership Programs* from FY2000.
JOCV	Japan Overseas Cooperation Volunteers: A volunteer system established in 1965 for participants between 20 and 39 years of age. Approximately 23,000 volunteers have been dispatched to 76 developing countries.
Local In-Country Training (Second Country Training)	Training conducted in developing countries so that Japan's technical cooperation outcomes can be better disseminated throughout the developing country.
Master Plan Study	A study to draw up a comprehensive development plan on an overall country or a specific region, or a long-term development plan for a specific sector.
Partnership Program	Projects carried out by JICA as part of ODA to support cooperation activities targeting regional communities in developing countries through Japanese NGOs, universities, local governments, and non-profit foundations that intend to carry out international cooperation. Particular emphasis is given to the three areas 1) Technical Cooperation through personnel, 2) target projects or regions with a high urgency, such as in the case of reconstruction assistance, and 3) opportunities to promote the understanding of and participation of Japanese citizens in international cooperation.
Project-Type Technical Cooperation	A form of technical cooperation that is planned, implemented, and evaluated within a 3-5 year cooperation period. The scheme combines the dispatch of experts, acceptance of trainees, and provision of equipment. Starting in FY2002 several types of assistance are grouped together under the name Technical Cooperation Projects*.
Technical Cooperation Project	A cooperation project with certain objectives that need to be achieved in a specific time frame with a logical relationship between the output/outcome and input/activities, in which cooperation can be made up of a combination of dispatch of experts, acceptance of trainees, and provision of equipment to meet the objectives.
Third-country Training	Training in a comparatively advanced developing country in which the training utilizes that country's personnel who have received training through Japan's technical cooperation and invites trainees from other developing countries.

Terms with * are listed in this chart.

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Appendix 1 Major Activity Cases

Appendix 2 Basic Check List

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Development Objectives Chart on Information and Communication Technology

Outline of Study

1. Background and Purpose of the Study

This study is the second phase of the study on Approaches for Systematic Planning of Development Projects carried out in FY2001. The study was designed to enhance country-specific approaches by strengthening issue-specific approaches. In the first phase of the study, four major development issues (Basic Education, HIV/AIDS, Promotion of Small and Medium Enterprises (SMEs), and Rural Development) were systematized and effective approaches for them were identified. Furthermore, the study reviewed JICA's activities based on Development Objectives Charts and the results were summarized as a report "Approaches for Systematic Planning of Development Projects."

As there was a growing demand for similar systematization of other issues as well, JICA decided to conduct a new study in FY2002. As a result of coordination within JICA's relevant divisions, this FY2002 study targeted the four issues: Poverty Reduction, Trade and Investment Promotion, Higher Education, and Information and Communication Technology.

The results of this study are envisioned to be constructive in the following ways:

• As basic information when formulating and revising Development Objectives Matrices for JICA Country Programs

• As basic information for project formulation studies and project and program formulation.

• As basic information when evaluating programs or carrying out country-specific evaluations.

• As materials for the JICA staff and Experts to use when they explain JICA's views on issues to recipient countries and other donors during meetings.

• To be stored in an Agency Thematic Database and shared within JICA with respect to views and approaches to issues.

2. Organization of this Report[1]

Chapter 1	Overview of the Issue (Current State, Definition, International Trends, Trends in Japanese Assistance)
Chapter 2	Effective Approaches for the Issue (Goals, Effective Approaches)
	*This chapter explains the systematized approaches and reviews JICA's activities on the basis of Development Objectives Chart.
Chapter 3	JICA's Cooperation Policy (JICA's Priority Areas, Points of Concern, and Future Direction)
Appendix 1	Major Activity Cases
Appendix 2	Basic Check List (including key indicators)
References	

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[1] As the results of the study are intended to be utilized in JICA's Thematic Guidelines, the organization of this report was designed to be consistent with the standard organization of future Thematic Guidelines.

3. Structure of the Development Objectives Chart

In this study, a Development Objectives Chart similar to the following was created for each development issue.

Sample Development Objectives Chart (Information and Communication Technology)

Sample Development Objectives Chart (Information and Communication Technology)

Development Objectives	Mid-term Objectives	Sub-targets of Mid-term Objectives	Examples of Activities
1. Improvement of Ability to Formulate IT Policies	1-1 Establishment of Telecommunications Policy	Introduction of Competitive Market Principle	× Support formulation of foreign capital investment policy
Formulation of national IT strategy	Number of service subscribers Scale of telecommunications industry Advancement of liberalization	Number of new market entries Scale of telecommunications industry Price of communications	× Support policy to promote private investment × Support deregulation of market entry Support formation of competitive markets
Key Indicators			

Circled Numbers imply key indicators
Marks in the column of Examples of Activities indicate how often JICA has implemented relevant projects.
  : JICA has considerable experience,   : JICA has certain experience,
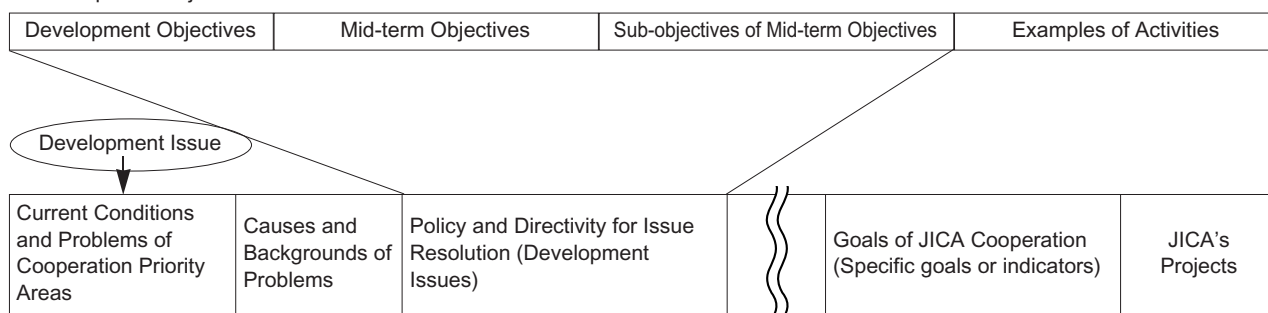 : JICA has experience as a component of projects, and × : JICA has little experience.

"Development Objectives," "Mid-term Objectives," and "Sub-targets of Mid-term Objectives" in the above sample chart show the break-down of each development issue.

Development Objectives Chart includes a summary of "Development Objectives" and "Mid-term Objectives" for the purpose of showing the overall picture of an issue as well as the chart for each Development Objective including its "Examples of Activities" and JICA's relevant cases. A complete chart covering all items ranging from "Development Objectives" to "Examples of Activities" is annexed in the end of the report.

Generally, the relationship between the Development Objectives Chart and JICA Country Programs varies depending on the specific conditions of each country and sector. However, if "Development Issue" of this report corresponds to a "Priority Sector" of Development Objectives Matrix in JICA Country Program, "Development Objectives," "Mid-term Objectives," and "Sub-targets of Mid-term Objectives" in the Development Objectives Chart show the breakdown of "Policy and Directivity for Issue Resolution (Development Issues)" in the latter. (The goal level corresponding to the Development Issue differs depending on country or field.)

Relationship between the Development Objectives Chart and the
Development Objectives Matrix of JICA Country Program

<Development Objectives Chart>

Development Objectives	Mid-term Objectives	Sub-objectives of Mid-term Objectives	Examples of Activities

Development Issue

Current Conditions and Problems of Cooperation Priority Areas	Causes and Backgrounds of Problems	Policy and Directivity for Issue Resolution (Development Issues)	Goals of JICA Cooperation (Specific goals or indicators)	JICA's Projects

<JICA Country Program, Development Objectives Matrix>

4. Task Force

The task force of this study is listed below. The task force was composed of four groups, and each group was responsible for drafting the respective article. The final study report was completed as a result of revisions of the draft articles based on the discussions at the Study Group meetings and a number of comments received from JICA staff of overseas offices and headquarters as well as external experts.

Members of Study Group

Chief	Director, Planning and Coordination Division, Planning and Evaluation Department	Hiroshi Kato
Poverty Reduction	Director, First Technical Cooperation Division, Social Development Cooperation Department	Eiji Inui
	Deputy Director, Global Issues Division, Planning and Evaluation Department	Harumi Okawa
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	Associate Specialist, Second Technical Cooperation Division, Social Development Cooperation Department	Yuko Ishibashi
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	Second Research and Development Division, Institute for International Cooperation	Kanako Adachi (also a member of the secretariat)
	Permanent Mission of Japan to the United Nations	Yuko Ishizawa (until December 2002)
	Researcher, Global Link Management, Inc.	Harumi Iida (from December 2002 until February 2003)
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Overview of Effective Approaches for Promoting the Use of Information and Communication Technology: Executive Summary

1. Overview of Information and Communication Technology

1-1 Current State of IT and its Importance

Information and communication technology (IT) is an important tool for improving economic productivity and efficiency of administrative services and it would be introduced into social sectors such as education in order to improve people's lives.

However, people (countries, or regions) who do not have enough opportunities to use or learn about IT, mainly those in developing countries, are not able to reap the benefits these technologies offer. The gap between people (countries, or regions) who have access to use and acquire IT and those who do not, what is called "digital divide," has become an important issue.

IT is also 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 everyone can use IT at an affordable cost anywhere and whenever they need.

1-2 Definition

IT includes both information technology and communication technology. It is technology for the purpose of inputting, storing, processing, transmitting, and outputting (displaying and printing) information, and is divided into hardware and software. In this report broadcasting and postal mail services are not included in IT.

1-3 International Trends

At the July 2000 Kyushu-Okinawa Summit a working group called the Digital Opportunity Taskforce ("DOT Force") was established to make the best use of opportunities provided by IT (digital opportunity) and for elimination of 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). In July 2001, the DOT Force presented the Genoa Plan of Action at the Genoa Summit, and Implementation Teams were organized for each action point in the plan. In June 2002 Progress Report on the Genoa Plan of Action was submitted at the Kananaskis Summit. It mainly discussed issues such as supporting national e-strategies, increasing access and reducing cost, enhancing human capacity development, knowledge creation and sharing, promoting the use of IT in health care and in support against infectious diseases, and national and international efforts to support local content and application creation, what are included in each of the Development Objectives of this report.

In addition, IT-related section of the Millennium Development Goals (MDGs) agreed upon at the U.N. Millennium Summit describes: "In cooperation with the private sector, make available the benefits of new technologies, especially information and communications technologies." Furthermore, 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 linguistic and cultural diversity of Asia.

1-4 Trends in Japan's Assistance

The importance of eliminating the international digital divide has been clearly indicated in "Japan's Comprehensive Cooperation Package to Address the International Digital Divide," announced in July 2000, in the "Okinawa Charter on Global Information Society (IT Charter)" adopted at the Kyushu-Okinawa Summit, 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 based on the above-mentioned efforts and the "e-Japan Strategy," "e-Japan Priority Policy Program," and the "e-Japan 2002 Program" also explicitly state technical cooperation to 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.

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

2. Effective Approaches for Promoting the Use of Information and Communication Technology

2-1 Goals for the Use of IT

The challenges that lie ahead in the IT sector are eliminating the digital divide and providing digital opportunities, mainly in developing countries. In addition, since IT is evolving and advancing rapidly and all types of information are becoming digitized, the goals here also include utilization of IT and digital content in other development issues and effective and efficient use of IT for international cooperation.

2-2 Effective Approaches for Promoting the Use of IT

Development Objective 1: Strengthening Capacity for IT Policy Formulation

In terms of telecommunications policy, it is important to provide policy guidance during the process in which a country moves from the stage of a state-owned enterprise to that of privatization and deregulation, with consideration for the importance of telecommunication operators in the communities while at the same time continuing to sustain the incentives for operators to improve their economical efficiency.

As for policies that foster the IT industry, it is important to keep policies and regulations (such as those to protect intellectual property rights and encourage research and development activities) to a minimum because the private sector should always take the lead.

To have policies that will eliminate gaps that exist within a country, it is essential to build appropriate support systems fitting with the structure of the telecommunications market with the goal of achieving universal service. Furthermore, to bridge gaps toward socially vulnerable groups, it is essential to increase and expand support systems in the private sector.

Policies that protect users should monitor and regulate the activities of operating companies from the perspective of security, ethics, and protection of personal information, so that users are not harmed by the provider's pursuit of economical efficiency.

Development Objective 2: Human Resources Development in IT

When developing IT engineers, it is important to ensure that there is at least a certain population of personnel who are competent to at least a certain technical level – in other words, it is essential to satisfy needs in terms of both quantity and quality.

Since the environment surrounding the IT sector changes very rapidly, it is necessary to extend assistance with the mechanism to continuously review its content in order to maintain technical levels.

Meanwhile, from the standpoint of ensuring the quantitative aspect, it is important to adopt measures that familiarize the population that is already playing an active role in society with IT and to increase the IT literacy of the population that will be entering society in the future while they are at the educational stage.

Raising education levels requires instructors to foster IT engineers, and rather than just simply increasing number of educators, emphasis should be placed on developing high quality educators.

In developing policy-makers it is important to carry out training to increase their capacity to formulate and implement appropriate policies regarding IT.

Development Objective 3: Improvement of Communication Infrastructure

A broad range of cooperation is required to promote the use of IT in developing countries, starting with improvement of a country's capacity to formulate IT policies, and this clearly requires a communication infrastructure, in particular, developing the telecommunications infrastructure. Improving telecommunications infrastructure requires the development of a backbone network and an access network. The provision of infrastructure in the rural areas is one of the important tasks as well but it needs to be carefully studied from a viewpoint of various costs involved. In addition, cooperation that makes it easier to use the Internet is indispensable.

Development Objective 4: Improvement of Efficiency and Effectiveness of Every Sector through the Use of IT

The use of IT in every sector can be roughly divided into: "promoting e-government" including promoting the internal efficiency of the government, online filing of application and notification procedures, disclosure of public information, and the participation of citizens in policy-making, and "using IT in each sector" including support for e-learning activities, support for content creation, use of IT as a tool for statistics and analyses, and gathering information using networks. With respect to promoting e-governments, it is typical to start by introducing computers for routine work and then to broaden the range of application. In using IT in every sector, it is effective to promote organizational efficiency and sharing and using information through information systems.

Development Objective 5: Improvement of Efficiency and Effectiveness of Development Assistance through the Use of IT

Advances in IT have made it possible to process all kinds of data electronically, and it is, therefore, effective to adopt digital methods for creating educational materials. Also, taking advantage of distance learning method through the use of IT will improve the overall efficiency of diffusing and transferring digitized technology and knowledge.

Using IT can promote the sharing of existing content between JICA and other donors and developing countries, and enables not only sharing, but also collaborative development of effective and efficient content. The use of IT will also make it possible to hold productive discussions without the constraints of time or space through TV conferencing for workshops and consultations with other donors and developing countries.

3. JICA's Cooperation Policy

3-1 JICA's Priorities and Points of Concern

Development Objective 1: Strengthening Capacity for IT Policy Formulation

In countries where the telecommunications business is run by a state-owned enterprise, the need is even greater to focus on providing assistance in operations and ensuring the soundness of the management of the state-owned enterprise, since it is responsible for improving the telecommunications infrastructure. In countries where the telecommunications business has been privatized, however, the aim should be on developing industrial activity through companies in the private sector. It is, therefore, important to carry out assistance for creating comprehensive IT policies that promote the development of rural infrastructure, user protection, and fostering the IT industry.

The measure of securing resources for policy-making needs consideration. This requires a framework in which JICA can make use of think tanks that are familiar with IT policies, personnel with actual administrative experience from ministries, agencies, and international organizations, and personnel from educational institutions.

Development Objective 2: Human Resources Development in IT

It is important to develop key persons in every country who are in charge of promoting the use of IT as well as guiding countries in establishment of frameworks to promote sustainable human resources development in IT under their own efforts. It is also essential to create systems and mechanisms for promoting the human resources development in IT, and to develop integral measures, including extension of results of efforts based on the successful model cases and improvement of IT literacy of as many citizens as possible.

In developing human resources in IT, the first priority is to increase the population of IT engineers who are active in their business field, while improving the quality of those engineers. For this purpose, priority would be given to improving the level of the existing IT engineer population and also to developing human resources by targeting young people who are at the stage of higher education or professional education.

Development Objective 3: Improvement of Communication Infrastructure

The telecommunications business at the core of developing the communication infrastructure is increasingly being privatized in the industrialized nations, and the same trend is observed in developing countries at higher stages of development. Meanwhile, although less developed countries are also influenced by these trends, they still need government-led measures and have a high potential need for ODA, and it is therefore important to respond to these.

Elimination of digital divide is not the only point for consideration here. Provision of telecommunications infrastructure in rural areas should be prioritized from the perspective of fulfilling basic needs as well.

Development Objective 4: Improvement of Efficiency and Effectiveness of Every Sector through the Use of IT

JICA has been cooperating to improve the operation of administrative agencies using IT in the form of providing computers and developing systems for statistics and patents (industrial property rights) since the first half of the 1980s. These efforts have been major activities of cooperation, and further will continue to be key issues along with the human resources development. Meanwhile, the disclosure of public information and the participation of citizens in policy-making should be taken into consideration when carrying out a variety of projects.

It is necessary to consider utilizing IT in every sector. Cooperation by using Geographical Information

Systems (GIS) to improve work efficiency, prevent disasters, and plan countermeasures by monitoring rainfall amounts, river flow rates, and environmental pollutants will also become increasingly important.

As a point of consideration, technical cooperation should be carried out mainly for systematization of works and creating prototypes. In planning of the systematization management and maintenance costs should be taken into consideration. In addition, in the information and communication fields the latest technology is sometimes the cheapest and most efficient, and it is therefore necessary to pay close attention to trends in technology.

Development Objective 5: Improvement of Efficiency and Effectiveness of Development Assistance through the Use of IT

With respect to this development objective, JICA should adopt a systematic method for the development of educational materials centered on the expansion of the distribution network for educational materials through JICA-Net and to create new content and improve and revise existing content.

Furthermore, in any type of project content should be digitized. It is desirable to enrich content by organizing and integrating it. An appropriate environment should be developed for joint development of contents in similar sectors among donors and developing countries. Furthermore, it is necessary to systematize the sector-specific knowledge in the knowledge management system operated by JICA.

Points of consideration include organizing the intellectual property rights and costs of materials, technology, and know-how for creating content, resolving language barriers, and comparing the cost effectiveness of face-to-face versus distance activities.

3-2 Issues to be Considered for Future Activities

(1) Assistance to Privatized Enterprises

In the current mechanism for Official Development Assistance (ODA) it is difficult to provide cooperation to privatized business entities. However, in the field of IT there are many cases in which the private sector carries the most responsibility in playing a leading role. It is therefore expected to look into the introduction of a flexible framework that enables cooperation for privatized business entities if the social benefit is great.

(2) Need for a Unit to Promote the use of IT

The use of IT is an issue that would involve all departments of JICA, and it is therefore necessary to consider establishing a specialized unit for the promotion and effective use of IT. This unit would summarize the progress of IT use in every sector and scheme and introduce examples of relevant projects, thereby, providing advice and information to all departments on the use of IT.

(3) Strengthening Distance Technical Cooperation

The effectiveness of distance technical cooperation is becoming more and more recognized, and therefore further development and utilization of content and techniques for remote lectures, e-Learning, and WBT (Web Based Training) will be important issues.