

CIVIL AVIATION AUTHORITY
THE ISLAMIC REPUBLIC OF PAKISTAN

PREPARATORY SURVEY
FOR THE PROJECT
FOR AIRPORT SECURITY IMPROVEMENT
(PHASE 2)

DECEMBER 2017

JAPAN INTERNATIONAL COOPERATION AGENCY

GYROS CORPORATION

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PREFACE

Japan International Cooperation Agency (JICA) decided to conduct the preparatory survey of the Project for Airport Security Improvement (Phase 2) and entrust the survey to GYROS CORPORATION.

The survey team held a series of discussions with the officials concerned of the Government of Pakistan and conducted field investigations from February to November 2017. As a result of further studies in Japan, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of the Islamic Republic of Pakistan for their close cooperation extended to the survey team.

December 2017

Itsu Adachi
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SUMMARY

1. Country Overview

The Islamic Republic of Pakistan is located in South Asia, sharing its borders with China, India, Afghanistan, and Iran. Its land area is 796 thousand square kilometers with a population of approximately 193.2 million. Close to the northern border lies the mountains of Hindu Kush Range, Karakoram Range, and Kashmir highlands. The Indus River flows through the center of the country with vast plains stretching along the river, and situated in the southwest is a desert region reaching the coastal areas of the Arabian Sea, with the Thar Desert lying in the east at the Indian border. Moreover, Pakistan is a multiethnic country consisting of diverse ethnic groups including Punjabis, Pashtuns, Sindhis, Baloch, and others.

The major industries are textile industry and agriculture, and the economy is also dependent on the remittance from overseas migrant workers. Economic reform had been stagnant for the past ten years, and the economic growth rate had been sluggish by 4% until 2015. However, with the sound agricultural production and the economic revitalization through large-scale business prompted by the China Pakistan Economic Corridor (CPEC), the ratio of the actual gross domestic product (GDP) in 2016 increased to 5.3%. Since 2007, the economic growth rate has been scoring at a high level of more than 5%, and the economic outlook is back on course for recovery. The gross national income (GNI) per capita was USD 1,510 in 2016 (World Bank, 2016).

2. Background and Outline of the Project

In Pakistan, the Civil Aviation Authority (CAA) is responsible for airport management and security, and based on National Aviation Policy 2015 (NAP2015) is currently strengthening security measures complying with international requirements at airports, which are prone to acts of terrorism. As the risk of hidden explosives in the checked baggage is increasing in recent years, it is crucial to enhance the overall level of detection and security as stipulated by International Civil Aviation Organization (ICAO).

In 2013, the Government of Japan (hereinafter referred to as “GOJ”) implemented “The Project for Airport Security Improvement in Pakistan” (hereinafter referred to as “Phase 1 Project”) and various aviation security equipment was installed to strengthen the security of

airports in Karachi, Lahore, and Islamabad. Meanwhile, the level of inspection at the medium-sized international airports in Multan and Faisalabad has remained as a concern in aviation security. Since many international flights departing from the two airports fly to or via the Middle Eastern countries where security requirements are not as stringent, the possibility of dangerous items entering through or hidden inside such baggage passing through poor inspection is quite high. Therefore, the inspection level at Multan and Faisalabad airports must be improved and upgraded to the level of the other three major airports to strengthen the overall aviation security measures in Pakistan. Moreover, the equipment which was initially planned in Phase 1 Project but was excluded due to high procurement cost caused by foreign exchange rate changes remains urgent and important.

Installation of security equipment at Faisalabad Airport, Multan Airport, and the New Islamabad Airport was requested by the Government of Pakistan. In order to further reduce the risk of terrorism in Pakistan, it is vital to establish inspection systems conforming to international standards at international airports and to contribute in enhancing countermeasures against terrorism not only at the airports but also for the entire region. Furthermore, the importance of this Project is well acknowledged by the Government of Pakistan, which is strengthening security measures within the country.

3. Results of the Survey and Contents of the Project

Japan International Cooperation Agency (JICA) dispatched the Preparatory Survey Team to Pakistan from 13th February to 16th March 2017 for the first field survey. The Team conducted surveys at five airports including those which were target airports of “The Project for Airport Security Improvement in Pakistan” (G/A signed in 2013, hereinafter referred to as “Phase 1 Project”), held series of discussions with the relevant government officials, and studied the natural conditions surrounding the airport sites. After returning to Japan, the Team reviewed the components of the survey and considered possibilities of the Project within the scope of the Grant Aid Scheme. During the second field survey, from 20th to 28th May 2017, the Team continued discussions with the government officials of Pakistan, carried out detailed survey at the sites, and examined the equipment to be procured through the Project. Based on these field surveys, the Team developed the outline design, preliminary cost estimation, and specifications of the equipment and compiled as the draft preparatory survey report. JICA dispatched the

Team from 4th to 9th November 2017 to further elaborate on the draft report, including details of the plan and works to be borne by the Pakistani side, to the government officials of Pakistan.

Although the initial request made by the Government of Pakistan included the three airports of Faisalabad, Multan, and New Islamabad, the need for strengthening the security level at Karachi Airport was identified through the field survey, and thus it was confirmed that aviation security shall be improved for four airports under this Project.

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Explosive Trace Detection Systems (ETDS) is equipment used at airports to detect traces of explosives on the surface of baggage. The ETDS will be installed where the baggage is opened and searched manually, and thus, a desk-top type certified by ECAC was selected.

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The following list summarizes the equipment to be installed under this Project.

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4. Project Implementation Schedule

The required period for project implementation is three months for detailed design, 24 months for the procurement of equipment.

5. Project Evaluation

Strengthening security and safety at international airports is regarded as the utmost priority of Pakistan, which is in line with the purpose of this Project. Establishing effective inspection system complying with international standards at major international airports and contributing to securing measures against terrorism not only within the airport but also at the regional level are consistent to the policies of the Government of Pakistan, which is pursuing public security improvement and enhancement.

According to the “County Assistance Policy for the Islamic Republic of Pakistan” (April 2012), “*a balanced and stable regional development including the border region*” is set as the priority area and assistance for measures against terrorism is addressed as one of the core pillars. In addition, JICA’s Country Analysis Paper for Pakistan (March 2014) highlights “counterterrorism” as the top priority and emphasizes the importance of providing support to security-related facilities and equipment. Thus, this Project is consistent with such analysis and policies of Japanese assistance to Pakistan.

The following quantitative effects can be expected through this Project.

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In addition, according to the qualitative effects, it is anticipated that the risk of terrorism could be reduced in Pakistan through the implementation of this Project.

As aforementioned, this Project is expected to achieve such benefits and, therefore, it is concluded that the relevance of this Project to be implemented as a Japan Grant Aid Project is high and its effectiveness is significant.

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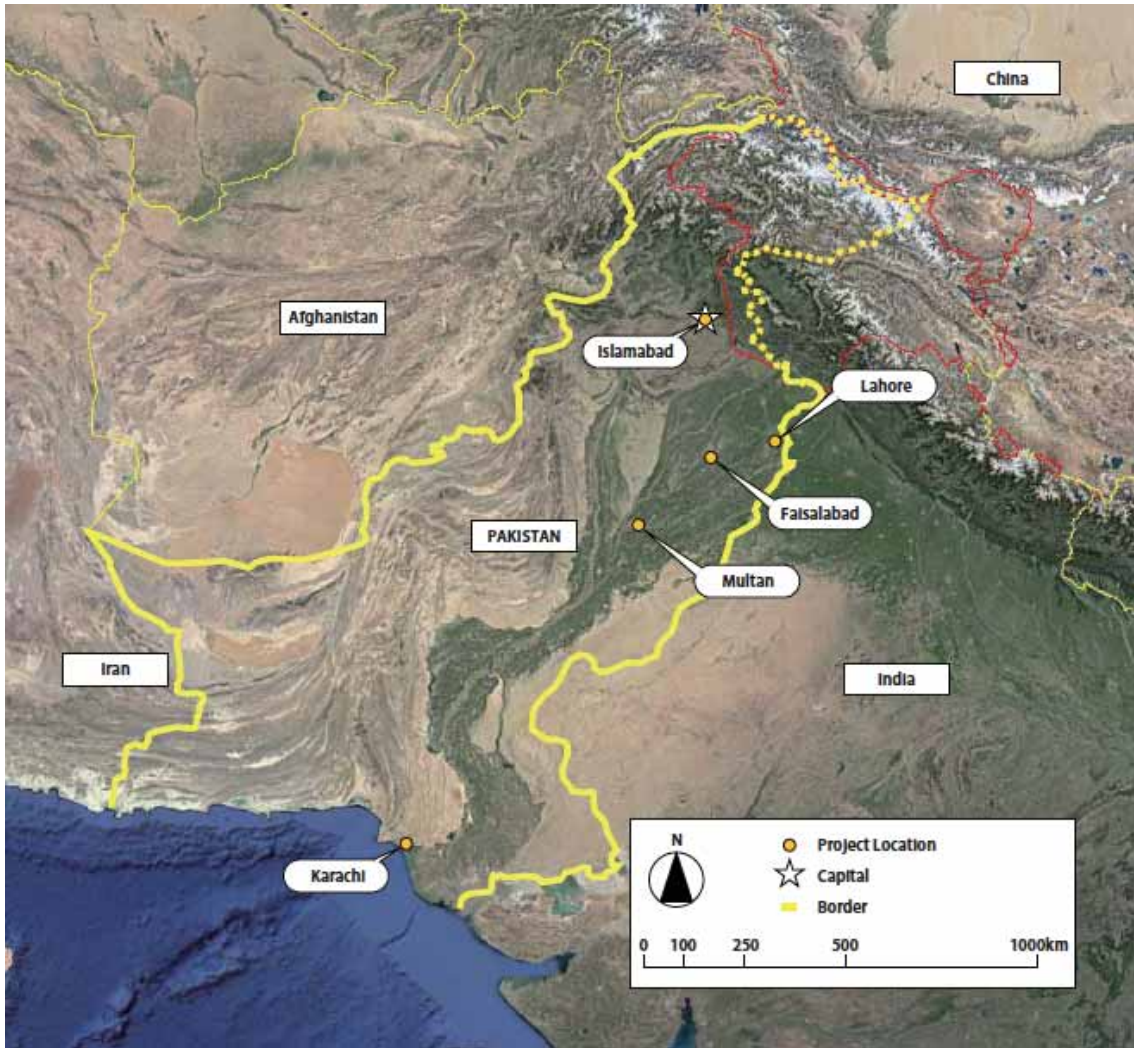
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LOCATION MAP



PERSPECTIVES

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Abbreviations

AH	Asian Highway
ANSI	American National Standards Institute
A/P	Authorization to Pay
ASEAN	Association of South East Asian Nations
ASF	Airport Security Force
ATR	Automatic Tag Reader
AVR	Automatic Voltage Regulator
AWG	American Wire Gauge
B/A	Banking Arrangement
BCP	Building Code of Pakistan
BHN	Basic Human Needs
BHS	Baggage Handling System
BS	British Standards
CAA	Civil Aviation Authority
CBRA	Checked Baggage Resolution Area
CCTV	Closed Circuit Television
CDA	Capital Development Authority
CSO	Chief Security Officer
CT	Computed Tomography
DAC	Development Assistance Committee
EAD	Economic Affairs Division
ECAC	European Civil Aviation Conference)
EDS	Explosive Detection System
EDS-CT	Computed Tomography Explosive Detection System
E/N	Exchange of Notes
ETDS	Explosives Trace Detection System
EU	European Union
FBR	Federal Board of Revenue
FSC	Full Service Carrier
G/A	Grant Agreement
GDP	Gross Domestic Product
HQ	Head Quarters
IBC	International Building Code
ICAO	International Civil Aviation Organization
ICRP	International Commission on Radiological Protection
ID	Identification
IEC	International Electrotechnical Commission
IED	Improvised Explosive Device
JICA	Japan International Cooperation Agency
LCC	Low Cost Carrier
LEDS	Liquid Explosive Detection System
M/D	Minutes of Discussions
NAP 2015	National Aviation Policy 2015
OECD	Organization for Economic Co-operation and Development

OSR	On Screen Resolution
PIA	Pakistan International Airlines
PNRA	Pakistan Nuclear Regulatory Authority
SAT	Site Acceptance Test
SBP	State Bank of Pakistan
TSA	Transportation Security Administration
UPS	Uninterruptable Power Supply

Chapter 1 Background of the Project

1-1 Background and Outline of Grant Aid

1-1-1 Background of Grant Aid

In Pakistan, the CAA is responsible for airport management and security, and based on NAP2015, is currently strengthening security measures complying with international requirements at airports which are prone to acts of terrorism. As the risk of hidden explosives in the checked baggage of passengers is increasing in recent years, it is crucial to enhance the overall level of detection and security as stipulated by International Civil Aviation Organization (ICAO).

In 2013, the Government of Japan (hereinafter referred to as “GOJ”) implemented “The Project for Airport Security Improvement in Pakistan” (hereinafter referred to as “Phase 1 Project”) and various aviation security equipment was installed to strengthen the security of airports in Karachi, Lahore, and Islamabad. Meanwhile, the level of inspection at the medium-sized international airports in Multan and Faisalabad has remained as a concern in aviation security. Since many international flights departing from the two airports fly to or via the Middle Eastern countries where security requirements are not as stringent, the possibility of dangerous goods entering through or hidden inside such baggage passing through poor inspection is quite high. Therefore, the inspection level at Multan and Faisalabad airports must be improved and upgraded to the level of the three major airports to strengthen the overall aviation security measures in Pakistan. Moreover, the equipment which was initially planned in Phase 1 Project but was excluded due to high procurement cost caused by foreign exchange rate changes remain urgent and important.

In order to further reduce the risk of terrorism in Pakistan, it is important to establish inspection systems conforming to international standards at the five international airports and to contribute in enhancing countermeasures against terrorism not only at the airport but also for the entire region. Furthermore, the Government of Pakistan recognizes the importance of this Project which is consistent with the government’s priority in strengthening security measures in the country.

1-1-2 Outline of the Request by the Government of Pakistan

The following Table lists the equipment requested by the Government of Pakistan.

Table 1 List of the Requested Equipment

Location	Equipment Item	Qty
New Islamabad Airport	Big Vehicle Scanner	1
Faisalabad Airport	Hold Baggage Screening Machine (EDS-CT)	3
Faisalabad Airport	Hand Baggage EDS/LEDS system	2
Faisalabad Airport	Small Vehicle Scanner	1
Faisalabad Airport	Big Vehicle Scanner	1
Multan Airport	Hold Baggage Screening Machine (EDS-CT)	5
Multan Airport	Hand Baggage EDS/LEDS system	4
Multan Airport	Small Vehicle Scanner	1
Multan Airport	Big Vehicle Scanner	1

1-2 Assistance from Japan

Table below summarizes the projects in Pakistan by the GOJ concerning security enhancement.

Table 2 List of Projects on Security Enhancement in Pakistan

Year	Scheme	Project Name	Summary
2013-2016	Grant Aid	The Project for Airport Security Improvement in Pakistan	Installation of various aviation security equipment (hold baggage inspection system, vehicle scanners, etc.) at major international airports of Islamabad, Lahore, and Karachi.
2014-2017	Grant Aid	The Project for Security Improvement in Port Karachi and Port Bin Qasim	Installation of three units of gantry type X-ray container inspection equipment to the ports of Karachi and Bin Qasim
2016-2017	Grant Aid	The Social and Economic Development Programme	Provision of grant for the procurement of equipment and products made in Japan for peacebuilding, humanitarian aid, and countermeasures against terrorism.
2018-	Grant Aid	The Social and Economic Development Programme	Installation of security equipment made in Japan as countermeasures against terrorism.

1-3 Assistance from Other Donors

In 2011, the Department for Transport of U.K. donated 18 Explosives Trace Detection System (ETDS) to ASF for major airports in Pakistan. Also, the Government of Bahrain provided cabin baggage X-ray screening system to Pakistan.

1-4 Project Sites and the Surrounding Environment

1-4-1 Development of Related Infrastructures

1-4-1-1 New Islamabad Airport

The New Islamabad Airport is expected to open at the end of December 2017. Big vehicle scanner will be installed through this Project, and since its location is on the road within the airport premises, power can be supplied easily.

1-4-1-2 Faisalabad Airport

At Faisalabad Airport, currently undergoing expansion works, the hold baggage inspection system to be installed under this Project will be deployed inside the passenger building, and power can be supplied from the nearby distribution panel. The power for the small vehicle scanner will be provided from the distribution panel located near the under vehicle scanner. The big vehicle scanner will be installed on the road in the airside and power can be supplied with ease.

1-4-1-3 Multan Airport

In 2015, the new terminal of Multan Airport was developed and is currently equipped with a generator capable of supplying backup power to the entire airport. Thus, power can be supplied from any distribution panel within the airport premises.

1-4-1-4 Karachi Airport

The hold baggage inspection system will be installed inside the building of Karachi Airport, and therefore, the power for the equipment can be supplied from the distribution panel within the airport building.

1-4-2 Natural Conditions

1-4-2-1 Climate of Pakistan

In much of Pakistan, the climate is characterized to be tropical or temperate, rainy, semi-arid/steppe and arid. In the north, summer is hot and winter cold, whereas in the south, it is relatively mild and temperate throughout, and in the central region, temperatures can reach to over 45 degrees Celsius during summer but can become extremely cold in winter. The highest

temperature ever recorded in Pakistan in the past is 50.55 degrees. Overall rain precipitation is low, and annual rainfall is around 250 mm to 1,250 mm, and most of the rain is brought about by the southwest monsoon blowing at the end of the summer.

Among the target airports, Karachi Airport is located in the southern coastal plain, and New Islamabad Airport is located in the upper part of Indus River plain which is in the north of Pakistan. Weather conditions vary according to regions, i.e., in Karachi the weather is dry and arid, whereas in Islamabad, Faisalabad, and Multan, it is steppe climate with wet and dry seasons. Since all project sites are located within the airport premises and the security equipment will be installed in leveled or prepared land, ground conditions and the surrounding drainage systems are good and have no issues.

1-4-2-2 Karachi

Facing the Arabian Sea, Karachi is situated in southern Pakistan and has a relatively temperate climate. The annual average temperature is 26.1 degrees, the annual maximum temperature is 30 degrees, and the annual minimum temperature is 22.2 degrees, with relatively low annual precipitation of 250 mm, the bulk of which occurs during the rainy season of July and August. In winter, the average temperature is about 20 degrees which is moderate and pleasant, but in the hot summer months during April and August, the maximum temperature may reach 30 degrees and 44 degrees. The highest and lowest temperatures ever recorded in Karachi are 47.8 degrees and 0 degree respectively.

Table 3 Monthly Average Temperature in Karachi

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average High (°C)	25.6	26.4	28.8	30.6	32.3	33.3	32.2	30.8	30.7	31.6	30.5	27.3
Average Low (°C)	14.1	15.9	20.3	23.7	26.1	27.9	27.4	26.2	25.3	23.5	20	15.7
Rainfall (mm)	3.6	6.4	8.3	4.9	0	3.9	66.4	44.8	22.8	0.3	1.7	4.5

Source: World Meteorological Organization

1-4-2-3 Islamabad

Islamabad lies in the warm temperate climate zone of Pakistan. Much more rain falls in summer than in winter, and the annual average temperature is 21.3 degrees, with annual maximum and minimum temperatures of 28.6 degrees and 14.1 degrees, and the precipitation average is 941 mm. The driest season is in November, having only 17 mm of rainfall. August

has the maximum rainfall, averaging 227 mm. The temperature in the warmest month may reach 31.7 degrees, while the lowest average temperature is 9.8 degrees in January. The difference between the lowest and the highest monthly precipitation is 210 mm, and the change in temperature within the year is 21.9 degrees.

Table 4 Average Monthly Temperature in Islamabad

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average High (°C)	17.7	19.1	23.9	30.1	35.3	38.7	35.0	33.4	33.5	30.9	25.4	19.7
Average Low (°C)	2.6	5.1	9.9	15	19.7	23.7	24.3	23.5	20.6	13.9	7.5	3.4
Rainfall (mm)	56.1	73.5	89.9	61.8	39.2	62.2	267	309.9	98.2	29.3	17.8	37.3

Source: World Meteorological Organization

1-4-2-4 Multan and Faisalabad

Multan and Faisalabad are well known for the production of citrus fruits and mango. The region is extremely hot in summer and affected by dust and sandstorms. The annual temperature of Multan is 25.2 degrees, with maximum and minimum temperatures 32.6 degrees and 17.9 degrees. The highest and the lowest temperature ever recorded in Multan are 52 degrees and 2 degrees below zero. Also, the annual temperature of Faisalabad is 23.8 degrees, with annual maximum temperature 30.9 degrees and minimum temperature 16.7 degrees.

Table 5 Average Monthly Temperature in Multan

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average High (°C)	21.0	23.2	28.5	35.5	40.4	42.3	39.2	38.0	37.2	34.6	28.5	22.7
Average Low (°C)	4.5	7.6	13.5	19.5	24.4	28.6	28.7	28.0	24.9	18.2	10.9	5.5
Rainfall (mm)	7.2	9.5	19.5	12.9	9.8	12.3	61.3	32.6	10.8	1.7	2.3	6.9

Source: World Meteorological Organization

Table 6 Average Monthly Temperature in Faisalabad

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average High (°C)	19.4	21.9	26.7	33.5	38.4	40.5	37.1	36.1	35.7	33.0	27.2	21.4
Average Low (°C)	4.1	7.1	12.3	18.0	22.7	26.9	27.1	26.6	23.7	17.0	10.1	5.1
Rainfall (mm)	11.5	20.1	25.7	16.9	16.2	27.9	115	89.8	28.7	3.8	3.0	8.6

Source: World Meteorological Organization

Since some of the equipment will be installed outside the airport buildings, the specifications shall be designed considering such dry climate and harsh environmental conditions and resistant to intense heat, dust, and sunlight.

1-4-3 Environmental and Social Considerations

Since the equipment will be installed at the airport and is likely to have minimal or no adverse impact on the natural and social environment, the Project is classified as Category C under JICA Guidelines for Environmental and Social Considerations.

The equipment which emits X-ray will be selected based on its compliance with ICRP60, a stipulation concerning radiation exposure limits recommended by the International Commission on Radiological Protection. For the big vehicle scanner which emits high-level X-ray, radiation-free zones shall be secured to ensure safety.

Chapter 2 Contents of the Project

2-1 Basic Concept of the Project

2-1-1 Overall Goal and Project Purpose

Under the National Aviation Policy 2015 (NAP2015), the Government of the Islamic Republic of Pakistan (GOP) has been strengthening aviation security measures meeting international requirements at airports operating international flights which are prone to terrorist attacks. The purpose of this Project is to strengthen airport security by installing security systems at major airports in Pakistan (Karachi, Multan, Faisalabad, New Islamabad) and, thereby, contributing to enhance social stability through mitigating the risks of terrorism.

2-1-2 Basic Concept of the Project

The following security equipment will be procured and installed at airports in Karachi, Multan, Faisalabad, and New Islamabad.

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2-2 Outline Design of the Japanese Assistance

2-2-1 Design Policy

2-2-1-1 Basic Policy

The following equipment will be procured and installed through this Project.

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2-2-1-1-1 Target Airports

The security of the four international airports of Karachi, Multan, Faisalabad, and the New Islamabad will be improved through the procurement of equipment under this Project. Other airports operating international flights are Lahore, Peshawar, and Quetta. Lahore International Airport was one of the target airports of “The Project for Airport Security Improvement in Pakistan” (G/A signed in 2013, hereinafter referred to as “Phase 1 Project”) under the Grant Aid Scheme, but was excluded from this Project since the GOP is planning for an extensive rehabilitation which includes improvement of hold baggage inspection. Moreover, despite the international relevance and importance of Peshawar and Quetta were revealed through the field survey, the two airports were excluded from this Project due to security reasons.

2-2-1-1-2 Selection of Hold Baggage Screening System

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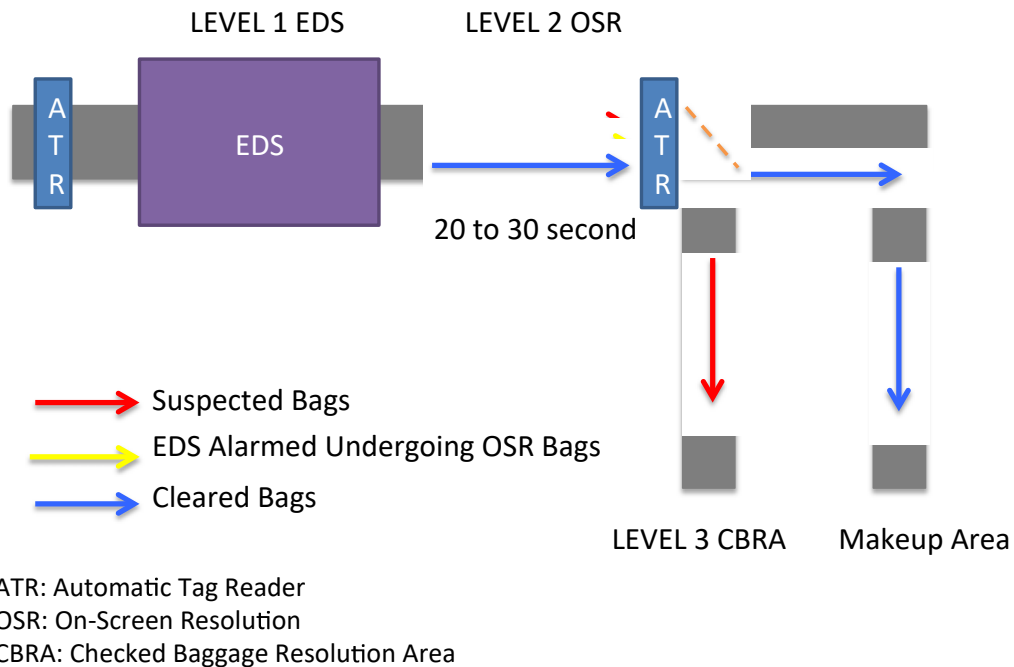
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2-2-1-1-3 Hold Baggage Screening

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The mini in-line system is a combination of EDS and Baggage Handling System (BHS) with higher throughput capabilities compared to the conventional five-level system. At Level 1, the bag is scanned by the automatic detection system of EDS and then sorted to “cleared,” “suspected,” and “alarmed.” Bags that are identified as “alarmed” must be screened by On-Screen Resolution (OSR) at Level 2 and those that are not cleared by OSR screening and confirmed as “suspected” will then be diverted to the Checked Baggage Resolution Area (CBRA). At the CBRA, such bags will be inspected through Explosives Trace Detection System (ETDS). If the bags are confirmed safe or “cleared” after ETDS screening, the checked baggage will be opened and searched inside.

Mini-Inline System Concept



Source: JICA Survey Team

Figure 1 Mini-Inline System

Since manual search of baggage in Pakistan is carried out in the presence of the passenger, the ETDS needs to be located in an area where it is accessible to passengers.

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2-2-1-1-4 Cabin Baggage Inspection

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2-2-1-1-5 Explosives Trace Detection Systems (ETDS)

Explosive Trace Detection Systems (ETDS) is an equipment used at airports to detect traces of explosives on surfaces of hold baggage which are screened through EDS-CT or EDS/LEDS, and it will be installed where manual inspection is carried out.

2-2-1-1-6 Inspection of Vehicles Entering Airports

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2-2-1-1-7 Inspection of Vehicles Entering the Airside Area

Various vehicles such as fuel trucks, maintenance vehicles, catering trucks, may enter from landside to airside of the airport to support the numerous operations of aircraft services. There are two gates which vehicles must pass before entering to the airside area of airports in Pakistan. Each vehicle enters the gate for inspection, where necessary documents such as ID cards and entry permits are examined and items loaded on the vehicle are carefully inspected. This screening process is carried out visually in most airports in Pakistan, except for Karachi and Lahore where big vehicle scanners were installed during Phase 1 Project to detect vehicles loading dangerous items and weapons with higher accuracy.

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2-2-1-2 Design Policy for Environmental Conditions

Local weather conditions at the airports can become severe with high temperatures reaching over 40 degrees Celsius and frequent dust storms. Since some of the equipment will be installed outside the airport buildings, they shall be made durable to such harsh environmental conditions and resistant to intense heat, dust, and sunlight.

2-2-1-3 Design Policy for Procurement and Business Environment

Any import and deployment of X-ray equipment, such as Explosives Detection Systems (EDS) and vehicle scanners, require submission of applications for the registration and licensing

to the Pakistan Nuclear Regulatory Authority (PNRA). As some of the manufacturing countries may require permission for export of such equipment, necessary procedures must be acknowledged and considered when planning the procurement schedule. However, since the requested equipment has already been procured during Phase 1 Project, such procedural requirements can be fulfilled without any problems.

2-2-1-4 Involvement of Local Contractors and Consultants

In Pakistan, various security equipment has been deployed and operated at ports and airports across the country. Since these are managed by local contractors and consultants with enough engineers for maintenance and construction, such skilled workforce shall be utilized during this Project.

2-2-1-5 Design Policy for Operation and Maintenance

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2-2-1-6 Standard of Facilities and Equipment

The equipment shall have enough throughput capacity and performance standards that comply with the current rules, as well as to rules which are likely to be revised soon.

2-2-1-7 Methodology and Procedures for Procurement and Implementation

The equipment for the Project shall be procured, in principle, through competitive tendering based on international and Japanese rules and regulations.

2-2-2 Basic Plan (Construction Plan/Equipment Plan)

2-2-2-1 Installation Plan of Equipment at Each Airport

Table below describes the equipment to be installed at each airport.

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2-2-2-2 Installation Work Plan of the Equipment at Karachi Airport

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2-2-2-3 Installation Work Plan of the Equipment at Multan Airport

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2-2-2-4 Installation Work Plan of the Equipment at Faisalabad Airport

Two EDS will be installed connected to BHS at Faisalabad Airport, currently undergoing rehabilitation and renovation works but will be completed before this Project. Since the rehabilitation works do not include belts and others needed for loading baggage on the container dolly, BHS including such apparatus will also be deployed. The desk where the operator examines the EDS images and space where the suspected baggage is opened and inspected, with the presence of the owner, will be allocated behind the check-in counter with a door on the right connecting these space. The ETDS will be installed in this area.

Two sets of LEDS will be installed at the security checkpoint located in front of international departure hall on the first floor and one ETDS will also be installed in this area.

One Small Vehicle Scanner will be installed at the end of the existing under vehicle scanner which is located at the entrance of the airport. Since the operator of the under vehicle scanner will operate the new scanner, it is necessary to install the control monitoring system of the under vehicle scanner inside the operator's room of the Small Vehicle Scanner.

A new road, leading towards the airside from the fueling station in the southwest of the apron, will be constructed and a Big Vehicle Scanner will be installed.

2-2-2-5 Installation Work Plan of the Equipment at New Islamabad Airport

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2-2-2-6 Specifications of the Equipment

Table below summarizes the main specifications of each equipment to be procured through this Project.

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2-2-3 Outline Design Drawings

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2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

The purpose of each equipment procured under this Project varies, i.e., EDS-CT and EDS/LEDS will be used for inspection of passenger baggage, while vehicle X-ray inspection system will be used for screening various vehicles entering the airport premises. Only a few manufacturers of such airport security equipment can meet the specifications required by this Project, and among those, some provide both types of equipment while others are specialized to one product. Since the purpose and place of installation of the equipment are entirely different, the procurement, installation, operation, and maintenance may be carried out separately, and there is no need for the manufacturers of baggage inspection system and those for vehicle screening to be linked or have relevance.

Therefore, the tender process shall incorporate such conditions and aspects of equipment procurement, and enable to attract more manufacturers to participate in this tender and improve competitiveness.

2-2-4-2 Implementation Conditions

2-2-4-2-1 Information on Local Agents

The equipment to be procured under this Project can be classified into two types:

- Explosives Detection Systems (EDS-CT and EDS for hold baggage, LEDS and ETDS for cabin baggage, and BHS; and
- Vehicle Scanners (for small and big vehicles).

Due to its specialized configuration, all the equipment will be made to order (MTO), and since none are manufactured in Japan, they shall be procured from overseas manufacturers. Some local agents authorized by manufacturers have been located within Pakistan which provides equipment and other services for airport security. The details of the main local agents are listed in Table below.

Table 7 Local Agents in Pakistan

Company Name	Contacts	Name of Affiliate Manufacturer
KARSAZ (PVT.) LIMITED	Address: 1st Floor, Ehtesham Center, 10th East Street, Phase I, D.H.A., Karachi-75500, Pakistan Tel: +92-21-111-KARSAZ (527-729) Fax: +92-21-5850-1915 URL: www.karsaz.com.pk	Smiths Detection
International Aeradio Pakistan (IAL)	Address: 411. Clifton Center, Main Clifton Road, Kaeach-75600, Pakistan Tel: +92-21-3583-7800/8746 Fax: +92-21-3587-0031 URL : www.ialpak.com	Rapiscan
TECNOLOGY LINKS (PUT) LTD.	Address: 4/11-12,Rimpa Plaza, M.A. Jinnah Road, Karachi, Pakistan Tel: +92-21-3273-4260 Fax: +92-21-3270-0728 URL: www.technologylinks.com.pk	LEIDOS
RIZVI&COMPANY	Address: B-24, Block No.9, Gulshan-e-Iqbal Karachi-75300, Pakistan Tel: +92-21-34821116/21-34827124 Fax: +92-21-34968626/21-34993570 URL: rizviandco.com.pk/	L-3

2-2-4-2-2 Laws and Regulations Concerning Procurement

The permission for import and installation of X-ray scanning equipment, such as LEDS and vehicle scanners, must be acquired from the Pakistan Nuclear Regulatory Authority (PNRA). Moreover, certain equipment may require export permission from the relevant authorities of the country in which it is manufactured and, therefore, such administrative procedures and requirements concerning procurement shall be carefully taken note before the procurement. However, since the same type of equipment has already been procured during Phase 1 Project, such issues may not arise or become problematic in this Project.

2-2-4-2-3 Installation by Local Agents

The equipment to be procured through this Project will be installed primarily by the manufacturers/contractors. In Pakistan, maintenance and servicing of security equipment at airports are carried out by local companies, and the development works at New Islamabad Airport are being implemented by local construction companies. Therefore, installation works for the procured equipment can be carried out by such local companies/contractors. In addition, those local companies/contractors are capable of the electrical and civil works, such as diverting

roads for the installation of the big vehicle scanner, which will be executed by the Pakistani Government.

2-2-4-2-4 Service Works by the Local Agents

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2-2-4-2-5 Customs Procedures and Transportation Plan

The procured equipment will be transported by sea from the nearest port of the manufacturing factory in countries, such as the United States, the United Kingdom, Germany, or France, by to the Port of Karachi. The maximum time required for the sea transportation is approximately two months. Once unloaded and cleared through customs, the equipment will be delivered to the designated airports by inland transportation. The distance to Islamabad which is the farthest from Karachi is around 1,500km. Since the development of Asian Highway 4 (AH4) and AH2 has improved road conditions and enhanced network, smooth inland transportation to Multan and Faisalabad is expected.

All import tax, sales tax, and income tax will be exempted from Projects under the Japanese Grant Aid Scheme in Pakistan. The relevant authorities concerning tax exemption procedures are as follows:

- Ministry of Finance, Revenue, Economic Affairs, Statistics and Privatization (MoF)
- EAD: Economic Affairs Division, MoF
- CAA: Civil Aviation Authority
- FBR: Federal Board of Revenue

- SBP: State Bank of Pakistan

Tax exemption procedures following the Exchange of Notes (E/N) are summarized below.

- Exchange of Notes (E/N) shall be concluded and signed between EAD and the Embassy of Japan.
- After signing the E/N, EAD will notify CAA and FBR the contents of the E/N and that the said Project is subject to tax exemption. In response, FBR will issue a letter of acknowledgement.
- Packing List, B/L, Invoice must be submitted to CAA at the time of shipment to apply for import tax exemption. CAA will apply for tax exemption by submitting an application form attached with such documents and letter of acknowledgement by FRB. EAD will then issue a tax exemption certificate to CAA.
- In Sindh Province, CAA will submit the necessary documents for tax exemption to the Government of Sindh, and then the Sindh Government will issue tax exemption certificates to EAD and CAA.

The procedures for Banking Arrangement (B/A) and Authorization to Pay (A/P) are described as follows:

- After E/N is signed, EAD will request SBP for B/A procedures and SBP will then open an account in a bank in Japan. The contract concluded between the GOP and the Consultant shall be verified by JICA to be eligible for the Grant and based on such contract, CAA will request SEP to issue an A/P which will be sent to the bank in Japan.

2-2-4-2-6 Laws and Regulations

The EDS-CT and EDS/LEDS procured by this Project will be installed near the check-in counter of the terminal building. Building Code of Pakistan (BCP) governs the design and construction of buildings in Pakistan, including airport terminal buildings. BCP was first published in 1986 by the Ministry of Housing and Works of GOP and adopts the structural design provisions stipulated in International Building Code (IBC) and British Standards (BS). The implementation and enforcement of BCP vests with the Authority Having Jurisdiction (AHJ) within their respective jurisdictions; equivalent to city-level administrative authority second to the central government and provincial government. The AHJ has the authority to determine/decide on the specifics and scope of building standards. The Capital Development

Authority (CDA) is responsible for providing municipal services in Islamabad Capital Territory and examines the provisions and regulations associated with the height and volume ratio of buildings, but in some cases, architects are held responsible for the building code/standards including structure specifications.

2-2-4-2-7 Restrictions on Installation of Equipment

Although the size of EDS-CT and EDS/LEDS that will be deployed in the terminal building is small (width 3.0m x length 5.0m), the systems can weigh up to over 6.0 tons due to the heavy materials used. Therefore, the intensity/load strength of the posts, beams, and floor slabs of the building should be checked before, especially if installed at check-in counters in the departure hall located on the second floor.

Small/big vehicle scanners will be installed at the entrance of the airport, parking area, and airside. Although there are no structural restrictions for its installation, these areas require a smooth flow of traffic and, therefore, location that ensures efficient performance of inspection should be considered.

Installation of EDS-CT and EDS/LEDS should be carried out without interrupting check-in services at the airport. Since international flights operate twenty-four hours at the target airports, the installation must be carefully planned to minimize the impact on the on-going security inspection by preparing temporary or makeshift check-in counters and utilizing the most extended interval between check-in hours for the installation.

The operation of EDS-CT can only start after the training of operators and maintenance staff is completed. Therefore, the time of installation must be planned accordingly and coordinated with the training schedule for operators and maintenance staff.

The engineering works to secure power supply for the equipment, which will be carried out by the Government of Pakistan, must be completed before the installation and, thus, coordination is required among the persons concerned.

2-2-4-3 Scope of Works

Table 8 Scope of Works

Category	Item	Japan	Pakistan
General	Procedures for Bank Arrangement (B/A), Authorization to Pay (A/P)		X
	Tax exemption and customs clearance fee		X
	Acquisition of permission for installation of X-ray scanning apparatus from Pakistan Nuclear Regulatory Authority (PNRA)		X
	Procurement of the equipment	X	
	Packaging and transportation of equipment	X	
	Installation, adjustment, and test operation of equipment	X	
	Initial operation and maintenance training	X	
	Acquisition of construction work permit		X
	Power supply for equipment from the existing distribution panel		X
EDS-CT, EDS/LEDS, ETDS	Coordination with airports for installation of equipment		X
	Relocation of check-in counters during the installation of equipment		X
Vehicle Scanners	Preparation of installation site for vehicle X-ray inspection system (including operator room)		X
	Ground leveling, construction of new pavement, demolition of existing pavement, fencing (*)		X
	Demolition and construction of gates (*) (see drawings in Outline Design Drawings 3-2-3)		X

(*): For selected airports only

2-2-4-4 Consultant Supervision

In line with the procedures practiced in Japan's Grant Aid Scheme, the agreement on consulting services for detailed design and procurement supervision will be concluded between the Government of Pakistan and the Consultant. After JICA verifies the agreement, the Consultant will implement the following services.

2-2-4-4-1 Detailed Design

Based on the results of the Preparatory Survey, Exchange of Notes (E/N), and the Grant Agreement (G/A) for the Project, the Consultant will carry out the services stipulated in the agreement. That is, the Consultant will review the cost estimation and prepare the tender documents, including specifications and drawings, based on the results of the detailed design.

2-2-4-4-2 Tender Assistance

The Consultant will discuss with the implementing agency of the Government of Pakistan concerning the selection of eligible tenderers and tender procedures, and assist the implementing agency to carry out the following tasks:

- Notice of tender
- Delivery of tender documents
- Opening of tenders
- Evaluation of tender
- Support for negotiation and award of contract.

2-2-4-4-3 Procurement Supervision

The Consultant will supervise the conformity of the equipment with the technical specifications, accuracy of installation, progress of works, and other relevant issues for the procurement and works for the Project implementation. The equipment examiner will review and approve the shop drawings and the equipment. The procurement supervisor will be stay at the site to supervise the installation works and monitor acceptance inspection and hand-over of the equipment.

2-2-4-5Quality Control Plan

All eligible manufacturers of the equipment procured under this Project are globally renowned providers of security solutions and have a well-established quality control system. Therefore, after completion of installation and adjustment, the performance and other functions or aspects of the equipment will be examined at the final Site Acceptance Test (SAT), and then delivered.

2-2-4-6 Procurement Plan

2-2-4-6-1 Procurement of Equipment

Since no Japan-made equipment conforms to the level of performance and specifications required for this Project, they will be procured from manufacturers of countries other than Japan or Pakistan. In addition, high level of performance, accuracy, and durability are expected from these equipment and, thus, they shall be products of the member countries of Organization for Economic Cooperation and Development (OECD), Development Assistance Committee (DAC), and Association of Southeast Asian Nations (ASEAN).

The equipment shall be procured from manufacturers which are capable of providing technical training for the Pakistani operators and maintenance personnel. Also, the manufacturers must have a maintenance and support network through local agents or distributors to ensure prompt and timely actions for repair at times of system failure to avoid any disruption of airport operation.

It is critical to always stock spare parts for quick repair and to minimize the adverse effects on airport operation. A certain amount of spare parts with high necessity will be provided through this Project based on the request made by the Pakistan Government during the field survey. Other spare parts should be funded by the Government of Pakistan and procured from local maintenance companies.

2-2-4-6-2 Transportation Plan

Major manufacturers of such equipment are based in the United States, the United Kingdom, Germany, and France and, thus, the equipment will be shipped from the nearest port from the factory of these countries to the Port of Karachi. Once unloaded and cleared through customs, the equipment will be transported to the designated airports by road in which the distances are around 1,200 km to Faisalabad, 900 km to Multan, and 1,500 km to New Islamabad. With the high-quality road network developed, inland transportation of the equipment shall not pose any problem.

2-2-4-7 Operational Guidance Plan

The equipment and systems to be procured by this Project are similar to those which are currently in operation at airports in Pakistan. Basic knowledge and skills to operate the system,

such as inspection procedures, evaluation, and analysis of images, are already practiced. Therefore, only training on initial operation and guidance by the manufacturer will be carried out at the time of installation.

2-2-4-8 Soft Component (Technical Assistance) Plan

Soft Component (technical assistance) will not be implemented in this Project since the basic system and operability of the newly installed equipment are not significantly different from and compatible with the current system.

2-2-4-9 Implementation Schedule

2-2-4-9-1 Basic Policy

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The equipment for each lot will be manufactured and shipped at the same time, but its installation, adjustment, and guidance will be carried out separately in a timely manner.

2-2-4-9-2 Period for Manufacturing of the Equipment

Each equipment is made-to-order, which means the manufacturers design, manufacture, and inspect, and ship the products after receiving each order. The time required to manufacture each equipment varies and differs by manufacturers, i.e., five months for EDS-CT/EDS, four months

for LEDS and ETDS, six months for vehicle X-ray inspection systems, and eleven months for BHS.

2-2-4-9-3 Period for Transportation to Sites

The necessary period for sea transport will be set as 60 days, including the time required to wait the arrival of ship for transport given the distance from the countries of origin and to the port of Karachi.

2-2-4-9-4 Period for Initial Operation Training, Acceptance Inspection, and Hand-Over

The equipment shall be used for the actual security inspection as soon as installation and adjustment are completed. Therefore, initial operation training and guidance for the equipment will be carried out in parallel with installation works of other equipment.

The amount of time required is three days at each airport for EDS (to be deployed at three airports) and EDS-CT (one airport only). For BHS, three days is needed for its operation and maintenance training, while for both small and big vehicle scanners, ten days is necessary at each airport since initial operation training and guidance will be carried out at the same time. Details of trainings will be reviewed during detailed design stage and will be stipulated in the technical specification of the tender documents.

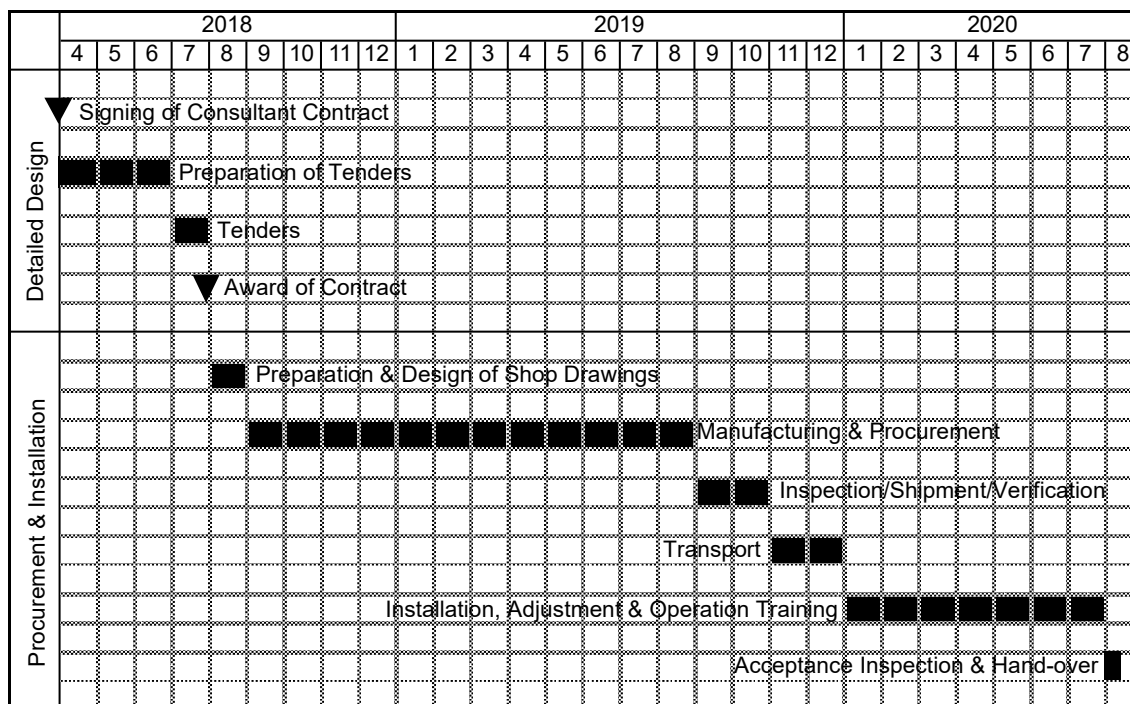
2-2-4-9-5 Estimated Period for Procurement

The estimated time required for Project implementation is as follows:

Table 9 Period Required for Project Implementation

	EDS	Vehicle Scanners	BHS
Preparation and design of shop drawings and approval of equipment:	1.0 month	1.0 month	2.0 months
Manufacturing of equipment (maximum):	5.0 months	6.0 months	11.0 months
Factory inspection, pre-shipment Inspection, and sea transport:	4.0 months	4.0 months	4.0 months
Installation, adjustment, and operation training:	3.0 months	4.0 months	7.0 months
Acceptance inspection and hand-over:	0.5 month	0.5 month	0.5 month
Total	13.5 months	15.5 months	24.5 months

2-2-4-9-6 Project Implementation Schedule



2-3 Obligations of the Recipient Country

2-3-1 Outline of Obligations of Pakistani Side

As the implementing body of Japanese Grant Aid Project, the Pakistani side shall be responsible for executing the obligations, without delay, as described in Table below, based on the scope of works specified in “2-4-3 Scope of Works.”

Since large-scale construction works and technically complicated works are not included in these set of obligations, no significant problems are expected to occur regarding the implementation by the Pakistani side. In addition, based on the budget balance of CAA, the project seems not to face any financial issues concerning the Project.

Table 10 Obligations of Pakistani Side

Category	Timing	Obligations
Civil Works	Before the start of equipment installation	Construction of new pavement, and demolition of the existing pavement (for vehicle scanners) (*)
		Demolition of the existing gate and installation of a new gate door (for vehicle scanners) (*)

Electrical Works	Before the start of equipment installation	Power supply to equipment from the existing distribution panels
Administrative Procedures	At commencement of Consulting Services	Banking Arrangement (B/A) and issuance of Authorization to Pay (A/P)
	At procurement of equipment	Tax exemption and customs clearance
	Before the start of equipment installation	Acquisition of permission for installation of X-ray scanning system from Pakistan Nuclear Regulatory Authority Acquisition of work permission
Other Miscellaneous Works	Before the start of equipment installation	Relocation of check-in counters to secure space for the installation of Hold Baggage EDS
		Secure space for hold baggage inspection sites (Multan and Faisalabad airports)
		Preparation of installation sites for Small Vehicle Scanners (including operator's room)
		Preparation of installation sites for Big Vehicle Scanners (including operator's room)

(*) For selected airports only

2-3-2 Civil and Electrical Works at Each Airport by Pakistani Side

Details of the civil, electrical, and other engineering works at each airport carried out by the Pakistani side are summarized as follows:

2-3-2-1-1 Karachi Airport

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2-3-2-1-2 Multan Airport

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2-3-2-1-3 Faisalabad Airport

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2-3-2-1-4 New Islamabad Airport

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2-3-3 Power Supply Works for the Equipment

During the field survey, the Survey Team examined the possible ways of supplying power from the existing distribution panels to the equipment focusing on the routes and power quality, which is described in the following. In principle, the scope of power supply works to be carried out by the Pakistani side will be confined to the installation point of the equipment.

Frequent voltage fluctuation and the power outage during rainy seasons have been adversely affecting the equipment and causing power quality problems at the airports, which were revealed in Phase 1 Project. Therefore, Automatic Voltage Regulation (AVR) and Uninterruptable Power Supplies (UPS) will be installed along with the equipment to be procured under this Project.

Since the required power capacities of the hold baggage inspection systems to be installed at terminal buildings are small, enough power could be supplied by installing switch panels to the closest existing distribution panel. Electrical characteristics, such as phases (single-phase or three-phase) and voltage source capacity (kVA), may vary according to the type of equipment. For this reason, specifications of power source will be notified to the Pakistani side and power source works shall be carried out after the supplier/manufacturer of the Project is awarded the tender and details of the equipment specifications are finalized.

The power for vehicle scanners which will be installed outside will be supplied from the transformer inside the substation within the airport terminal area.

The Pakistani side will be responsible for securing power for the newly installed equipment at each airport by carrying out cable laying work and supplying power from the distribution panel inside the existing substation via new switch panels at each airport. Although the electric power supply requirements of the small and big vehicle scanners are relatively large (20 to 50 kVA), the existing substations have sufficient capacities. Depending on the location and distance from the nearest substation, the estimated length of the cable laying work is 300 meters to 600 meters. Since the cables need to be buried underground, excavation work will be required.

2-4 Project Operation Plan

The number of operators necessary for operating the procured equipment is described in Table below.

Since many security personnel is already deployed in security checkpoints, airport entrance, and security-restricted areas at airports within Pakistan, the operation of the equipment can be managed without a significant increase in additional personnel. Moreover, as the existing equipment is currently well maintained, it is anticipated that a sufficient level of maintenance for the new equipment will also be carried out after initial operation and maintenance guidance is provided by the manufacturers.

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2-5 Project Cost Estimation

2-5-1 Initial Cost Estimation

The total project cost was estimated based on the conditions described below under the Japanese Grant Aid. However, this is not equivalent to the amount of the grant specified in the Exchange of Notes (E/N).

Moreover, the use of contingencies is applicable to this Project. However, the amount shall be determined by the Ministry of Foreign Affairs, Government of Japan.

Bases of the Cost Estimates

Date: May 2017

Exchange rates:

1 USD = 113.11 Yen

1 Pakistan Rupee = 1.22 Yen

1 Euro=121.23 Yen

The estimated cost to be borne by Pakistan is shown in Table below. Since CAA's capital ratio is high, the estimated amount can be borne by the Pakistani side without facing any financial issues. The amount is less than 0.02% of the annual budget (the total revenue for 2014 was PKR 46.6 billion¹).

Table 11 Cost to be Borne by the Government of Pakistan

Item	Cost
Civil works	PKR 4.0 million/approximately JPY4.8 million
Electrical works (power supply)	PKR 6.4 million/approximately JPY7.7 million
Construction works	PKR 3.6 million/approximately JPY4.4 million
Miscellaneous	PKR 9.8 million/approximately JPY11.9 million
Total	PKR 23.8 million/approximately JPY28.8 million

2-5-2 Operation and Maintenance Cost

One year warranty period for equipment maintenance shall be guaranteed and included in the contract under the grant aid. However, after the first year of the warranty period, the maintenance cost shall be borne by the Pakistani side based on a contract signed between the Pakistani side and the maintenance company.

The spare parts necessary for one year is procured through the grant aid, but spare parts from then onward must be purchased by the Pakistani side.

The annual cost required for maintenance of the equipment procured under this Project is shown in the following table. From the second year and onwards, the annual amount estimated

¹ CAA Annual Report 2014

is approximately PKR 137 million. This amount is affordable by the Pakistani side, since the amount is relatively small compared to the 2014 annual income of PKR 46.4 billion and net surplus after taxation, which is PKR 19.8 billion.

Personnel expenses required for operation and maintenance of the new equipment will not increase significantly since the number of personnel is sufficient, and the tasks are manageable by rearranging rotations and assignments of CAA personnel.

Table 12 Maintenance Cost per Annum

Item	The First Year	From second year
Maintenance and Service Contract (spare parts included)	-	PKR 137 million (JPY166 million)

Chapter 3 Project Evaluation

3-1 Preconditions

The following tasks shall be carried out without delays by the Pakistani side as preconditions for the sound implementation of this Project.

- Approval of PC-1 within the Government of Pakistan
- Acquisition of relevant permits for construction works within the airport
- Banking Arrangement (B/A) and issuance of Authority to Pay (A/P)
- Acquisition of permits for installing X-ray equipment from Pakistan Nuclear Regulatory Authority (PNRA)
- Provision of power supply works, civil engineering works (road paving, fencing, construction of new gates) and construction works inside the terminal building (relocation of check-in counters, removal of partitions, installation of doors)

3-2 Necessary Inputs by the Recipient Country

The Government of Pakistan must provide assurance that the officers who have completed the initial operation and maintenance training or officers who have been supervised by those trained officers continue to operate and maintain the procured equipment and that enough budget will be secured for the equipment, to realize and sustain the effects of this Project after Project completion.

3-3 Important Assumptions

In order to ensure continued effects of this Project, it is assumed that the type of threats which can be detected by the current equipment will not change drastically. If such changes are to be made on the explosives or other dangerous objects, new equipment with inspection level proportionate to the new threats must be procured. In addition, the security situation of airport surroundings is also an important assumption and critical factor that enables installation works at the target airports.

3-4 Project Evaluation

3-4-1 Relevance

3-4-1-1 Beneficiary of the Project

Strengthening of security at major international airports will contribute to upgrade and improve aviation security for the entire country, and the beneficiaries of this Project are the people of Pakistan and international travelers using these airports.

3-4-1-2 Project Purpose

The purpose of this Project is to strengthen airport security by installing security systems at major airports in Pakistan (Karachi, Multan, Faisalabad, New Islamabad) and, thereby, contributing to enhance social stability through mitigating the risks of terrorism. The overall goal of this Project is to accelerate people's movement and enhance the mobility of people beyond borders in Pakistan.

3-4-1-3 Consistency with Development Goals of Pakistan

Strengthening security and safety at international airports is emphasized as the utmost priority under NAP2015 which is in line with the purpose of this Project. Establishing effective inspection system complying with international standards at major international airports and contributing to securing measures against terrorism not only within the airport but also at the regional level are consistent to the policies of the Government of Pakistan, which is pursuing public security improvement and enhancement.

3-4-1-4 Consistency with Japan's Official Development Assistance Policies

According to the "Country Assistance Policy for the Islamic Republic of Pakistan" (April 2012), "a balanced and stable regional development including the border region" is set as the priority area and assistance for measures against terrorism is addressed as one of the core pillars. In addition, JICA's Country Analysis Paper for Pakistan (March 2014) highlights "counterterrorism" as the top priority and emphasizes the importance of providing support to security-related facilities and equipment. Thus, this Project is consistent with such analysis and policies of Japanese assistance to Pakistan.

3-4-2 Effectiveness

3-4-2-1 Quantitative Effects

The following quantitative effects can be expected from this Project.

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3-4-2-2 Qualitative Effects

The following quantitative effect is expected from this Project.

- The risk of terrorism will be reduced in Pakistan

As aforementioned, this Project is expected to provide significant benefits to and, at the same time, contribute to improving the basic human needs of the people of Pakistan. Therefore, it is concluded that the relevance of this Project to be implemented under the Japanese Grant Aid Scheme is high and its effectiveness anticipated.

APPENDICES

Appendix 1. Member List of the Survey Team

Position	Name	Organization
Leader (JICA)	Hiroyuki Ueda	Senior Advisor for Transport Sector, JICA
Planning Manager (JICA)	Itaru Takahashi	Team 2 Transportation and ICT Group, Infrastructure and Peacebuilding Department, JICA
Chief Consultant/Airport Security Planner	Takao Yamaguchi	Gyros Corporation
Airport Security Specialist (1)	Hiroshi Mizumasa	Gyros Corporation
Airport Security Specialist (2)	Yukie Oda	M.S.K. Co. Ltd.
Procurement Planner/Cost Estimator	Nobuo Monoe	Landtec Japan, Inc.

Appendix 2. Study Schedule

Schedule of the First Field Survey in Pakistan

No.	Date	day	Team Leader (JICA)	Program Manager (JICA)	Chief Consultant / Airport Security Planner	Security Equip. Expert (1)	Security Equip. Expert (2)	Procurement Survey Expert	Remarks	Location
1	13-Feb	Mon	Tokyo Japan to Islamabad via Bangkok						NRT 11:45→BKK 17:05 (TG643) BKK 18:45→ISB 22:20 (TG349)	Islamabad
2	14-Feb	Tue	Visit JICA Office, Visit CAA, ASF & EAD for Kickoff Meeting							Islamabad
3	15-Feb	Wed	New Islamabad & current Islamabad airport Survey. Islamabad → Lahore (by Air)						ISB22:00→LHE23:10(PK657)	Lahore
4	16-Feb	Thu	Lahore airport Survey Lahore → Faisalabad (by Car)						by car	Faisalabad
5	17-Feb	Fri	Faisalabad airport Survey							Faisalabad
6	18-Feb	Sat	Faisalabad → Multan (by Car)						by car	Multan
7	19-Feb	Sun	Internal Meeting (Multan)							Multan
8	20-Feb	Mon	Multan Airport Survey Multan → Karachi (by Air)						MUX12:50→KHI14:15(PK383)	Karachi
9	21-Feb	Tue	Karachi Airport Survey Discussion with CAA & FSA (Karachi)							Karachi
10	22-Feb	Wed	Discussion with CAA & FSA (Karachi) Karachi → Islamabad (by air)					NRT→BKK →ISB	KHI16:00→ISB17:55(PK308)	Islamabad
11	23-Feb	Thu	Discussion & signing with CAA, FSA & EAD (in ISB)							Islamabad
12	24-Feb	Fri	Report representative JICA Pakistan. ISB → BKK	Report representative JICA Pakistan					ISB 23:30→BKK 06:15 (TG350)	Islamabad
13	25-Feb	Sat	BKK - TYO	Internal meeting					BKK 08:00→NRT 15:50 (TG676)	Islamabad
14	26-Feb	Sun		Internal meeting						Islamabad
15	27-Feb	Mon		New Islamabad airport Survey						Islamabad
16	28-Feb	Tue		Existing Islamabad airport Survey						Islamabad
17	1-Mar	Wed		Islamabad → Lahore					ISB09:30→LHE10:25(PK651)	Lahore
18	2-Mar	Thu		Lahore airport Survey Lahore → Faisalabad					by Car	Faisalabad
19	3-Mar	Fri		Faisalabad airport Survey						Faisalabad
20	4-Mar	Sat		Internal meeting						Faisalabad
21	5-Mar	Sun		Faisalabad → Multan					by Car	Multan
22	6-Mar	Mon		Multan airport Survey						Multan
23	7-Mar	Tue		Multan airport Survey Multan → Karachi					MUX12:00→KHI13:30 (NLI62)	Karachi
24	8-Mar	Wed		Karachi airport Survey						Karachi
25	9-Mar	Thu		ASF Training Center Survey Market Survey						Karachi
26	10-Mar	Fri		Discussion for Technical Memorandum						Karachi
27	11-Mar	Sat		Internal meeting						Karachi
28	12-Mar	Sun		Internal meeting						Karachi

Schedule of the Second Field Survey in Pakistan

No.	Date	day	Chief Consultant / Airport Security Planner	Security Equip. Expert (1)	Remarks	Location
1	5/20	Sat	POM-MNL	HND-BKK	HND-BKK 10:35-15:05 TG683 POM-MNL 16:50-20:10 PX010	Manila/ Aircraft
2	5/21	Sun	MNL-AUH-KHI	BKK-KHI	MNL-AUH 07:10-12:30 EY435 AUH-KHI 15:50-19:00 EY220 BKK-HKI 14:10-17:10 TG507	Karachi
3	5/22	Mon	Discussion with CAA and ASF			Karachi
4	5/23	Tue	Move from Karachi to Multan			Multan
					KHI-MUL 17:00-18:25 PK330	
5	5/24	Wed	Multan Airport Survey / Move from Multan to Karachi			Karachi
					MUL-KHI 19:25-20:50 PK331	
6	5/25	Thu	Discussion with CAA and ASF and Signing the technical memorandum			Karachi
7	5/26	Fri	KHI-DXB	Reporting	KHI-DXB 19:40-20:55 EK 609	Karachi
8	5/27	Sat		KHI-BKK	KHI-BKK 23:50-06:40 TG342	Aircraft
9	5/28	Sun		BKK-HND	BKK-HND 13:00-21:10 TG660	

Schedule of the Third Field Survey in Pakistan

Date	day	Team Leader (JICA)	Program Manager (JICA)	Chief Consultant / Airport Security Planner	Remarks	Location
2017/11/4	Sat	Move from Tokyo to Islamabad via Bangkok			NHD10:35→BKK15:40 (TG683) BKK18:45→ISB22:20 (TG349)	
2017/11/5	Sun	Study team meeting				
2017/11/6	Mon	JICA Office, discussion and presentation of DOD to CAA and ASF				
2017/11/7	Tue	Discussion with CAA and ASF				
2017/11/8	Wed	Signing of Minutes, Japanese Embassy, Leave Islamabad to Bangkok			ISB23:30→BKK06:15 (TG350)	
2017/11/9	Thu	Bangkok to Tokyo			BKK14:50→HND22:30 (TG660)	

Appendix 3. List of Parties Concerned in the Recipient Country

CAA (Civil Aviation Authority)

Mr. Fazal vm Minallah (Director Security HQ karachi)
Mr. Syad Hassan Jafri (Joint Director HQ karachi)
Mr. Saad Nafia (Section Officer Islamabad)
Mr. Amiyos Eay Yoz Qbry (Deputy Security Islamabad)
Mr. Adnan Inamullah Kharn (JS Aviation Islamabad)
Mr. Nazem A Khaal (Sr.Joint Director Islamabad)
Mr. Ammanullah Alvi (Airport Manager Islamabad)
Mr. Naeem A Khan (Joint Director Islamabad)
Mr. Riazudin (Airport Manager Lahore)
Mr. Nawtaz Gil (VIG&Security Lahore)
Mr. Colr Zahid Hussain (Chief Security Officer New Islamabad)
Mr. Salman Shalud (Chief Engineer New Islamabad)
Mr. Anwar (ADLD CNS Engineer New Islamabad)
Mr. Shakeel Ahmed (Joint Director New Islamabad)
Mr. M. Anwar Zia (Airport Manager Faisalabad)
Mr. Syad Anwar Zakar Kazmi (Assistant Director Faisalabad)
Mr. Tawgeen Iqbal (Project Manager Faisalabad)
Mr. Raja Azhar Mahmood (Airport Manager Multan)
Mr. Iqtidar hamder (Deputy Airport Manager Multan)
Mr. Abdul Majid (Joint Director Multan)

ASF (Airport Security Force)

Lt Col Navaid Ahsan (Director Operation HQ ASF)
Mr. Umar Nisar (Major Deputy Director HQ)
Mr. Masood (Security Officer Islamabad)
Mr. Khalid Waqar (CSO Islamabad)
Mr. Obaid Ullah(CSO Lahore)
Mr. Tahir Mehmorol (Inspector Lahore)
Mr. Nazil Islam (Security Officer Lahore)
Mr. Liaqat Ali Ch (CSO Faisalabad)
Mr. Zia-ul Haq (CSO Multan)
Major (R) Aslam Pervez(CSO Karachi)
Mr. Waheed (ASF, Karachi Airport)

*CSO: Chief Security Officer


Appendix 4. Minutes of Discussions (M/D) (First Field Survey)


**Minutes of Discussions
on the Preparatory Survey for
the Project for Airport Security Improvement (Phase 2)**

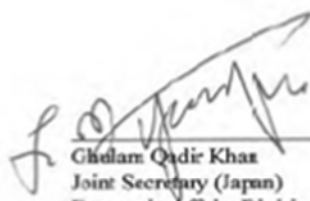
In response to the request from the Government of the Islamic Republic of Pakistan (hereinafter referred to as "Pakistan"), Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Preparatory Survey Team for the Outline Design (hereinafter referred to as "the Team") of the Project for Airport Security Improvement (Phase 2) (hereinafter referred to as "the Project"), headed by Hiroyuki Ueda, Senior Transport Sector Advisor of JICA, from February 14 to 24, 2017. The Team held a series of discussions with the officials of the Government of Pakistan and conducted a field survey. In the course of the discussions, both sides have confirmed the main items described in the attached sheets.

Islamabad, February 23, 2017


Hiroyuki Ueda
Leader
Preparatory Survey Team
Japan International Cooperation Agency
Japan


Air Cdre (R) Fazal um Minallah, SI (M)
Director Security
Civil Aviation Authority
The Islamic Republic of Pakistan


Lt Col Navaid Ahsan
Director Operations
Airport Security Force
The Islamic Republic of Pakistan


Ghulam Qadir Khaz
Joint Secretary (Japan)
Economic Affairs Division
Ministry of Finance, Revenue, Economic
Affairs, Statistics and Privatization
The Islamic Republic of Pakistan


Adnan Inamullah Khan
Joint Secretary (Aviation)
Aviation Division, Cabinet Secretariat
The Islamic Republic of Pakistan

ATTACHMENT

1. Objective of the Project

The objective of the Project is to strengthen the airport security at four (4) international airports in Islamabad, Faisalabad, Multan and Karachi by improving security equipment, thereby contributing to safe air transportation in Pakistan.

2. Title of the Preparatory Survey

Both sides confirmed the title of the Preparatory Survey as "the Preparatory Survey for the Project for Airport Security Improvement (Phase 2)".

3. Project site

Both sides confirmed that the sites of the Project are four (4) airports as follows:

- 1) New Islamabad Airport,
- 2) Faisalabad Airport,
- 3) Multan Airport,
- 4) Karachi Airport

4. Responsible authority for the Project

Both sides confirmed the authorities responsible for the Project are as follows:

- 4-1. The sponsoring organization is Aviation Division, Cabinet Secretariat.
- 4-2. The implementing organization is Civil Aviation Authority (CAA). It will be the executing agency for the Project (hereinafter referred to as "the Executing Agency"). The Executing Agency shall coordinate with all the relevant authorities to ensure smooth implementation of the Project and ensure that the undertakings for the Project shall be managed by relevant authorities properly and on time. The organization chart of CAA is shown in Annex 1.
- 4-3. The user of the equipment is Airport Security Force (ASF). The organization chart of ASF is shown in Annex 2.

5. Items requested by the Government of Pakistan

- 5-1. As a result of discussions between both sides, the items in the following table were finally requested by the Pakistani side. JICA will assess the feasibility of the above requested items through the survey and will report the findings to the Government of Japan. The final scope of the Project will be decided by the Government of Japan.

CONFIDENTIAL INFORMATION

CONFIDENTIAL INFORMATION

CONFIDENTIAL INFORMATION

published.

- 13-6. The Pakistani side understood the principle of the Japan's Development Cooperation Charter, which stresses that ODA must not be utilized for military purpose or promoting international conflicts, and agreed to ensure that the equipment to be procured in the Project will never be used for any military purposes.
- 13-7. The Pakistani side shall provide security measures for all concerned Japanese nationals working for the Project, if deemed necessary.

Annex 1: Organization Chart of CAA

Annex 2: Organization Chart of ASF

Annex 3: Japanese Grant

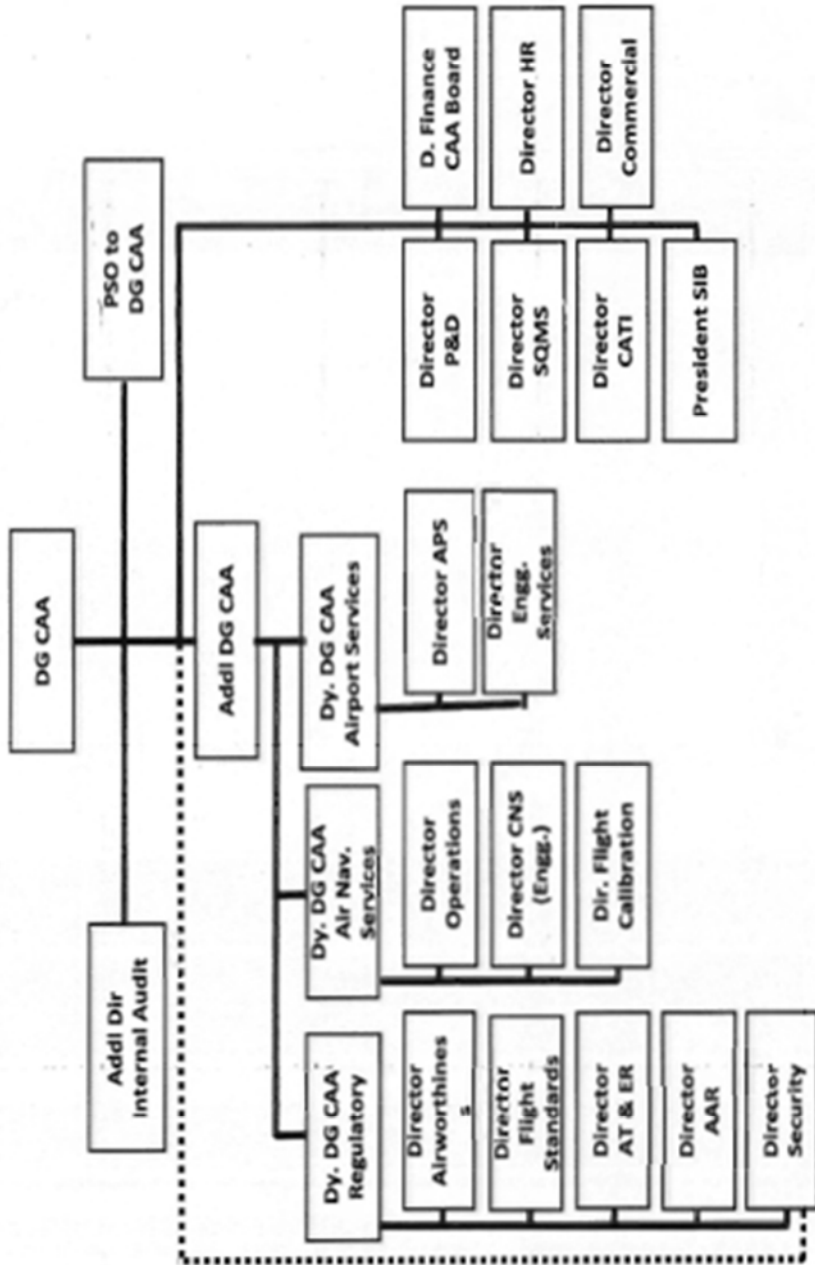
Annex 4: Major Undertakings to be taken by the Government of Pakistan

Annex 5: Project Monitoring Report (template)

for

for
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5/1

Organization Chart of Civil Aviation Authority

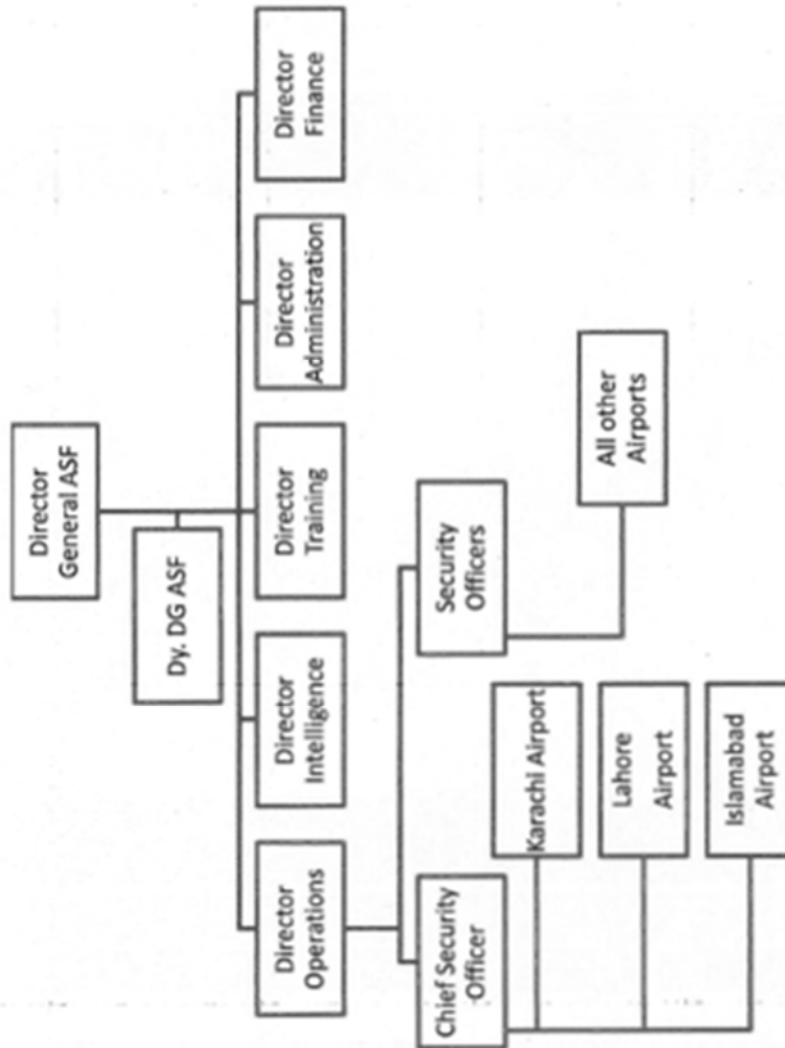


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Organization Chart of Airport Security Force



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JAPANESE GRANT

The Japanese Grant is non-reimbursable fund provided to a recipient country (hereinafter referred to as "the Recipient") to purchase the products and/or services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. Followings are the basic features of the project grants operated by JICA (hereinafter referred to as "Project Grants").

1. Procedures of Project Grants

Project Grants are conducted through following procedures (See "PROCEDURES OF JAPANESE GRANT" for details):

- (1) Preparation
 - The Preparatory Survey (hereinafter referred to as "the Survey") conducted by JICA
- (2) Appraisal
 - Appraisal by the government of Japan (hereinafter referred to as "GOJ") and JICA, and Approval by the Japanese Cabinet
- (3) Implementation
 - Exchange of Notes
 - The Notes exchanged between the GOJ and the government of the Recipient
 - Grant Agreement (hereinafter referred to as "the G/A")
 - Agreement concluded between JICA and the Recipient
 - Banking Arrangement (hereinafter referred to as "the B/A")
 - Opening of bank account by the Recipient in a bank in Japan (hereinafter referred to as "the Bank") to receive the grant
 - Construction works/procurement
 - Implementation of the project (hereinafter referred to as "the Project") on the basis of the G/A
- (4) Ex-post Monitoring and Evaluation
 - Monitoring and evaluation at post-implementation stage

2. Preparatory Survey

(1) Contents of the Survey

The aim of the Survey is to provide basic documents necessary for the appraisal of the the Project made by the GOJ and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of

relevant agencies of the Recipient necessary for the implementation of the Project.

- Evaluation of the feasibility of the Project to be implemented under the Japanese Grant from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.
- Preparation of an outline design of the Project.
- Estimation of costs of the Project.
- Confirmation of Environmental and Social Considerations

The contents of the original request by the Recipient are not necessarily approved in their initial form. The Outline Design of the Project is confirmed based on the guidelines of the Japanese Grant.

JICA requests the Recipient to take measures necessary to achieve its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the executing agency of the Project. Therefore, the contents of the Project are confirmed by all relevant organizations of the Recipient based on the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Survey, JICA contracts with (a) consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

(3) Result of the Survey

JICA reviews the report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the feasibility of the Project.

3. Basic Principles of Project Grants

(1) Implementation Stage

1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes (hereinafter referred to as "the E/N") will be signed between the GOJ and the Government of the Recipient to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Recipient to define the necessary articles, in accordance with the E/N, to implement the Project, such as conditions of disbursement, responsibilities of the Recipient, and procurement conditions. The terms and conditions generally applicable to the Japanese Grant are stipulated in the "General Terms and Conditions for Japanese Grant (January 2016)."



2) Banking Arrangements (B/A) (See "Financial Flow of Japanese Grant (A/P Type)" for details)

- a) The Recipient shall open an account or shall cause its designated authority to open an account under the name of the Recipient in the Bank, in principle. JICA will disburse the Japanese Grant in Japanese yen for the Recipient to cover the obligations incurred by the Recipient under the verified contracts.
- b) The Japanese Grant will be disbursed when payment requests are submitted by the Bank to JICA under an Authorization to Pay (A/P) issued by the Recipient.

3) Procurement Procedure

The products and/or services necessary for the implementation of the Project shall be procured in accordance with JICA's procurement guidelines as stipulated in the G/A.

4) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the Recipient to continue to work on the Project's implementation after the E/N and G/A.

5) Eligible source country

In using the Japanese Grant disbursed by JICA for the purchase of products and/or services, the eligible source countries of such products and/or services shall be Japan and/or the Recipient. The Japanese Grant may be used for the purchase of the products and/or services of a third country as eligible, if necessary, taking into account the quality, competitiveness and economic rationality of products and/or services necessary for achieving the objective of the Project. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm, which enter into contracts with the Recipient, are limited to "Japanese nationals", in principle.

6) Contracts and Concurrence by JICA

The Recipient will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be concurred by JICA in order to be verified as eligible for using the Japanese Grant.

7) Monitoring

The Recipient is required to take their initiative to carefully monitor the progress of the Project in order to ensure its smooth implementation as part of their responsibility in the G/A, and to regularly report to JICA about its status by using the Project Monitoring Report (PMR).

8) Safety Measures

The Recipient must ensure that the safety is highly observed during the implementation of the Project.

9) Construction Quality Control Meeting

Construction Quality Control Meeting (hereinafter referred to as the "Meeting") will be held for quality assurance and smooth implementation of the Works at each stage of the Works. The member of the Meeting will be composed by the

Recipient (or executing agency), the Consultant, the Contractor and JICA. The functions of the Meeting are as followings:

- a) Sharing information on the objective, concept and conditions of design from the Contractor, before start of construction.
- b) Discussing the issues affecting the Works such as modification of the design, test, inspection, safety control and the Client's obligation, during of construction.

(2) Ex-post Monitoring and Evaluation Stage

- 1) After the project completion, JICA will continue to keep in close contact with the Recipient in order to monitor that the outputs of the Project is used and maintained properly to attain its expected outcomes.
- 2) In principle, JICA will conduct ex-post evaluation of the Project after three years from the completion. It is required for the Recipient to furnish any necessary information as JICA may reasonably request.

(3) Others

1) Environmental and Social Considerations

The Recipient shall carefully consider environmental and social impacts by the Project and must comply with the environmental regulations of the Recipient and JICA Guidelines for Environmental and Social Considerations (April, 2010).

2) Major undertakings to be taken by the Government of the Recipient

For the smooth and proper implementation of the Project, the Recipient is required to undertake necessary measures including land acquisition, and bear an advising commission of the A/P and payment commissions paid to the Bank as agreed with the GOJ and/or JICA. The Government of the Recipient shall ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the Recipient with respect to the purchase of the Products and/or the Services be exempted or be borne by its designated authority without using the Grant and its accrued interest, since the grant fund comes from the Japanese taxpayers.

3) Proper Use

The Recipient is required to maintain and use properly and effectively the products and/or services under the Project (including the facilities constructed and the equipment purchased), to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Japanese Grant.



4) Export and Re-export

The products purchased under the Japanese Grant should not be exported or re-exported from the Recipient.

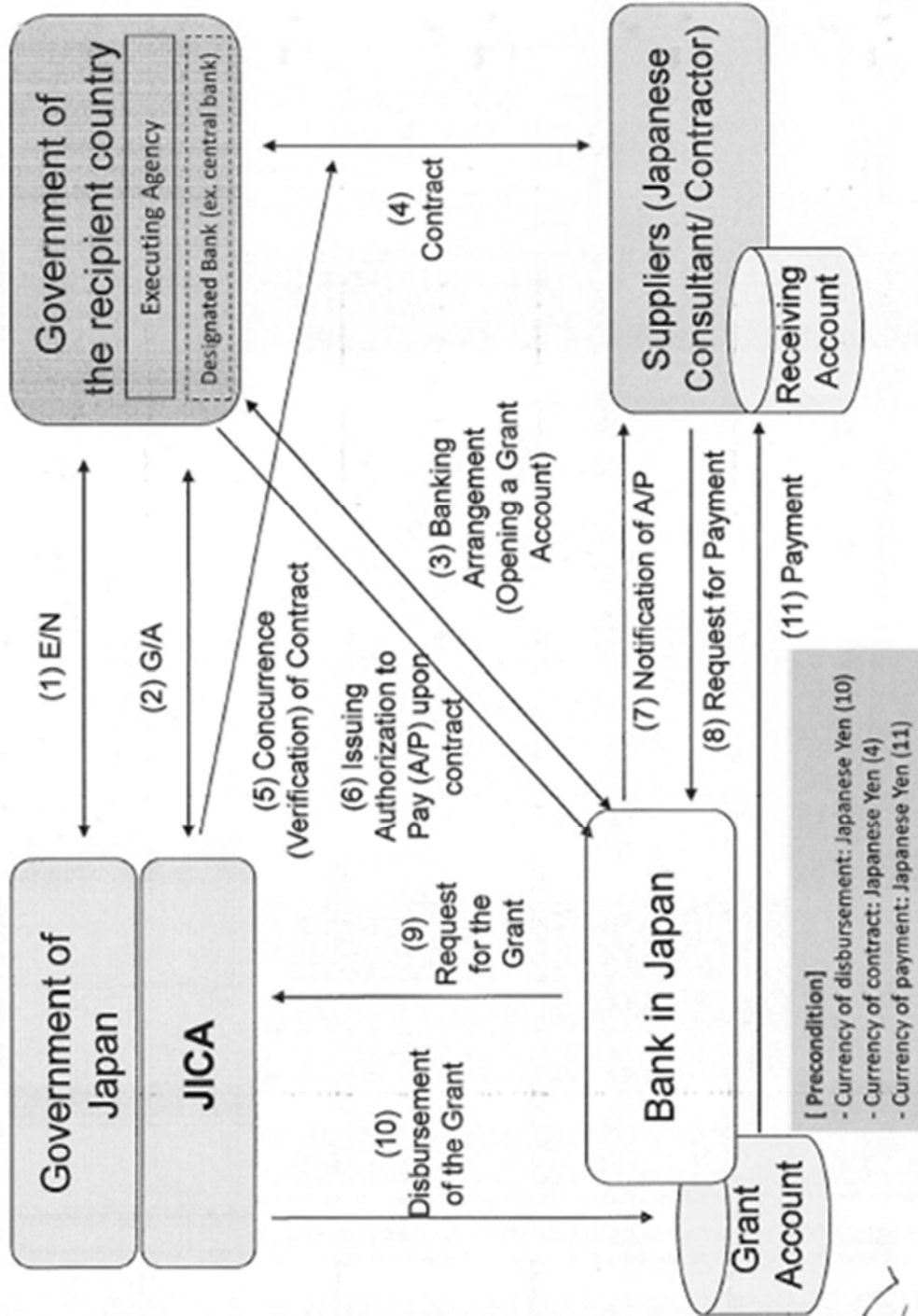
PROCEDURES OF JAPANESE GRANT

Stage	Procedures	Remarks	Recipient Government	Japanese Government	JICA	Consultants	Contractors	Agent Bank
Official Request	Request for grants through diplomatic channel	Request shall be submitted before appraisal stage.	x	x				
1. Preparation	(1) Preparatory Survey Preparation of outline design and cost estimate		x		x	x		
	(2) Preparatory Survey Explanation of draft outline design, including cost estimate, undertakings, etc.		x		x	x		
2. Appraisal	(3) Agreement on conditions for implementation	Conditions will be explained with the draft notes (E/N) and Grant Agreement (G/A) which will be signed before approval by Japanese government.	x	x (E/N)	x (G/A)			
	(4) Approval by the Japanese cabinet			x				
3. Implementation	(5) Exchange of Notes (E/N)		x	x				
	(6) Signing of Grant Agreement (G/A)		x		x			
	(7) Banking Arrangement (B/A)	Need to be informed to JICA	x					x
	(8) Contracting with consultant and issuance of Authorization to Pay (A/P)	Concurrence by JICA is required	x			x		x
	(9) Detail design (D/D)		x			x		
	(10) Preparation of bidding documents	Concurrence by JICA is required	x			x		
	(11) Bidding	Concurrence by JICA is required	x			x	x	
	(12) Contracting with contractor/supplier and issuance of A/P	Concurrence by JICA is required	x					x
	(13) Construction works/procurement	Concurrence by JICA is required for major modification of design and amendment of contracts.	x			x	x	
	(14) Completion certificate		x			x	x	
4. Ex-post monitoring & evaluation	(15) Ex-post monitoring	To be implemented generally after 1, 3, 10 years of completion, subject to change	x		x			
	(16) Ex-post evaluation	To be implemented basically after 3 years of completion	x		x			

notes:

1. Project Monitoring Report and Report for Project Completion shall be submitted to JICA as agreed in the G/A.
2. Concurrence by JICA is required for allocation of grant for remaining amount and/or contingencies as agreed in the G/A.

Financial Flow of Japanese Grant (A/P Type)



Major Undertakings to be taken by the Government of Pakistan

1. Specific Obligations of the Government of Pakistan which will not be funded with the Grant

(1) Before the Tender

No.	Items	Deadline	In charge	Estimated Cost	Ref.
1	To establish Project Management Unit (PMU)	within 1 month after the signing of the G/A	CAA		
2	To open bank account (B/A)	within 1 month after the signing of the G/A	CAA		
3	To issue A/P to a bank in Japan (the Agent Bank) for the payment to the consultant	within 1 month after the signing of the contract	CAA		
4	To submit Project Monitoring Report (with the result of Detail Design)	before preparation of bidding documents	CAA		

Note: B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable

(2) During the Project Implementation

No.	Items	Deadline	In charge	Estimated Cost	Ref.
1	To issue A/P to a bank in Japan (the Agent Bank) for the payment to the Supplier(s)	within 1 month after the signing of the contract(s)	CAA		
2	To bear the following commissions to a bank in Japan for the banking services based upon the B/A		CAA		
	1) Advising commission of A/P	within 1 month after the signing of the contract(s)			
	2) Payment commission for A/P	every payment			
3	To secure sites and spaces for installation of the equipment	1 month before installation of each equipment	CAA		
4	To enable provision of electric power supply for the equipment	1 month before installation of each equipment	CAA		
5	Acquisition of permission for installation of X-ray scanning apparatus from Pakistan Nuclear Regulatory Authority (PNRA)	1 month before installation of each equipment	CAA		
6	To ensure prompt unloading and customs clearance at ports of disembarkation in recipient country and to assist the Supplier(s) with internal transportation therein	during the Project	CAA		
7	To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the country of the Recipient and stay therein for the performance of their work	during the Project	CAA		
8	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the products	during the Project	CAA		

	and/or the services				
9	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project	during the Project	CAA		
10	To submit Project Monitoring Report after each work under the contract(s) such as shipping, hand over, installation and operational training	within 1 month after completion of each work	CAA		
	1) To submit Project Monitoring Report (final)	within 1 month after signing of Certificate of Completion for the works under the contract(s)	CAA		
	2) To submit a report concerning completion of the Project	within 6 months after completion of the Project	CAA		
11	To take necessary measure for safety of construction	during the construction	CAA		

(3) After the Project

No.	Items	Deadline	In charge	Estimated Cost	Ref.
1	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid 1) Allocation of maintenance cost 2) Operation and maintenance structure 3) Routine check/Periodic inspection	after completion of the construction	CAA		

2. Other Obligations of the Government of Pakistan funded with the Grant

No.	Items	Deadline	Amount (Million Japanese Yen)
1	1) To provide and install equipment	To be estimated	To be estimated
	2) To conduct the following transportation		
	a) Marin (Air) transportation of the products from Japan or the third countries to the recipient country b) Internal transportation from the port of disembarkation to the project site		
2	To implement detailed design, bidding support and procurement supervision (Consulting Services)	To be estimated	To be estimated
	Total	To be estimated	To be estimated

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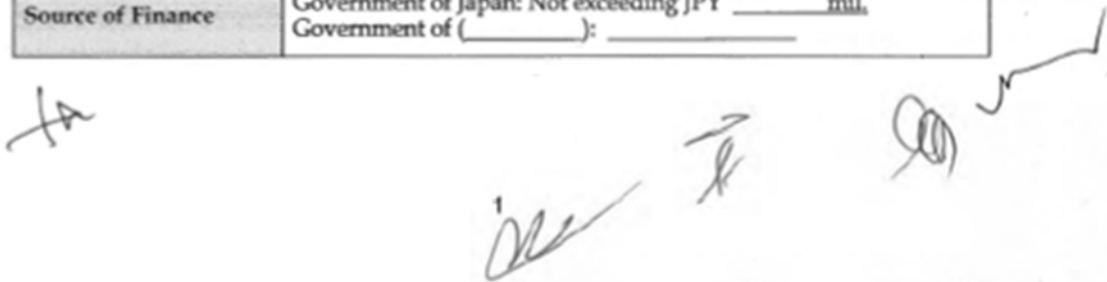
Project Monitoring Report
on
Project Name
Grant Agreement No. XXXXXXX
20XX, Month

Organizational Information

Signer of the G/A (Recipient)	Person in Charge (Designation) _____ Contacts Address: _____ Phone/FAX: _____ Email: _____
Executing Agency	Person in Charge (Designation) _____ Contacts Address: _____ Phone/FAX: _____ Email: _____
Line Ministry	Person in Charge (Designation) _____ Contacts Address: _____ Phone/FAX: _____ Email: _____

General Information:

Project Title	
E/N	Signed date: Duration:
G/A	Signed date: Duration:
Source of Finance	Government of Japan: Not exceeding JPY _____ mil. Government of (): _____



1: Project Description

1-1 Project Objective

--

1-2 Project Rationale

- Higher-level objectives to which the project contributes (national/regional/sectoral policies and strategies)
- Situation of the target groups to which the project addresses

--

1-3 Indicators for measurement of "Effectiveness"

Quantitative indicators to measure the attainment of project objectives		
Indicators	Original (Yr)	Target (Yr)
Qualitative indicators to measure the attainment of project objectives		

2: Details of the Project

2-1 Location

Components	Original <i>(proposed in the outline design)</i>	Actual
1.		

2-2 Scope of the work

Components	Original* <i>(proposed in the outline design)</i>	Actual*
1.		

Reasons for modification of scope (if any).

(PMR)

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2-3 Implementation Schedule

Items	Original		Actual
	<i>(proposed in the outline design)</i>	<i>(at the time of signing the Grant Agreement)</i>	

Reasons for any changes of the schedule, and their effects on the project (if any)

2-4 Obligations by the Recipient

2-4-1 Progress of Specific Obligations

See Attachment 2.

2-4-2 Activities

See Attachment 3.

2-4-3 Report on RD

See Attachment 11.

2-5 Project Cost

2-5-1 Cost borne by the Grant(Confidential until the Bidding)

Components			Cost (Million Yen)	
	Original <i>(proposed in the outline design)</i>	Actual <i>(in case of any modification)</i>	Original ¹⁾²⁾ <i>(proposed in the outline design)</i>	Actual
1.				
Total				

Note: 1) Date of estimation:
 2) Exchange rate: 1 US Dollar = Yen

2-5-2 Cost borne by the Recipient

Components			Cost (1,000 Taka)	
	Original <i>(proposed in the outline design)</i>	Actual <i>(in case of any modification)</i>	Original ¹⁾²⁾ <i>(proposed in the outline design)</i>	Actual
1.				

3



Note: 1) Date of estimation:
2) Exchange rate: 1 US Dollar =

Reasons for the remarkable gaps between the original and actual cost, and the countermeasures (if any)

(PMR)

2-6 Executing Agency

- Organization's role, financial position, capacity, cost recovery etc,
- Organization Chart including the unit in charge of the implementation and number of employees.

Original (at the time of outline design) name: role: financial situation: institutional and organizational arrangement (organogram): human resources (number and ability of staff):
Actual (PMR)

2-7 Environmental and Social Impacts

- The results of environmental monitoring based on Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- The results of social monitoring based on in Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- Disclosed information related to results of environmental and social monitoring to local stakeholders (whenever applicable).

3: Operation and Maintenance (O&M)

3-1 Physical Arrangement

- Plan for O&M (number and skills of the staff in the responsible division or section, availability of manuals and guidelines, availability of spareparts, etc.)

Original (at the time of outline design)
Actual (PMR)

3-2 Budgetary Arrangement

- Required O&M cost and actual budget allocation for O&M

Original (at the time of outline design)

Actual (PMR)

4: Potential Risks and Mitigation Measures

- Potential risks which may affect the project implementation, attainment of objectives, sustainability
- Mitigation measures corresponding to the potential risks

Assessment of Potential Risks (at the time of outline design)

Potential Risks	Assessment
1. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
2. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
3. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:

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	Contingency Plan (if applicable):
Actual Situation and Countermeasures (PMR)	

5: Evaluation and Monitoring Plan (after the work completion)

5-1 Overall evaluation

Please describe your overall evaluation on the project.

--

5-2 Lessons Learnt and Recommendations

Please raise any lessons learned from the project experience, which might be valuable for the future assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

--

5-3 Monitoring Plan of the Indicators for Post-Evaluation

Please describe monitoring methods, section(s)/department(s) in charge of monitoring, frequency, the term to monitor the indicators stipulated in 1-3.

--



6 

Attachment

1. Project Location Map
2. Specific obligations of the Recipient which will not be funded with the Grant
3. Monthly Report submitted by the Consultant
- Appendix - Photocopy of Contractor's Progress Report (if any)
 - Consultant Member List
 - Contractor's Main Staff List
4. Check list for the Contract (including Record of Amendment of the Contract/Agreement and Schedule of Payment)
5. Environmental Monitoring Form / Social Monitoring Form
6. Monitoring sheet on price of specified materials (Quarterly)
7. Report on Proportion of Procurement (Recipient Country, Japan and Third Countries) (PMR (final) only)
8. Pictures (by JPEG style by CD-R) (PMR (final) only)
9. Equipment List (PMR (final) only)
10. Drawing (PMR (final) only)
11. Report on RD (After project)



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Monitoring sheet on price of specified materials

1. Initial Conditions (Confirmed)

Items of Specified Materials	Initial Volume A	Initial Unit Price (¥) B	Initial total Price C=A×B	1% of Contract Price D	Condition of payment Price (Decreased) E=C-D Price (Increased) F=C+D
1 Item 1	●●t	●	●	●	●
2 Item 2	●●t	●	●	●	●
3 Item 3					
4 Item 4					
5 Item 5					

2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring : ●●

(2) Result of the Monitoring Survey on Unit Price for each specified materials

Items of Specified Materials	1st month, 2015	2nd month, 2015	3rd month, 2015	4th	5th	6th
1 Item 1	●	●	●			
2 Item 2						
3 Item 3						
4 Item 4						
5 Item 5						

(3) Summary of Discussion with Contractor (if necessary)

Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)
 (Actual Expenditure by Construction and Equipment each)

	Domestic Procurement (Recipient Country) A	Foreign Procurement (Japan) B	Foreign Procurement (Third Countries) C	Total D
Construction Cost	(A/D%)	(B/D%)	(C/D%)	
Direct Construction Cost	(A/D%)	(B/D%)	(C/D%)	
others	(A/D%)	(B/D%)	(C/D%)	
Equipment Cost	(A/D%)	(B/D%)	(C/D%)	
Design and Supervision Cost	(A/D%)	(B/D%)	(C/D%)	
Total	(A/D%)	(B/D%)	(C/D%)	

Appendix 5. Technical Memorandum (First Field Survey)

**Technical of Memorandum
on the Preparatory Survey for
the Project for Airport Security Improvement (Phase 2)**

The Preparatory Survey Team for the Outline Design (hereinafter referred to as "the Team") of the Project for Airport Security Improvement (Phase 2) (hereinafter referred to as "the Project"), headed by Takao Yamaguchi, Chief Consultant of the Team had continued the survey, from February 24 to March 9, 2017. The Team held a series of discussions with the officials of the Government of Pakistan on the technical result of the survey. In the course of the discussions, both sides have confirmed the main items described in the attached sheets.

Karachi, March 9, 2017



Takao Yamaguchi
Chief Consultant
Preparatory Survey Team
Japan International Cooperation Agency
Japan



Air Cdre (R) Fazal um Minallah, SI (M)
Director Security
Civil Aviation Authority
The Islamic Republic of Pakistan



Lt Col Navaid Ahsan
Director Operations
Airport Security Force
The Islamic Republic of Pakistan

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Appendix 6. Technical Memorandum (Second Field Survey)

Technical of Memorandum No.2 on the Preparatory Survey for the Project for Airport Security Improvement (Phase 2)

The Preparatory Survey Team for the Outline Design (hereinafter referred to as "the Team") of the Project for Airport Security Improvement (Phase 2) (hereinafter referred to as "the Project"), headed by Takao Yamaguchi, Chief Consultant of the Team had visited Pakistan from May 22 to May 26, 2017. The Team visited Multan Airport on 24 May, 2017. The Team held a series of discussions with the officials of the Government of Pakistan on the technical issues of the survey. In the course of the discussions, both sides have confirmed the main items described in the attached sheets.

Karachi, May 25, 2017



Takao Yamaguchi
Chief Consultant
Preparatory Survey Team
Japan International Cooperation Agency
Japan



AirCdre (R) Fazal um Minallah, SI (M)
Director Security
Civil Aviation Authority
The Islamic Republic of Pakistan

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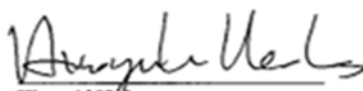
Appendix 7. Minutes of Discussions (M/D) (Draft Report Explanation)

**Minutes of Discussions
on the Preparatory Survey for
the Project for Airport Security Improvement (Phase 2)
(Explanation of Draft Preparatory Survey Report)**

With reference to the minutes of discussions on the Preparatory Survey for the Project for Airport Security Improvement (Phase 2) (hereinafter referred to as "the Project") signed between Civil Aviation Authority (hereinafter referred to as "CAA") of the Islamic Republic of Pakistan (hereinafter referred to as "Pakistan") and the Japan International Cooperation Agency (hereinafter referred to as "JICA") on February 23, 2017, JICA dispatched the Preparatory Survey Team (hereinafter referred to as "the Team"), headed by Hiroyuki Ueda, Senior Transport Sector Advisor of JICA, to Pakistan for the explanation of Draft Preparatory Survey Report (hereinafter referred to as "the Draft Report") of the Project from November 4 to 8, 2017.

As a result of the discussions between authorities concerned of the Government of Pakistan and JICA, both sides agreed on the main items described in the attached sheets.

Islamabad, November 8, 2017



Hiroyuki Ueda
Leader
Preparatory Survey Team
Japan International Cooperation Agency



Sikander Aqeel Ansari
Joint Secretary (II)
Aviation Division, Cabinet Secretariat
The Islamic Republic of Pakistan



Air Cdre (R) Fazal um Minallah, SI (M)
Director Security
Civil Aviation Authority
The Islamic Republic of Pakistan



Syed Mujtaba Hussain
Joint Secretary (Japan)
Economic Affairs Division
Ministry of Finance, Revenue, Economic Affairs,
Statistics and Privatization
The Islamic Republic of Pakistan



Lt Col Navaid Ahsan
Director Operations
Airport Security Force
The Islamic Republic of Pakistan

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manufacturers shall be determined at the time of the supplier contract covering aspects of maintenance of hardware and software along with the list of spares with the prices and spares to be kept on site.

11. Ex-Post Evaluation

JICA will conduct ex-post evaluation after three (3) years from the project completion, in principle, with respect to five evaluation criteria (Relevance, Effectiveness, Efficiency, Impact, and Sustainability). The result of the evaluation will be publicized. The Pakistani side is required to provide necessary support for the data collection.

12. Schedule of the Study

JICA will finalize the Preparatory Survey Report based on the confirmed items. The report will be sent to the Pakistani side around January 2018.

13. Environmental and Social Considerations

The Team explained that "JICA Guidelines for Environmental and Social Considerations (April 2010)" (hereinafter referred to as "the Guidelines") is applicable for the Project. The Project is categorized as C because the Project is likely to have minimal adverse impact on the environment under the Guidelines.

14. Other Relevant Issues

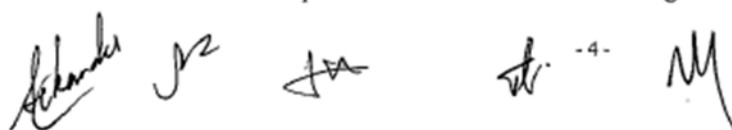
14-1. Disclosure of Information

Both sides agreed on the disclosure of the Preparatory Survey Report to the public as follows:

- The Preparatory Survey Report excluding cost estimation of the Project will be disclosed to the public after completion of the Preparatory Survey.
- The Preparatory Survey Report including cost estimation of the Project will be disclosed to the public after the contract for supply of the Project equipment is concluded.
- The following parts of the Preparatory Report will be excluded for disclosure to the public from security aspect.
 - Number and specifications of the security equipment
 - Location map of the security search areas and layout drawings of security equipment installation
 - Information on screening procedures and staffing of operators

14-2. PC-1 Process

The Pakistani side agreed to formulate PC-1 with referring to information of the Project from the Japanese side. The Pakistani side agreed on key actions with time table

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proposed as follows. The Japanese side reiterated that timely implementation of these actions were crucial for the Japanese Government to make a commitment of grant for the Project. The Pakistani side agreed to monitor and expedite the process with reference to the following proposed plan.

- Middle of November 2017: Development of PC-1 and its submission to the Aviation Division by CAA
- Early December 2017: Approval of PC-1 by Central Development Working Party (CDWP) and if necessary Executive Committee of National Economic Council (ECNEC)

14-3. Purchase of Goods and services from the Third Countries

Both side confirmed that the eligible source countries of the following equipment would include the third countries other than Japan and Pakistan

- Hold Baggage Screening System (EDS-CT)
- Hold Baggage Screening System (EDS Multi-view)
- Cabin Baggage Screening System (EDS/LEDS)
- Explosive Trace Detection System (ETDS)
- Airside Vehicle X-ray Inspection System
- Passenger Vehicle X-ray Inspection System
- Baggage Handling System

14-4. Maintenance Service Contract for the Phase 1 Equipment

The Team expressed concerns on the delayed conclusion of Maintenance Service Contract for the security equipment under the Project for Airport Security Improvement (Phase 1). The Pakistani side confirmed that it will enter into the Maintenance Service Contract for the Phase 1 Equipment to ensure uninterrupted operation of the equipment as soon as possible.

14-5. Priority Development Needs for Airport Security Improvement

The Pakistani side explained the further development needs for airport security improvement as follows:

- Screening equipment for hold baggage, cabin baggage, passengers, airside vehicle and passenger vehicle at Peshawar, Quetta and Turbat Airports
- Training simulators and training programs for ASF Academy and CATI.
- Perimeter surveillance and intrusion detection system at Karachi, Multan, Faisalabad, Peshawar and Quetta Airports

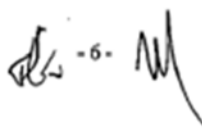
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Annex 1: Cost Estimate of the Project

Annex 2: Project Implementation Schedule

Annex 3: Major Undertakings to be taken by the Government of Pakistan

Annex 4: Project Monitoring Report (template)



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Annex 2: Project Implementation Schedule

Estimated Timeline for the Project Implementation is as follows:

- E/N and G/A: March 2018
- Detailed Design and Procurement of the Contractor: April – July 2018
- Manufacturing, Delivery and Installation of the Equipment: August 2018 – August 2020
(including operation and maintenance training at site)
- Warrantee Period: August 2020 – August 2021

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Annex 3: Major Undertakings to be taken by the Government of Pakistan

1. Specific Obligations of the Government of Pakistan which will not be funded with the Grant

(1) Before the Tender

No.	Items	Deadline	In charge	Estimated Cost (million Pakistani Rupee)	Ref.
1	To establish Project Management Unit (PMU)	within 1 month after the signing of the G/A	CAA		
2	To open bank account (B/A)	within 1 month after the signing of the G/A	CAA		
3	To issue A/P to a bank in Japan (the Agent Bank) for the payment to the consultant	within 1 month after the signing of the contract	CAA		
4	To submit Project Monitoring Report (with the result of Detail Design)	before preparation of bidding documents	CAA		

Note: B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable

(2) During the Project Implementation

No.	Items	Deadline	In charge	Estimated Cost (million Pakistani Rupee)	Ref.
1	To issue A/P to a bank in Japan (the Agent Bank) for the payment to the Supplier(s)	within 1 month after the signing of the contract(s)	CAA	9.8	
2	To bear the following commissions to a bank in Japan for the banking services based upon the B/A		CAA		
	1) Advising commission of A/P	within 1 month after the signing of the contract(s)			
	2) Payment commission for A/P	every payment			
3	To secure sites and spaces for installation of the equipment - Road and fence works for Big Vehicle Scanner in Faisalabad and Multan - Check-in counter relocation in Karachi and Multan - Doors and partitions in Multan and Faisalabad	1 month before installation of each equipment	CAA	7.6	
4	To enable provision of electric power supply for the equipment - Electrical distribution to equipment in Karachi, Multan, Faisalabad and New Islamabad	1 month before installation of each equipment	CAA	6.4	
5	Acquisition of permission for installation of X-ray scanning apparatus from Pakistan Nuclear Regulatory Authority (PNRA)	1 month before installation of each equipment	CAA		
6	To ensure prompt unloading and customs clearance at ports of disembarkation in recipient country and to assist the Supplier(s) with internal transportation therein	during the Project	CAA		

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Annex 4: Project Monitoring Report (template)

G/A NO. XXXXXXX
PMR prepared on DD/MM/YY

<p><u>Project Monitoring Report</u> on <u>Project Name</u> <u>Grant Agreement No. XXXXXXX</u> 20XX, Month</p>
--

Organizational Information

Signer of the G/A (Recipient)	Person in Charge (Designation) _____ Contacts Address: _____ Phone/FAX: _____ Email: _____
Executing Agency	Person in Charge (Designation) _____ Contacts Address: _____ Phone/FAX: _____ Email: _____
Line Ministry	Person in Charge (Designation) _____ Contacts Address: _____ Phone/FAX: _____ Email: _____

General Information:

Project Title	
E/N	Signed date: Duration:
G/A	Signed date: Duration:
Source of Finance	Government of Japan: Not exceeding JPY _____ mil. Government of (): _____

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1: Project Description	
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1-1 Project Objective

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1-2 Project Rationale

- Higher-level objectives to which the project contributes (national/regional/sectoral policies and strategies)
- Situation of the target groups to which the project addresses

--

1-3 Indicators for measurement of "Effectiveness"

Quantitative indicators to measure the attainment of project objectives		
Indicators	Original (Yr)	Target (Yr)
Qualitative indicators to measure the attainment of project objectives		

2: Details of the Project

2-1 Location

Components	Original <i>(proposed in the outline design)</i>	Actual
1.		

2-2 Scope of the work

Components	Original* <i>(proposed in the outline design)</i>	Actual*
1.		

Reasons for modification of scope (if any).
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2-3 Implementation Schedule

Items	Original		Actual
	(proposed in the outline design)	(at the time of signing the Grant Agreement)	

Reasons for any changes of the schedule, and their effects on the project (if any)

--

2-4 Obligations by the Recipient

2-4-1 Progress of Specific Obligations
 See Attachment 2.

2-4-2 Activities
 See Attachment 3.

2-4-3 Report on RD
 See Attachment 11.

2-5 Project Cost

2-5-1 Cost borne by the Grant (Confidential until the Bidding)

Components	Original		Cost (Million Yen)	
	(proposed in the outline design)	Actual (in case of any modification)	Original ¹⁾²⁾ (proposed in the outline design)	Actual
1.				
Total				

Note: 1) Date of estimation:
 2) Exchange rate: 1 US Dollar = Yen

2-5-2 Cost borne by the Recipient

Components	Original		Cost (1,000 Taka)	
	(proposed in the outline design)	Actual (in case of any modification)	Original ¹⁾²⁾ (proposed in the outline design)	Actual
1.				

Note: 1) Date of estimation:
 2) Exchange rate: 1 US Dollar =

Reasons for the remarkable gaps between the original and actual cost, and the countermeasures (if any)

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2-6 Executing Agency

- Organization's role, financial position, capacity, cost recovery etc,
- Organization Chart including the unit in charge of the implementation and number of employees.

Original (at the time of outline design) name: role: financial situation: institutional and organizational arrangement (organogram): human resources (number and ability of staff):
Actual (PMR)

2-7 Environmental and Social Impacts

- The results of environmental monitoring based on Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- The results of social monitoring based on in Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- Disclosed information related to results of environmental and social monitoring to local stakeholders (whenever applicable).

3: Operation and Maintenance (O&M)

3-1 Physical Arrangement

- Plan for O&M (number and skills of the staff in the responsible division or section, availability of manuals and guidelines, availability of spare parts, etc.)

Original (at the time of outline design)
Actual (PMR)

3-2 Budgetary Arrangement

- Required O&M cost and actual budget allocation for O&M

Original (at the time of outline design)
Actual (PMR)

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4: Potential Risks and Mitigation Measures

- Potential risks which may affect the project implementation, attainment of objectives, sustainability
- Mitigation measures corresponding to the potential risks

Assessment of Potential Risks (at the time of outline design)

Potential Risks	Assessment
1. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
	Contingency Plan (if applicable):
2. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
	Contingency Plan (if applicable):
3. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
	Contingency Plan (if applicable):
Actual Situation and Countermeasures (PMR)	

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5: Evaluation and Monitoring Plan (after the work completion)

5-1 Overall evaluation

Please describe your overall evaluation on the project.

5-2 Lessons Learnt and Recommendations

Please raise any lessons learned from the project experience, which might be valuable for the future assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

5-3 Monitoring Plan of the Indicators for Post-Evaluation

Please describe monitoring methods, section(s)/department(s) in charge of monitoring, frequency, the term to monitor the indicators stipulated in 1-3.

Attachment

1. Project Location Map
 2. Specific obligations of the Recipient which will not be funded with the Grant
 3. Monthly Report submitted by the Consultant
- Appendix - Photocopy of Contractor's Progress Report (if any)
- Consultant Member List
 - Contractor's Main Staff List
4. Check list for the Contract (including Record of Amendment of the Contract/Agreement and Schedule of Payment)
 5. Environmental Monitoring Form / Social Monitoring Form
 6. Monitoring sheet on price of specified materials (Quarterly)
 7. Report on Proportion of Procurement (Recipient Country, Japan and Third Countries) (PMR (final) only)
 8. Pictures (by JPEG style by CD-R) (PMR (final) only)
 9. Equipment List (PMR (final) only)
 10. Drawing (PMR (final) only)
 11. Report on RD (After project)

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Attachment 6 of the PMR: Monitoring Sheet on Price of Specified Materials

1. Initial Conditions (Confirmed)

Items of Specified Materials	Initial Volume A	Initial Unit Price (¥) B	Initial total Price C=A x B	1% of Contract Price D	Condition of payment Price (Decreased) E=C-D	Price (Increased) F=C+D
Item 1	●●●	●	●	●	●	●
Item 2	●●●	●	●	●		
Item 3						
Item 4						
Item 5						

2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring : ●●

(2) Result of the Monitoring Survey on Unit Price for each specified materials

Items of Specified Materials	1st month, 2015	2nd month, 2015	3rd month, 2015	4th	5th	6th
Item 1	●	●	●			
Item 2						
Item 3						
Item 4						
Item 5						

(3) Summary of Discussion with Contractor (if necessary)

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Attachment 7 of the PMR: Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)
 (Actual Expenditure by Construction and Equipment each)

	Domestic Procurement (Recipient Country) A	Foreign Procurement (Japan) B	Foreign Procurement (Third Countries) C	Total D
Construction Cost	(A/D%)	(B/D%)	(C/D%)	
Direct Construction Cost	(A/D%)	(B/D%)	(C/D%)	
Others	(A/D%)	(B/D%)	(C/D%)	
Equipment Cost	(A/D%)	(B/D%)	(C/D%)	
Design and Supervision Cost	(A/D%)	(B/D%)	(C/D%)	
Total	(A/D%)	(B/D%)	(C/D%)	

