



# **【Online】 Knowledge Co-Creation Program (Group & Region Focus)**

## **GENERAL INFORMATION ON**

### **OPERATION AND MAINTENANCE OF URBAN WATER SUPPLY SYSTEM (WATER QUALITY AND PURIFICATION) (A)**

**課題別研修「都市上水道維持管理(浄水・水質)(A)」**

*JFY 2022*

**Course No.: 202107976J001**

**Online Course Period: From January 10, 2023 to February 24, 2023**

This information pertains to one of the JICA Knowledge Co-Creation Programs (Group & Region Focus) of the Japan International Cooperation Agency (JICA) implemented as part of the Official Development Assistance of the Government of Japan based on bilateral agreement between both Governments.

#### **JICA Knowledge Co-Creation Program (KCCP)**

The Japanese Cabinet released the Development Cooperation Charter in February 2015, which stated, *“In its development cooperation, Japan has maintained the spirit of jointly creating things that suit partner countries while respecting ownership, intentions and intrinsic characteristics of the country concerned based on a field-oriented approach through dialogue and collaboration. It has also maintained the approach of building reciprocal relationships with developing countries in which both sides learn from each other and grow and develop together.”* JICA believes that this ‘Knowledge Co-Creation Program’ will serve as a foundation of mutual learning process.

# ***I. Concept***

## **Background**

Safe accessible water is indispensable for human lives, improving health, reducing poverty, social well-being and sustainable development. Yet more than 1.8 billion people still do not have access to safe water, which leads to death of millions of people every year. Particularly rapid urbanization in many developing countries is increasing pressure on public institutions to provide adequate supplies of clean water to populations.

In its endeavor to reconstruct and modernize after the World War II, Japan has gone through the process of trial and error in developing urban water supply system. Such experiences have been accumulated as lessons learned.

## **For What**

This program aims to support the organizations in their attempt to develop the urban water supply system. Participating organizations are expected to fully utilize the knowledge, skills and a solution plan explored and acquired by their leading staff to participate in this course.

## **For Whom**

This program is designed for field engineers in urban drinking water supply management currently engaged in water quality and purification.

## **How**

(1) Participating organizations are requested to prepare an Inception Report and Pre Study Report to identify facing issues in urban water supply system, with special focus on water quality and purification. Participants are expected to recognize clear missions or assignments of what to acquire from the program.

(2) Through the lectures and observation of the urban water supply system of Osaka City and other, participants are expected to formulate the plan in order to address the issues in their organization.

(3) Participating organizations are required to establish a program by their own initiatives to disseminate techniques and knowledge brought back by participants.

## Sustainable Development Goals (SDGs)

The 2030 Agenda for Sustainable Development (the 2030 Agenda) is a set of international development goals from 2016 to 2030, which was adopted by the UN Sustainable Development Summit held in September 2015. As a development cooperation agency, JICA is committed to achieving the SDGs. This program is linked to and will contribute to the realization of following goals under Sustainable Development Goals (SDGs).



Goal 1, by 2020, build the resilience of the poor and these in vulnerable, situations and reduce their exposure and vulnerability to climate related extreme events and other economic social and environmental shocks and disasters.

Goal 5, enhance the use of enabling technology, in particular information and communication technology, to promote the empowerment of women.

Goal 6, ensuring access to water and sanitation for all, with “achieving universal and equitable access to safe and affordable drinking water for all by 2030” as one of the targets.

## II. Description

1. Title (No.): Operation and Maintenance of Urban Water Supply System (Water Quality and Purification) (A)

2. Course Period in JAPAN  
January 10, 2023 to February 24, 2023

3. Target Regions or Countries:  
Brazil, Laos, Lebanon, Madagascar, Nepal

4. Eligible / Target Organization : This program is designated for counterpart organizations or their related organizations of Japan's bilateral cooperation program

5. Course Capacity (Upper limit of Participants) :  
5 participants

6. Language to be used in this program : English (Including Japanese with English interpretation.)

7. Program Objective:  
To develop engineers' capacity to take a leading role in water quality and purification, by sharing applicable knowledge and skills gained in the program among the engineers and technicians in their countries.

8. Overall Goal:  
Capacity of urban water supply maintenance and management in participating countries and regions is improved.

### 9. Expected Module Output and Contents:

This program consists of the following components. Details on each component are given below:

<b>(1) Preliminary Phase in a participant's home country (Oct.2022-Jan.2023)</b> <i>Participating organizations make required preparation for the Program in the respective country.</i>		
Output	Contents	Method
1) Clarify issues faced by the participating organizations and identify the learning needs / specific assignment for participants	(1) Preliminary discussion in the organizations	Discussion in the organization
	(2) Participants to recognize clear assignment and tasks for the program.	Discussion in the organization
	(3) Submission of Inception Report	Report preparation
	(4) Submission of Pre-Study Report	Report preparation

<b>(2) Core Phase in Online Program (January 10, 2023 to February 24, 2023)</b>		
Output	Contents	Method
2) Participants can explain methods of water quality and purification as well as operation and maintenance techniques utilized in Osaka City and other organizations.	(1) Water Treatment (introduction and methodology of water quality control, theory of chlorination, comprehensive water treatment)	E-learning
	(2) Needs assessment discussion (participants have interview with Osaka City experts to clarify the exact needs for the program)	Online discussion
3) Participants can explain tips on operation and maintenance of purification plant and administration of water supply business.	(1) Operation and maintenance of Purification Plant	E-learning
	(2) Operation and maintenance of Intake and Distribution Facilities	
	(3) Maintenance of mechanical, electrical and measuring instruments and water quality control	
4) Participants can find out measures to improve and/or solve current problems.	(1) Consultation	Q&A report Online discussion
5) Action Plan is formulated to disseminate knowledge and techniques on water quality and purification.	(1) Action Plan formulation	Self-learning/ Online discussion
	(2) Action Plan presentation	Presentation/ Demonstration

<b>(3) Finalization Phase in a participant's home country</b>		
<i>Participating organizations implement the Action Plan by making use of knowledge &amp; skills brought back by participants. This phase marks the end of the Program.</i>		
<i>Participating organizations are required to submit <b>Progress Reports by May.31, 2023.</b></i>		
Output	Contents	Method
The Action Plan is implemented in participating organizations within four months after participants' return.	Implementation of dissemination program	Dissemination program
	Progress Report on dissemination program	Submission of the report to JICA local offices.

**\* In case the Progress Report is not submitted from any organization by May 31, 2023, JICA may suspend acceptance of participants from that organization in the future.**

**<Tentative Program Schedule>**

Date (2023)	program	Method
1 <sup>st</sup> week Jan.10 (Tue) to Jan.15 (Sun)	<u>Lecture:</u> <ul style="list-style-type: none"> <li>• Outline of water supply in Japan</li> <li>• Outline of Japanese Waterworks Association</li> <li>• Outline of Osaka City Waterworks Bureau operation</li> <li>• Water transmission and distribution system that does not easily generate non-revenue water</li> </ul>	On Demand
	<b>Needs Discussion</b> for finding out Issues	Pre-Study Report Q&A by Cornerstone
2 <sup>nd</sup> week Jan.16 (Mon) to Jan.22 (Sun)	<u>Lecture:</u> <ul style="list-style-type: none"> <li>• Water treatment and maintenance of water purification facilities</li> <li>• Conservation of water sources and water quality control in water supply</li> </ul>	On Demand
	<b>Needs Discussion</b> for finding out Issues	Pre-Study Report Q&A by Cornerstone Online discussion
3 <sup>rd</sup> week Jan.23 (Mon) to Jan.29 (Sun)	<b>Consultation</b> for finding out solution	Q&A by Cornerstone
4 <sup>th</sup> ~6 <sup>th</sup> week Jan.30 (Mon) to Feb.19 (Sun)	<b>Consultation</b> for finding out solution	Q&A by Cornerstone
	<b>Action Plan formulation</b>	Online workshop Online discussion
7 <sup>th</sup> week Feb.20 (Mon) to Feb.24 (Fri)	<b>Action Plan presentation</b>	Online presentation

※subject to change without prior notice

### **III. Eligibility and Procedures**

#### **1. Expectations to the Applying Organizations**

- (1) This course is designed primarily for organizations that intend to address specific issues or problems identified in their operation. Applying organizations are expected to utilize the program for those specific purposes.
- (2) This course is enriched with contents and facilitation schemes specially developed in collaboration with relevant prominent organizations in Japan. These special features enable the course to meet specific requirements of applying organizations and effectively facilitate them toward solutions for the issues and problems.

#### **2. Nominee Qualifications:**

Applying Organizations are expected to select nominees who meet the following qualifications.

##### **(1) Essential Qualifications:**

- 1) To be engineers responsible for “Water Quality and Purification” of operation and maintenance of urban water supply.
- 2) To be currently engaged in urban water supply field offices, such as water treatment plants, and have at least five (5) years’ practical experience in that area.
- 3) To have a strong commitment and capacity to disseminate acquired techniques and knowledge after return.
- 4) Language: **have a competent command of spoken and written English** which is equal to TOEFL CBT 250 or more (This KCCP includes active participation in discussions, action plan (interim report) development, thus requires high competence of English ability. Please attach an official certificate for English ability such as TOEFL, TOEIC etc. if possible.)

##### **5) Technical Requirements for the Online Course (Computer)**

###### **Technology Proficiency:**

- Basic computer skills such as, sending/receiving email with attachments, and using a web browser.
- Online course may be delivered using the following services, Web Conferences (Cornerstone, Zoom,), Cloud Storage (Gigapod), and YouTube. (Online tutorial and support by JICA will be limited. The ability to be self-directed in learning new technology skills are required.)

###### **Internet Connection:**

- High Speed Broadband Connection (at least 2Mbps) from your office or your home.

\*Internet access charge incurred for this course shall be borne by you.

**Hardware (Minimum Requirement):**

- Regular access to a computer, either from your home or from your office.
  - Operating System: Windows or Mac OS (Updated version is preferred).
  - Processor: Intel Core 2 Duo or higher; 2GHz or higher
  - Memory: 4GB of RAM or higher
  - Hard Drive Space: 5GB free disk space
  - Browser: Google Chrome is preferred browser. (Edge, Firefox, Safari can be used)
  - Others: Webcam Microphone, and Audio output Device (Speaker or Headset)
- \*In some cases, Smartphone (Android OS or Apple iOS) can be used as substitute of PC.

6) Health: must be in good health to participate in the program.

7) Attendance Requirement: Participation in online program and submission of various assignments is an essential requirement for the completion of the course.

**(2) Recommendable Qualifications:**

- 1) Age: **between the ages of twenty-five (25) and fifty (50) years.**
- 2) Gender Equality and Women's Empowerment: Women are encouraged to apply for the program. JICA makes a commitment to promote gender equality and women's empowerment, providing equal opportunity for all applicants regardless of sexual orientation and gender identity.

**3. Required Documents for Application**

- (1) Application Form:** The Application Form is available at **the JICA overseas office (or the Embassy of Japan)**
- (2) Photocopy of Passport or ID:** Photocopy should include Name, Date of Birth, Nationality, Sex, Passport number and Expire date.
- (3) English Score Sheet (Photocopy):** to be submitted with the application form, if the nominees have any official English examination scores. (e.g., TOEFL, TOEIC, IELTS)
- (4) Inception Report of "Water Supply Service Information Sheet":** to be submitted with the application form. The contents of the sheet is referred to **ANNEX I**

**4. Procedures for Application and Selection****(1) Submission of the Application Documents**

Closing date for applications: **Please confirm the local deadline with JICA overseas office (or the Embassy of Japan).**

(All required material must arrive at **JICA Center in Japan by December 5, 2022**)



## **(2) Selection**

Primary screening is conducted at the JICA overseas office (or the embassy of Japan) after receiving official documents from your government. JICA Center will consult with concerned organizations in Japan in the process of final selection. Applying organizations with the best intentions to utilize the opportunity will be highly valued.

The Government of Japan will examine applicants who belong to the military or other military-related organizations and/or who are enlisted in the military, taking into consideration of their duties, positions in the organization and other relevant information in a comprehensive manner to be consistent with the Development Cooperation Charter of Japan.

## **(3) Notice of Acceptance**

The JICA overseas office (or the Embassy of Japan) will notify the results **not later than December 14, 2022.**

## **5. Additional Document to be submitted by accepted participants:**

**Pre-Study Report** to be submitted by **December 26, 2022.** Only accepted participants are required to prepare the report (*See ANNEX II for further details*).

JICA will provide a lecture on **December 19, 2022** for preparation of the report.

This Report should be submitted by uploading on JICA-VAN (JICA's Cornerstone) by participant, or sent directly to JICA at [Nishiji.Ayumi@jica.go.jp](mailto:Nishiji.Ayumi@jica.go.jp) and [Shimizu.Yoshitomo3@jica.go.jp](mailto:Shimizu.Yoshitomo3@jica.go.jp) by email.

## **6. Conditions for Participation**

The Participant of KCCP is required

- (1)** to strictly observe the course schedule
- (2)** not to change the program topics
- (3)** not to record or share the online contents without JICA's permission

## IV. Administrative Arrangements

### 1. Organizer (JICA Center in Japan)

(1) **Center:** JICA Kansai Center (JICA Kansai)

(2) **Programme Officer:**

Ms. NISHIJI Ayumi (E-mail: Nishiji.Ayumi@jica.go.jp)

Mr. SHIMIZU Yoshitomo (E-mail: Shimizu.Yoshitomo3@jica.go.jp)

### 2. Implementing Partners:

(1) **Name:** Osaka Municipal Waterworks Bureau

**URL:** <http://www.city.osaka.lg.jp/contents/wdu030/english/>

(2) **Name:** Kyoto City Water and Sewage Works Bureau

**URL:** <http://www2.city.kyoto.lg.jp/suido/engtop.htm>

(3) **Name:** Osaka Water General Service Co., Ltd. (affiliated with Osaka Municipal Waterworks Bureau)

**URL:** <https://www.owgs.co.jp/english/>

(4) **Remark:**

The city of Osaka and the city of Kyoto are situated at the heart of the Japanese archipelago. They have been developed over the centuries as a center of Japanese politics and economy.

Osaka City's water supply system became only the fourth modern supply system in the country when it was inaugurated in November 1895. Numerous expansion programs in line with the growth of the city's area and population have since brought the system's supply capacity up to its current daily level of 2.43 million m<sup>3</sup>.

Kyoto City almost relies on Lake Biwa as water source and intakes by the Lake Biwa Waterway, and partially on the Uji River. The raw water is purified in three purification plants (Keage, Matsugasaki and Shin-Yamashina). Purified water is distributed by distribution pipes and supplied from water supply equipment that leads to the residential areas.

YouTube of "Knowledge Co-Creation Program" and "Introduction of JICA Center" are viewable from the link below

<b>Part I: Knowledge Co-Creation Program and Life in Japan</b>	
English ver.	<a href="https://www.youtube.com/watch?v=SLurfKugrEw">https://www.youtube.com/watch?v=SLurfKugrEw</a>
Spanish ver.	<a href="https://www.youtube.com/watch?v=m7I-WIQSDjI">https://www.youtube.com/watch?v=m7I-WIQSDjI</a>
<b>Part II: Introduction of JICA Centers in Japan</b>	
JICA Kansai	<a href="https://www.jica.go.jp/kansai/english/office/index.html">https://www.jica.go.jp/kansai/english/office/index.html</a>

## V. Other Information

1. Participants who have successfully completed the program will be awarded a certificate by JICA.

# **ANNEX I : Inception Report** **“Water Supply Service Information Sheet”**

- ※ Please submit this report along with the application Form by December 5, 2022.
- ※ Please submit in the specified Excel file sent separately.
- ※ Please provide information about where your organization has jurisdiction like district/city/country.

## Water Supply Service Information Sheet

### 1. Personal Information

(1) Your Name																			
(2) Email Address																			
(3) Country																			
(4) Date of Birth																			
(5) Sex																			
(6) Religion																			
<p>(7) Working experience in JICA projects (Have you ever related with any JICA project/expert? If yes, please describe the name of project(s) and/or expert. If not, please put "None". )</p>																			
(8) Area of Interest	<table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> NRW management</td> <td><input type="checkbox"/> Asset management</td> <td><input type="checkbox"/> Water distribution management</td> </tr> <tr> <td><input type="checkbox"/> Tariff system</td> <td><input type="checkbox"/> Mapping system</td> <td><input type="checkbox"/> Human resources development</td> </tr> <tr> <td><input type="checkbox"/> Customer service</td> <td><input type="checkbox"/> Plumbing work</td> <td><input type="checkbox"/> Planning&amp;design of water supply systems</td> </tr> <tr> <td><input type="checkbox"/> Water treatment</td> <td><input type="checkbox"/> Inspection&amp;certificaton</td> <td><input type="checkbox"/> Business administration of water utilities</td> </tr> <tr> <td><input type="checkbox"/> Water resource development</td> <td colspan="2"></td> </tr> <tr> <td><input type="checkbox"/> Others: Please specify</td> <td colspan="2">( <input style="width: 150px;" type="text"/> )</td> </tr> </table>	<input type="checkbox"/> NRW management	<input type="checkbox"/> Asset management	<input type="checkbox"/> Water distribution management	<input type="checkbox"/> Tariff system	<input type="checkbox"/> Mapping system	<input type="checkbox"/> Human resources development	<input type="checkbox"/> Customer service	<input type="checkbox"/> Plumbing work	<input type="checkbox"/> Planning&design of water supply systems	<input type="checkbox"/> Water treatment	<input type="checkbox"/> Inspection&certificaton	<input type="checkbox"/> Business administration of water utilities	<input type="checkbox"/> Water resource development			<input type="checkbox"/> Others: Please specify	( <input style="width: 150px;" type="text"/> )	
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<input type="checkbox"/> Others: Please specify	( <input style="width: 150px;" type="text"/> )																		

## 2. Organization Profile and Job Description

### **Organization Profile**

(1) Name of the organization

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(2) Mission of the organization

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(3) Type of the organization

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(4) Number of Staff

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### **Job Description**

(1) Department/Division

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(2) Present Position

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(3) Date of employment by the present organization

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(4) Date of assignment to the present position

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(5) Outline of duties: Describe your current duties

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(6) Challenge of your duties: what is current issue/challenge on your own duty?

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### 3. Water Supply

#### Target Area

Please choose one area/country, and answer following questions based on the area/country.

- If you're working in Ministry/organizations which are responsible for whole country, please use the data of whole country.
- If you're a municipal/local government officer, please choose specific city/area/region you're responsible for.

(1) Target area   
 (ex. Whole country of Thailand, Bangkok metropolis, City of Chiang Mai, etc.)

#### Water Resource and Treatment

(1) Composition of water resource

Surface water	<input type="text"/>	%
Groundwater	<input type="text"/>	%
Spring water	<input type="text"/>	%
Others	<input type="text"/>	%

(2) Maximum daily water supply demand  m<sup>3</sup>/day  
 (3) Average daily water supply demand  m<sup>3</sup>/day  
 (4) Total daily capacity of treatment plants  m<sup>3</sup>/day  
 (5) Main treatment process

Please specify the treatment process, if you choose "Others" (  )

#### Water Distribution

(1) Total length of distribution pipe  km  
 (2) Material of distribution pipe

#### Water Supply Service

(1) Service Area  km<sup>2</sup>  
 (2) Population in service area  people  
 (3) Number of connections  connections  
 (4) Service population  people  
 (5) Coverage ratio  #DIV/0!  
 (6) Supply duration per day  hours/day  
 (7) Material of service pipe   
 (8) Water pressure at tap  MPa (※1 MPa=10 bar)  
 (9) Customer meter installation ratio  %  
 (10) Frequency of meter reading

### Non-Revenue Water

(1) Non-Revenue Water Ratio  %

(2) Water Balance Sheet: Please fill the following water balance sheet, if available.

System Input Volume	Authorized Consumption	Revenue Water	Billied Authorized Consumption	<input type="text"/>	%
		Non- Revenue Water	Unbillied Authorized Consumption	<input type="text"/>	%
	Water Losses			Apparent Losses (Commercial Losses)	<input type="text"/>
		Real Losses (Physical Losses)		<input type="text"/>	%

### Tariff System & Business Administration

(1) Average tariff per unit volume in USD  USD/m<sup>3</sup>

※Please calculate average tariff per unit volume assuming monthly household consumption as 20m<sup>3</sup>(Calculation method by IWA)

(2) Tariff collection ratio  %

(3) Operating revenue per year  USD/year

(4) Net profit/loss per year  USD/year

(5) Number of staffs per 1,000 connections  #DIV/0! staffs/1,000 connections

## **ANNEX II : Pre-Study Report**

### Instruction of Pre-study Report (Accepted participants only)

- ※ Participants are required to formulate “Action Plan” in the Online Program and to implement the plan after the program.
- ※ Object of Action Plan is to improve the technical issues of participating organization by disseminating knowledge and information learnt in the program.
- ※ Therefore, participants are required to clarify issues faced by the participating organizations and identify the learning needs.
- ※ Sample form of pre-study report will be provided after participant is finalized.
- ※ JICA will provide a lecture on **December 19, 2022** for preparation of the report.
- ※ The report must be submitted by uploading to JICA-VAN (JICA’s Cornerstone) or be sent directly to JICA at [Nishiji.Ayumi@jica.go.jp](mailto:Nishiji.Ayumi@jica.go.jp) and [Shimizu.Yoshitomo3@jica.go.jp](mailto:Shimizu.Yoshitomo3@jica.go.jp) **by December 26, 2022** by email.

## **For Your Reference**

### **JICA and Capacity Development**

Technical cooperation is people-to-people cooperation that supports partner countries in enhancing their comprehensive capacities to address development challenges by their own efforts. Instead of applying Japanese technology per se to partner countries, JICA's technical cooperation provides solutions that best fit their needs by working with people living there. In the process, consideration is given to factors such as their regional characteristics, historical background, and languages. JICA does not limit its technical cooperation to human resources development; it offers multi-tiered assistance that also involves organizational strengthening, policy formulation, and institution building.

Implementation methods of JICA's technical cooperation can be divided into two approaches. One is overseas cooperation by dispatching experts and volunteers in various development sectors to partner countries; the other is domestic cooperation by inviting participants from developing countries to Japan. The latter method is the Knowledge Co-Creation Program, formerly called Training Program, and it is one of the core programs carried out in Japan. By inviting officials from partner countries and with cooperation from domestic partners, the Knowledge Co-Creation Program provides technical knowledge and practical solutions for development issues in participating countries.

The Knowledge Co-Creation Program (Group & Region Focus) has long occupied an important place in JICA operations. About 400 pre-organized courses cover a wide range of professional fields, ranging from education, health, infrastructure, energy, trade and finance, to agriculture, rural development, gender mainstreaming, and environmental protection. A variety of programs is being customized by the different target organizations to address the specific needs, such as policy-making organizations, service provision organizations, as well as research and academic institutions. Some programs are organized to target a certain group of countries with similar developmental challenges.

### **Japanese Development Experience**

Japan, as the first non-Western nation to become a developed country, built itself into a country that is free, peaceful, prosperous and democratic while preserving its tradition. Japan will serve as one of the best examples for our partner countries to follow in their own development.

From engineering technology to production management methods, most of the know-how that has enabled Japan to become what it is today has emanated from a process of adoption and adaptation of course, has been accompanied by countless failures and errors behind the success stories.

Through Japan's progressive adaptation and application of systems, methods and technologies from the West in a way that is suited to its own circumstances, Japan has developed a storehouse of knowledge not found elsewhere from unique systems of organization, administration and personnel management to such social systems as the livelihood improvement approach and governmental organization. It is not easy to apply such experiences to other countries where the circumstances



differ, but the experiences can provide ideas and clues useful when devising measures to solve problems.

JICA, therefore, would like to invite as many leaders of partner countries as possible to come and visit us, to mingle with the Japanese people, and witness the advantages as well as the disadvantages of Japanese systems, so that integration of their findings might help them reach their developmental objectives..



**Contact Information for Inquires**

For enquiries and further information, please contact the JICA overseas office or the Embassy of Japan. Further, address correspondence to:

**JICA Kansai Center (JICA Kansai)**

**Address: 1-5-2, Wakinohama-kaigandori, Chuo-ku, Kobe, Hyogo 651-0073, Japan**

**TEL: +81-78-261-0341/0383 FAX: +81-78-261-0465**