Final Report on the Study on Safety Management for Construction Work in Japanese ODA Project

February 2012

JAPAN INTERNATIONAL COOPERATION AGENCY（JICA）
The Overseas Construction Association of Japan, INC

EID
JR
12-025

Summary

1. Objective and Overview of Study

The objective of the study was to provide information which would contribute to preventing and reducing the number of accidents to those involved in ongoing construction works by Japanese ODA, information concerning legislation/administration related to occupational safety and health, safety risk and the background of construction work, current state of safety management, examples of downside and upside results, instructive lessens, etc. were collected and analyzed.

The three nations of Sri Lanka, Cambodia and Kenya were subject to field survey and for Indonesia and Vietnam, hearing sessions were held with construction and consultant firms, data collected, sorted out, compiled, etc. and based thereon, matters for which parties concerned should be aware of to prevent and reduce the number of accidents clarified and means of addressing such given due consideration.

2. ODA Construction Project Accident Statistics/Analysis

The number of accidents in grant aid projects during fiscal years of 2000 through 2010 and ODA loan projects during fiscal years of 2008 through 2010 were aggregated and analyzed. Accident occurrence in grant aid projects decreased temporarily during fiscal years of 2004 through 2005, but nine cases were reported in fiscal 2006 and reached thirteen cases in fiscal 2010.
The number of Accidents in ODA loan projects totaled seventy-one in all during the three fiscal years of 2008 through 2010. Casualties in grant aid projects during the eleven fiscal years between 2000 and 2010 totaled 152. There were changes from year to year, but there was an upward tendency in the past three years.
On the other hand, casualties in ODA loan projects during the three fiscal years of 2008 through 2010 numbered 283. During the past three years, there tended to be an increase and fiscal 2010 ended up with 110 casualties. Serious accidents (in which three or more casualties were involved) which occurred between fiscal 2000 and 2010 numbered twenty-four resulting in a total of 310 casualties and 118 fatalities. The number of serious accidents which occurred in grant aid projects in recent years tended to decrease compared to the first five years of 2000, but there were two such cases in 2006 and another in 2010. Twelve serious accidents occurred in ODA loan projects during the past three years.
Fifty-five public accidents occurred between fiscal 2000 and 2010 of which fourteen were incidents whereby ODA projects were victimized and such incidents occurred roughly once a year on average.

3. Present State of Occupational safety in Study Nations

The current situation of legal systems in study nations are as follows:

1) Occupational Safety and Health Laws are generally in order
2) Legislations, regulations, etc. based on laws are inadequate
3) Legal arrangements relative to construction machinery and equipment are inadequate
4) Laws and ordinances to prevent traffic accidents involving construction machinery and transporting machines are inadequate
5) International Labour Organization (ILO) support is significant to advance laws related to occupational safety and health.

In respect of occupational safety and health, administrative characteristics can be summarized as follows:

1) An authority which oversees matters related to occupational safety and health exists in each

nation subject to study.

2) Authority in charge of occupational safety and health is the competent authority, but approvals and licenses for the construction industry are generally lax.
3) Occupational accident prevention programs are formulated to cover all industries but a program specifically for the construction industry does not exist.
4) Rules are established to file accident reports, but whether they take root and pervade is a matter for the future to determine.
5) The only penalty in the majority of countries is a minor fine.

Furthermore, in respect of the current situation concerning a qualification system for the construction industry, on the whole a nationwide qualification system such as that based on The Japanese Industrial Safety and Health Law does not exist. Although qualifications for certain technicians have been established, they are mainly plant related (boiler, forklift operation, etc.) qualifications. However, even if qualified, such workmen's technical ability is very frequently questionable.

On the other hand, although in part and with the exception of some countries, education and training systems for occupational safety and health specializing in construction system is being advanced. However, the number of this field is still very few.

4. Safety Management Issues in Nations subject to Study

Points of issue per actor relative to safety management at countries subject to study are summarized hereunder.

The controversial point on the part of clients (outsourcers) is that awareness as undertakers concerning site safety management is not so strong and basic knowledge concerning safety management is inadequate. Although personnel resources with training and field or site experience related to safety management may be available, there were occasions now and then where such information or knowledge was unknown to the organization concerned. To be specific, there were examples where site inspection was not performed excessively relying on consultant's site report. Again, there were cases in which a responsibility structure was not clarified in the event an industrial accident occurred and specific laws, criteria, etc. related to occupational safety and health unavailable and providing guidance involving legal binding force impossible.

As far as consultant issues are concerned, specialists with knowledge and experience in occupational safety and health are but a few, there were cases where awareness and understanding of occupational safety were seldom resulting in not being able to completely check critical elements of temporary works, construction machinery, etc. A consultant under three tier (client, consultant and contractor) agreement clauses does not specialize in safety manager, does not have powerful authority over the contractor, contractor does heed consultant's instructions and in the event a safety specialist is not assigned, issues may arise in consultant's safety management. In such an event, the consultant's burden and responsibility is substantial and issues such as normal assignment of personnel is not quite sufficient arise.

Controversial points of contractor are, firstly, the difficulty of safety control over sub-contractors. One reason for this is because the level of skill and technique of operators who manipulate construction machinery and equipment vary due to lack of adequate qualification system and lack of consciousness concerning safety management by local manpower in country concerned. Again, due to difference in awareness towards public works and safety, there is the problem of having to advance construction works amidst an environment in which public accidents are liable to occur. It is dependent on the type of construction to be performed, but as especially elongated road construction works and water and sewerage works adjacent to private land, electric power plant construction are bound to be of a large scale, etc., work has to be advanced whilst harboring risks peculiar to developing countries, the significant key is how to appropriately assign manpower responsible for safety management. Based on such circumstances, how to make the PDCA safety cycle work is the big issue.

5. Directionality of Approach Hereafter

Based on results of study, causes for issues have been sorted out, measures to reduce accidents investigated and finally, as a recommendation, measures to be tackled hereafter individually by client, consultant, contractor and JICA actors have been developed. Directionality of main schemes of approach hereafter is as described hereunder.

<Directionality of client's approach>

○Seminars utilizing technical cooperation project, ○Enriched training contents in JICA's training course for specific issues such as "Project Supervision in Development of Infrastructure," ○Effective utilization of this study, ○Utilization of external experts, ○Establishment of "Safety Management Guidelines" (tentative name; draft), ○Initiatives for fair tender evaluation concerning safety measures, ○Utilize accident reporting system, and make it useful for effective safety measures by statistical processing/analysis, ○Penalty provisions, ○Infallible performance of the client responsibilities.

<Directionality of consultant's approach>

○Employment of external safety experts, ○Clarify in the contract specific safety items and the number of safety managers, ○Concept of designated temporary structures.

<Directionality of contractor's approach>

○Holding overseas training seminar (voluntary activities of the industry association), ○Startup inspection and regular inspection, ○Introduction of the test for confirming operator skills, ○Proper and specific appropriation of safety response cost, ○Conducting joint safety patrol, ○Introducing penalties and awards for subcontractors, ○Introducing reporting of near miss events, ○Holding training seminars for local firms and subcontractors (the industry's voluntary activities)

<Directionality of JICA's approach>

○Addition of safety provisions in E/N of grant aid projects, ○Implement survey by adding "Safety Consultant (tentative name)" to the ODA preparatory survey, ○Survey, design and estimation by "Safety Consultant (tentative name)," ○Review of standards for "Projects requiring care under the safety measures upon construction, ○Formulation of "Safety Management Guideline (tentative name; draft)," ○Creation of "Safety Examination System for ODA Construction Projects (tentative name; draft), ○Formulation of "Third Party Accident Prevention Guideline (tentative name; draft)," ○Assisting the client and local operators by utilization of yen-loan account technical assistance, ○Improvement of accident report system, ○Improvement of response upon oc currence of accident, ○Examination of measures against material accident, ○Towards realization of the proposal.

Final Report
on the Study on Safety Management
for
Construction Work in Japanese ODA Project

◆ Table of Contents ◆

Chapter 3 Present State of Institutional Approach of the ODA Projects

Chapter 4 The Legal System and Administration in the Surveyed Countries

Chapter 5 Present State and Issues of Safety Management in Countries under study

◆ List of Figure & Tables ◆

[List of Figures]

[List of Tables]

◆ Abbreviations ◆

A/P	: Authorization to Pay
ADB	: Asian Development Bank
AfDB	: African Development Bank
B/D	: Basic Design
CAMFEBA	: Cambodian Federation of Employer and Business Associations
CAR	: Contractor's All Risks Policy
CMAA	: Cambodian Mine Action and Victim Assistance Authority
CMAC	: Cambodian Mine Action Centre
D/D	: Detailed Design
DANIDA	: Danish International Development Assistance
E/N	: Exchange of Notes
EAC	: East African Community
FIDIC	: International Federation of Contract Engineers
FINIDA	: Finnish International Development Assistance
G/A	: Grant Agreement
GTC	: General Terms and Conditions for Japanese ODA Loans
ICTAD	: Institute for Construction Training and Development
IDI	: Infrastructure Development Institute, Japan
IFAWPCA	: International Federation of Asian and Western Pacific Contractors' Associations
ILO	: International Labour Organization
ISO	: International Organization for Standardization
JICA	: Japan International Cooperation Agency
JIS	: Japanese Industrial Standards
KeRRA	: Kenya Rural Roads Authority
KURA	: Kenya Urban Road Authority
KY	: Kiken Yochi (Hazard Prediction)
L/A	: Loan Agreement
M/D	: Minutes of Discussion
MLIT	: Ministry of Land, Infrastructure, Transport and Tourism
MPWT	: Ministry of Public Works and Transport
NGO	: Non Governmental Organization
NIOSH	: National Institute of Occupational Safety & Health
OCAJI	: The Overseas Construction Association of Japan, INC

ODA	: Official Development Assistance
OHSAS	: Occupational Health and Safety Assessment Series
OHSMS	: Occupational Health and Safety Management System
OSH	: Occupational Safety and Health
P/Q	: Prequalification
PPE	: Personal Protective Equipment
QBS	: Quality Based Selection
QCBS	: Quality and Cost Based Selection
QDS	: Quality, Delivery and Safety
R/D	: Record of Discussions
RDA	: Road Development Authority
SME	: Small and Medium Enterprises
TBM	: Tool Box Meeting
TOR	: Terms of Reference
WB	: World Bank

Chapter 1 Study Overview

1-1 Summary of Study

1-1-1 Background of Study

Facility construction projects being executed by Japanese ODA loans, grant aid, technical cooperation, etc. shows the growing tendency of rapid increase on accidents during construction, lately. Once an accident happened, damage to construction target (physical damage,) casualties in construction personnel concerned (labor accident) or third party casualties such as to pedestrians/neighboring residents and the like, damages, etc. to property such as underground facilities entailing worker's accident compensation and third party indemnification requirements, delayed work completion, increased costs, deferred project effect or apprehension of a n egative effect being fomented such as client state's credence with Japan being degraded occurred. By nature, the target of aid programs is to enhance people's health and safety and a labor accident in an ongoing facility construction project can be referred to as not being consistent with such an objective.

Internationally, any systematized management standards for safely controlled construction still have not been established, and therefore, works were executed at individual construction sites by main contractors in accordance with their respective policies and procedures. To mitigate work accidents, performing a study for hazardous and toxic nature (risk assessment) of each individual construction and operation sufficiently bearing in mind site conditions and having countermeasures on the ready based thereon was essential. In recent years, an organized and systematic approach being of importance is the perception widely accepted to enhance construction safety in developed countries, but safety management of construction work in developing countries are at times influenced by the experience and know-how of individuals who engage in such work.

1-1-2 Objective of Study

As providing information which would contribute to prevent and reduce the number of accidents during construction work for those individuals concerned in connection with Japanese ODA construction projects was the objective of this study, information of legal systems and administration related to occupational safety and health, risks in construction work and their background, current situation of safety management, downside and upside instructive examples of a few countries in which such construction is to be executed were collected and analyzed. Based on findings thereof, matters and issues, etc. to which those concerned should bear in mind to evade and decrease work accidents were considered.

1-1-3 Countries subject to Study

Countries subject to the study were three, namely, Cambodia, Sri Lanka and Kenya. Field surveys were conducted, information collected and analyzed. For Indonesia and Vietnam, required information were acquired through interview sessions with construction firms, etc. in Japan and by securing and analyzing information acquired.

1-1-4 Scope of Study

Aiming for upgrading quality whilst reviewing safety management conditions at ODA construction field sites, occupational safety and health related legal systems, regulations and administrative systems of the aforesaid three countries were confirmed, circumstances of safety management at construction sites inspected and precise issues derived therefrom. Projects subject to study were those which entailed civil engineering and construction works (those on w hich works being

conducted in principle) executed by yen loan and grant aid subsequent to concluding an international agreement after fiscal 2000.

1-2 Study Execution Overview

In the study, the legal system related to construction work safety, physical and social constraints, etc. in developing countries have been identified and how appropriate safety management ought to be to evade and reduce work related accidents under such conditions has also been considered from the various point of view.

Firstly, collection of information concerning occupational safety and administration, occupational accidents as well as shuddering and startling incidents (was not a s erious accident but sudden phenomenon or mistake could have directly ended up a such) and their causes, current situation of construction work safety management, examples of downside and upside results, lessons, etc. was carried out. Secondly, characteristic safety risks in constructions works of individual nations and background, restraints and hindrances in executing works in a safe manner have been analyzed. Finally, issues and matters to be attended to when a Japanese construction firm, consultant and parties concerned such as JICA and others address safety management under local conditions have been considered.

1-2-1 Manner of Study Execution

·Acquisition of general information

Efforts were exerted to gather information from governmental agencies and local construction firms regarding related laws, ordinances and administrative matters. As concerns safety management of construction work, from local construction work personnel, governmental agencies, insurance firms, JICA concerned personnel, international organizations, developed nation donors, etc., and, as for Indonesia and Vietnam in which local site studies did not take place, information collected from Japanese construction firms and consultants were studied.

·Study of each project

At and in countries subject to study (Sri Lanka, Cambodia, Kenya,) construction site inspection, interview sessions with personnel concerned took place and data and information collected. Furthermore, safety management of construction work being executed by non-Japanese firms was also targeted. As concerns Indonesia and Vietnam for which studies were wholly concluded in Japan, interviews took place with Japanese construction firms, consultants and other parties for projects being executed by Japanese firms and information acquired accordingly. Together with local studies and studies in Japan, surveys were conducted mainly focusing on accidents involving casualties, construction work and work items having the possibility of leading to and linking up with serious or public accident.

1-2-2 Study Operation Plan

·Interviews, questionnaires, study plan and implementation

Substance and specific items to be taken up in interviews reviewed, institutions and enterprises required to adequately achieve objectives of the study through interviews selected to acquire information concerning the nation’s occupational safety related legal system and administration, accidents as well as shuddering and startling incidents and such causes, current state of construction safety control, examples of downside and upside results, instructive lessons and other matters.

·Gathering information through local resources

·Collecting and sorting out data and information

1-2-3 Parties Interviewed and Items of Information Collected

Table hereunder denotes authorities concerned and affiliated institutions visited for the study, construction sites and items of information collected.

(1) Countries which were subject to on-site Study (Sri Lanka, Cambodia, Kenya)

1) Sri Lanka

Table 1-1 List of Governmental and Other Offices Visited in Sri Lanka

Party visited	Main informational items acquired
Ministry of Labor & Labor Relations	○Legal system and administration related on occupational safety and health, ○Industrial accident statistics, ○Qualification system, ○Education/Training, ○Workmen's compensation and workmen's compensation insurance, etc.
Ministry of Highways Road Development Authority	○Approach related to occupational safety and health as client, ○Industrial accident statistics, ○Education, Training, ○Incident response and penal regulations, ○Workmen's compensation and workmen's compensation insurance, etc.
Ministry of Youth Affairs & Skills Development	○Actual state of occupational safety guidance, ○Work practice, ○Existence or non-existence of qualification system, ○Substance of qualification system, ○Seminars and profession technician training institute, etc.
ILO Country Office for Sri Lanka & the Maldives	○Approach concerning occupational safety and health for ILO developing countries, ○Concrete participation measures for target nation concerning law related systems in occupational safety and health domain, ○Actual state of participation towards improving occupational safety and health conditions, ○Industrial accident statistics, ○Accident reporting system, etc.
ADB Sri Lanka Resident Mission	○ADB approach for preventing/reducing accidents, ○Regulations concerning safety responsibility and obligations under standard construction work contract and its application, ○Penal regulations applicable to contractor causing accident, etc.
National Construction Association of Sri Lanka (NCASL)	○Industrial accident statistics, ○ Approach related to occupational safety as NCASL, ○Labor practice, ○Social practice, etc.
Construction sites (3 locations) * Refer to Table 1-2	○Near miss incidents and causes, ○Serious accident risk, ○Public accident risk, ○Current state of safety management, ○Issues and backdrops, approach for improvement, ○Workers safety awareness, danger predictive capacity, ○Protective gear, safety precautionary materials, etc. ○Current state of consultant's construction supervision, ○Contrivance and improvement examples, ○Instructive lesson examples and successful examples, ○Requests to JICA, etc.
JICA Sri Lanka Office	○Courtesy call/Major points of study explained, ○Local information obtained, ○Study report, etc.
Embassy of Japan, Sri Lanka	○Courtesy call/Major points of study explained, etc. ○Study report, etc.

Table 1-2 List of Construction Sites Visited in Sri Lanka

	Project name/Scheme	Client	Consultant	Contractor
1	Southern Highway Construction Project (Yen loan)	Sri Lanka Road Development Authority	Japanese firm	Japanese firm
2	Greater Colombo Urban Transport Development Project (Yen loan)	Ministry of Highways and Road Development (MOH)	Japanese firm	Chinese firm
3	Upper Kotmale Hydro Power Project (Yen loan)	Ceylon Electric Board (CEB)	Japanese firm	Japanese firm

Ministry of Labor & Labor Relations

Ministry of Highways, Road Development Authority

Ministry of Youth Affairs & Skills Development

ILO Country Office for Sri Lanka & the Maldives

ADB Sri Lanka Resident Mission

National Construction Association of Sri Lanka

JICA Sri Lanka Office ①

JICA Sri Lanka Office ②

Greater Colombo Urban Transport Development Project ①

Greater Colombo Urban Transport Development Project ②

Greater Colombo Urban Transport Development Project ③

Greater Colombo Urban Transport Development Project ④

Upper Kotmale Hydro Power Project ①

Upper Kotmale Hydro Power Project ②

Upper Kotmale Hydro Power Project ③

Southern Highway Construction Project

2) Cambodia

Table 1-3 List of Governmental and Other Offices Visited in Cambodia

Party visited	Main informational items acquired
Ministry of Labor and Vocational Training	○Legal systems/Administration related to occupational safety and health, ○Industrial accident statistics, ○Qualification system, ○Education/Training, ○Worker's compensation and worker's compensation insurance, ○Actual state of occupational safety guidance, ○Labor practice, ○Existence or non-existence of qualification system, ○Seminars, professional technician training institute, etc.
Ministry of Public Works & Transport	○Addressing occupational safety and health related issues as client, ○Industrial accident statistics, ○Education, training, ○Incident response and penal regulations, ○Workmen's accident compensation and workmen's compensation insurance
ADB Cambodia Resident Mission	○ADB vs. industrial accident prevention/reduction, ○Regulations and application of safety responsibility and obligations under standard construction work contract, ○Penal regulations applicable to contractor causing accident, etc.
Construction site (3 locations) *Refer to Table 1-4	○Causes of near miss incident, ○Grave accident risk, ○Public accident risk, ○Current state of safety management, ○Issues, their backgrounds and quest for improvement, ○Worker's awareness of safety and danger prediction capacity, ○Protective gear and safety precautionary equipment, etc., ○Current state of consultant's construction supervision, ○Examples of contrivance and improvement, ○Examples of instructive lessons and successful results, ○Requests to JICA, etc.
JICA Cambodia Office	○Courtesy call/Explanations of major points of study, ○Acquiring local information, ○Study report, ○Taking part in safety measures explanatory meeting, etc.
Embassy of Japan, Cambodia	○Courtesy call/Explanations of major points of study, ○Study report, etc.

Table 1-4 List of Construction Sites Inspected in Cambodia

0	Project name/Scheme	Client	Consultant	Contractor
1	Shihanoukville Port SEZ Development Project (Yen loan)	Port Authority of Shihanoukville, Council for the Development of Cambodia	Japanese firm	Japanese firm
2	Niroth Water Supply Project (Yen loan)	Phnom Penh Water Supply Authority	French firm	Singapore firm
3	Project for Construction of Neak Loeung Bridge (Grant aid)	Ministry of Public Works and Transport	Japanese firm	Japanese firm

Ministry of Labor and Vocational Training

Ministry of Public Works & Transport

ADB Cambodia Resident Mission

JICA Cambodia Office

JICA Cambodia Office: Safety Measures Explanatory Meeting ①

JICA Cambodia Office: Safety Measures Explanatory Meeting ②

Shihanoukville Port SEZ Development Project ①

Shihanoukville Port SEZ Development Project ②

Shihanoukville PEZ Development Project ③

Shihanoukville Port SEZ Development Project ④

Niroth Water Supply Project ①

Niroth Water Supply Project ②

Niroth Water Supply Project ③

Niroth Water Supply Project ④

Project for Construction of Neak Loeung Bridge ①

Project for Construction of Neak Loeung Bridge ②

Project for Construction of Neak Loeung Bridge ③

Project for Construction of Neak Loeung ④

3) Kenya

Table 1-5 List of Governmental and Other Offices Visited in Kenya

Party visited	Main informational items acquired
Ministry of Labor	○Legal system and administration concerning occupational safety and health, ○Industrial accident statistics, ○Qualification system, ○Education, Training, ○Worker's compensation and worker's compensation insurance, etc.
Ministry of Roads	○Addressing occupational safety and health issues as client, ○Industrial accident statistics, ○Education, training, ○Incident response and penal regulations, ○Worker's compensation and worker's compensation insurance, etc.
Ministry of Public Works	○Addressing occupational safety and health issues as client, ○Industrial accident statistics, ○Education, training, ○Incident response and penal regulations, ○Worker's compensation and worker's compensation insurance, etc.
Ministry of Higher Education	○Actual state of occupational safety education, ○Labor practice, ○Existence/non-existence of qualification system, ○Substance of qualification system, ○Seminars and institutions and institutes to train professional technicians, etc.
African Development Bank Group Kenya Country Office	○Addressing industrial accident prevention/reduction issue as AfDB, ○Regulations and application of safety responsibility and obligations under standard construction contract, ○Penal regulations applicable to enterprise causing accident, etc.
Construction site (3 locations) *Refer to Table 1-6	○Near miss incidents and cause, ○Grave accident risk, ○Public accident risk, ○Current state of safety management, ○Issues and their background, addressing improvements, ○Worker's safety awareness, danger predicting capacity, ○Protective gear, safety precautionary equipment, etc. ○Current state of consultant's construction supervision, ○Contrivance and improvement examples. ○Instructive lessons and successful examples, ○Requests to JICA, etc.
JICA Kenya Office	○Courtesy call/Major points of study explained, ○Local information, ○Study report, etc.
Embassy of Japan, Kenya	○Courtesy call/Major points of study explained, ○Study report, etc.

Table 1-6 List of Construction Sites Inspected

	Project /Scheme	Client	Consultant	Contractor
1	Sondu-Miriu Hydropower Project/ Sang'ro Power Plant Project (Yen loan)	Kenya Electricity Generating Company Limited (KenGen)	Japanese firm	Chinese firm
2	Project for Improvement of Water Supply System in Embu and the Surrounding Areas (Grant aid)	Ministry of Water and Irrigation (MOWI)	Japanese firm	Japanese firm
3	Project for the Construction of Nairobi Western Ring Roads (Grant aid)	Kenya Urban Road Authority (KURA)	Japanese firm	Japanese firm

Ministry of Labor

Ministry of Roads

Ministry of Public Works

Ministry of Higher Education

JICA Kenya Office ①

JICA Kenya Office ②

Sondu-Miriu Hydropower Project Sang'ro Power Plant Project ①

Sondu-Miriu Hydropower Project Sang'ro Power Plant Project ②

Sondu-Miriu Hydropower Project Sang'ro Power Plant Project ③

Sondu-Miriu Hydropower Project Sang'ro Power Plant Project ④

Project for Improvement of the Water Supply System in Embu and Surrounding Areas ①

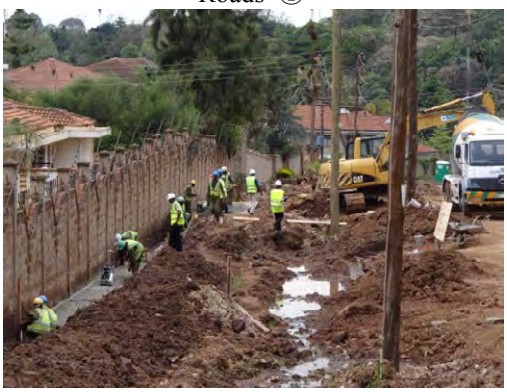
Project for Improvement of the Water Supply System in Embu and Surrounding Areas ②

Project for Improvement of the Water Supply System in Embu and Surrounding Areas ③

Project for Improvement of the Water Supply System in Embu and Surrounding Areas ④

Project for the Construction of Nairobi Western Ring Roads ①

Project for the Construction of Nairobi Western Ring Roads ②



Project for the Construction of Nairobi Western Ring Roads ③

Project for the Construction of Nairobi Western Ring Roads ④

(2) Interview Based Study for Vietnam & Indonesia

As concerns Vietnam and Indonesia, information was basically collected through open information and questionnaire survey targeted Japanese firms. Matters or items for which interviews were replied by Japanese construction and consultant firms having experience on participating in ODA projects in the two nations are shown hereunder.

Table 1-7 Matters taken up in Interviews on Subject Countries in Japan

Parties interviewed	Items of main information acquired
Consultants and contractors being involved in ongoing construction projects	○Industrial accidents, near miss incidents, ○Grave accident and public accident risk, ○Current state of safety management at ongoing construction site, ○Controversial safety management points, etc. at ongoing construction site, ○Current state of sub-contractor, ○Current state of client's and consultant's supervision of works, ○Current state of shop/firm safety and health management, ○Incident response, etc., ○Worker's accident compensation and public accident compensation, ○Occupational safety approach, ○Matters requested of JICA, etc.

1-3 System of carrying out Study

1-3-1 Domestic Support System

The Overseas Construction Association of Japan, Inc. structured a home support framework outlined hereunder for the study. One characteristic of the framework is coordination with Infrastructure Development Institute-Japan to which reinforcement engineer Hiroo Oda is affiliated forming a support base for The Overseas Construction Association of Japan, Inc. to which Takashi Nakayama is affiliated and oversaw entire operations. As regards support role sharing, the policy was to have The Overseas Construction Association of Japan, Inc. play central role in conducting interviews, distributing, collecting and analyzing questionnaire forms, etc. in countries subject to survey for construction related matters and have Infrastructure Development Institute play central role mainly in charge of analyzing Asian Development Bank, etc. information publicly made available as well as information acquired from existing construction industry reports and comprehensive consideration and deliberation conducted jointly by and between both establishments.

The Overseas Construction Association of Japan, Inc. (OCAJI)	
Project director	Hajime Suzuki, Executive Vice President
Overall control	Toru Naito, Managing Director

General Manager, General Affairs Division: Namio Matsui	General Manager, International Affairs & Planning Division: Tsutomu Aburaya

In charge of reinforcement

Infrastructure Development Institute-Japan (IDI)	
General supervision	Kiyofumi Yoshino, President
Overall control	Hiromichi Maruyama, Managing Director

Director, General Affairs and Planning Department: Saburo Kawamura	Deputy Director, General Affairs and Planning Department: Fujio Ito

Figure 1-1 Domestic (Home) Support Framework

1-3-2 Overseas Support System

For this survey, the clue was to grasp live voices of clients actually engaged in construction projects, construction firm, consultants and others as the essentials were there. In this respect, coordination with the Nairobi, Colombo, Jakarta and other branch offices of The Overseas Construction Association of Japan, Inc. for the studies described hereunder took place.

1) Japan-Cambodia Conference on Construction Japan-Vietnam
2) Industry Conference on Japan-Vietnam Construction
3) Construction Industry International Contribution Promoting Conference
4) Others

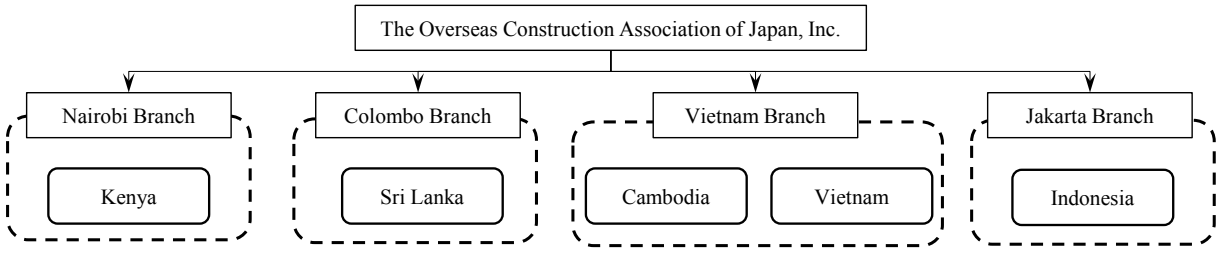


Figure 1-2 Overseas Support Framework

1-3-3 Study Members

Members constituting the study group were as denoted hereunder:

Leader	Takashi Nakayama	Overall control/Safety & hygiene	The Overseas Construction Association of Japan, Inc.
Member(s)	Hiroo Oda	Execution of works & safety (1)	Infrastructure Development Institute-Japan
	Keiji Habara	Execution of works & safety (2)	The Overseas Construction Association of Japan, Inc
	Fujio Ito	Execution of works & safety (3) safety & hygiene assistance	Infrastructure Development Institute-Japan
	Hiroshi Saito	Controller	Infrastructure Development Institute-Japan, cost paid by IDI

1-3-4 Study Schedule

A summarized schedule for study is as follows:

Table 1-8 Study Schedule