

**Ministry of Local Government (MoLG)
Palestinian Authority**

**Preparatory Survey Report
on
the Project for the Improvement of Infectious
Waste Management
in Palestinian Authority**

February 2023

Japan International Cooperation Agency

**EX Research Institute Ltd.
INTEM Consulting, Inc.**

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Preface

The Japan International Cooperation Agency (JICA) decided to conduct the Preparatory Survey on the Project for the Improvement of Infectious Waste Management in Palestine and entrusted this work to EX Research Institute Ltd. in collaboration with INTEM Consulting, Inc.

The survey team held a series of discussions with the officials concerned of the Palestinian Authority from June 2022 to February 2023, and conducted a field investigation. Additional research was carried out in Japan, and 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 Palestinian Authority for their close cooperation with the survey team.

February 2023

Takahiro Morita
Director General
Global Environment Department
Japan International Cooperation Agency

SUMMARY

Summary

1. Background of the Project

(1) Background and Overview of the Grant Aid Project

In the Palestinian Authority (hereinafter referred to as “Palestine”), the amount of infectious waste, such as medical equipment and protective clothing used for treatment and examination, has been increasing due to the spread and prolongation of COVID-19 worldwide and the growing number of infected patients, making the proper management of infectious waste an urgent issue.

The purpose of this project is to investigate the appropriateness and necessity of the equipment and other facilities for the collection, transportation, intermediate treatment, and final disposal of infectious waste in Palestine as a grant aid project.

(2) Current Situation of the Relevant Sectors and Issues

Infectious waste generated from medical facilities is collected, transported, sterilized, and finally disposed of by the Joint Service Councils (hereinafter referred to as “JSC”). In the Gaza Strip, about 80% of infectious waste is properly treated thanks to the support of international aid organizations and the Japanese government. However, in the West Bank, although Palestine’s own efforts and support from international organizations have led to the installation of sterilization equipment at three JSCs by June 2022, such equipment can only cover the southern (Hebron and Bethlehem), central (Ramallah), and northern (Jenin and surrounding governorates) parts of Palestine. In addition to this equipment, further increase in sterilization capacity is therefore needed to cover the remaining areas in the southern-central (Jerusalem and Jericho) and northern-central (Nablus, Qalqilya, and Salfit) parts of the West Bank.

Another impending issue to address is the shortage of containers and special collection vehicles for separate collection of infectious waste throughout Palestine. Furthermore, as a result of the approximately 30% increase in the amount of infectious waste brought to the final disposal sites during the COVID-19 pandemic, there is a shortage of heavy equipment required for final disposal, and separate landfill disposal of infectious and municipal solid waste has become a problem.

(3) Development Plan

Under the third pillar “Sustainable Development” of the National Policy Agenda (2017-2022), Palestine has identified “Building resilient communities” as one of its national priorities and has stated the strengthening of waste management as a means of achieving this goal.

(4) Socio-Economic Conditions

The Palestinian economy is no exception to the impact of the spread of COVID-19, with the Palestinian GDP in 2020 declining by over 9% compared to 2019 (with a temporary drop of nearly -20% in the second quarter), and the effects are also reflected in the poverty rate for that year, which jumped to 29.7%, up 8 percentage points from 2016. Total GDP for the first and second quarters of 2022 rose 15.52% and 11.54%, respectively, compared to the same periods in 2021, and the Palestinian economy as a whole is expected to continue its recovery, albeit slowly, for the time to come.

(5) Trend of Japanese ODA

JICA’s technical cooperation “Project for Capacity Development in Solid Waste Management Phase 3” (2020-2024) is implementing various activities to reduce the amount of waste landfilled in final disposal sites throughout Palestine. Another technical cooperation “Project for Infectious Waste Management under the Influence of COVID-19” (2021-2022), implemented in relation to Output 6 “Improvement of Infectious Waste Management Capacity” of the above project, supported the establishment of an infectious waste management system in the Palestinian West Bank with the overall goal of ensuring that infectious waste is properly treated and disposed of to reduce the risk of waste-derived infections.

(6) Natural Conditions

There is no need to consider special specifications due to the weather conditions.

(7) Environmental and Social Impacts

Since the candidate sites where the equipment to be procured will be used are not located in environmentally sensitive areas, it was judged that the potential negative impact on the environment was not significant, and the project was therefore classified as “Category C” by JICA.

2. Summary of Survey Results and Project Description

(1) Summary of Survey Results

With the aforementioned background, JICA dispatched a preparatory survey team to Palestine for a first field survey from July 5, 2022 to July 31, 2022. The mission conducted a survey on the current status of infectious waste management planning in 13 JSCs, a social situation survey, and a survey on equipment procurement in MoLG and JSCs. Based on the field survey and analysis, the contents and policies of the plan were established.

Furthermore, during the period from August 2022 to December 2022, the survey team conducted a second remote field survey in cooperation with local consultants and local staff and agreed with the Palestinian counterpart on the contents of the cooperation (draft).

(2) Project Objective

The objective of this project is to strengthen the capacity of infectious waste management in the West Bank in Palestine by providing the necessary equipment and materials for infectious waste management, thereby contributing to reducing the risk of waste-derived infection and improving comprehensive waste management.

1) Contents of the Improvement Plan

(i) Description of main equipment

Microwave sterilization equipment, Infectious waste collection vehicles, Containers, Heavy machinery for final disposal site.

(ii) Consulting Service / Soft Component

Detailed design, bidding assistance, procurement supervision, support for activities regarding safety improvements for separate discharge and storage at medical facilities, and technical support for maintenance of heavy equipment, etc.

2) Basic Policy

(i) As COVID-19 spreads and prolongs worldwide, the number of infected patients is growing, and the amount of infectious waste generated, such as medical materials and equipment used for treatment and testing, masks, protective clothing, etc., are increasing, making the proper management of infectious waste an urgent issue. This project will support the development of equipment and other facilities for the collection, transportation, intermediate treatment, and final disposal of infectious waste in Palestine in order to improve the infectious waste management capacity of MoLG and JSCs.

(ii) In Palestine, infectious waste is managed by JSCs as part of municipal solid waste management. If a problem arises in the management of the municipal solid waste, JSC, as the implementing entity, will be overwhelmed with the response, and this may have a serious impact on the management of infectious waste. In order to solve this problem, this project will not only provide support to the parties directly related to infectious waste but also to the JSCs for the proper management of municipal solid waste.

(iii) Infectious diseases such as SARS, MERS, and COVID-19 regularly occur in approximately 10-year cycles. When these infectious diseases spread, a large amount of personal

protective equipment (hereinafter referred to as “PPE”) and waste that can contribute to the spread of infection are discharged from homes and offices. If not properly collected and disposed of, they can cause further spread of infection. This project will support the proper management of municipal solid waste by JSCs to prevent this problem.

3) Outline Design Policy

(i) Policy for Selection of Target Area

The target area for the provision of equipment is limited to the West Bank. In the Gaza Strip, JICA and other international organizations started supporting the establishment of an infectious waste management system, human resource development, and service development earlier than in the West Bank, and the Gaza Strip has the capacity to completely cover all infectious waste generated throughout Palestine. In contrast, the West Bank has not yet been able to provide infectious waste treatment services to the entire area due to capacity constraints, so the support will be targeted to the West Bank.

(ii) Policy on Collection and Transportation Equipment

The replacement of old equipment will be considered as a top priority, with the aim of maintaining the current collection and transportation capacities in order to properly collect and transport masks, PPE, and other waste that can contribute to the spread of infection, which are mixed into municipal solid waste.

(iii) Policy on Final Disposal Site Operation Equipment

It is necessary to maintain the capacity for proper final disposal of municipal solid waste and to ensure that infectious waste brought to the final disposal site is not mixed with municipal solid waste. Therefore, the replacement of old equipment will be considered as a top priority, with the aim of maintaining the current operational capacity.

(iv) Policy on Infectious Waste Equipment

In order to achieve the policy goal that all infectious waste generated from medical facilities will be treated by 2028, the processing capacity of the microwave sterilization equipment and the JSCs to which the equipment will be provided will be selected based on the inventory survey on the amount of infectious waste generated by each JSC conducted under the technical cooperation project.

(v) Policies related to the Specifications of Equipment

- Since there are very few equipment, vehicles, and heavy machinery manufactured in Palestine, Japanese or third-country products will be procured. The procurement plan will be contingent on the availability of a local agent to provide after-sales service for maintenance and management of the equipment.
- The vehicles shall have an internal combustion engine that complies with current environmental regulations in Japan, third countries, and recipient country.
- The handling of the new equipment/replacement of existing equipment that has become obsolete should not be significantly different for the implementing agency from the existing equipment.
- Regarding the procurement of third-country products, it should be planned to ensure the same quality as that of Japanese products.

(3) Target Equipment

The equipment planned to be procured in this project is shown in the following table.

Table: Equipment planned to be procured

Item	Description	Location													
		Nablus	Ramallah	Qalqiya	Jenin	Tubas	Jericho	NE & SE Jerusalem	N & NW Jerusalem	Higher Hebron & Bethlehem	Tulkarem	Salfit	Hebron	Bethlehem	Total
Equipment for infectious waste	Microwave sterilization equipment (125 kg/hour)	1													1
	Microwave sterilization equipment (75 kg/hour)							1							1
	Healthcare waste collection vehicles	1					1	1			1				4
	Color-coded leak-proof plastic medical waste containers	350						350							700
	Regular containers for non-infectious waste (4 m ³)	8	8				8	8		8					40
Containers	1.1 m ³ containers	200	200	200	200	200	200	200	200	-	200	200	200	200	2,400
	240-liter containers	100	100	100	100	100	100	100	100	-	100	100	100	100	1,200
Heavy machinery	Track loaders				1								1		2
	Backhoe loader							1							1
	Landfill compacting roller machine												1		1
	Tipper trucks				1			1					1		3
Equipment and Vehicles for waste collection	Collection vehicles Small (8 m ³)		1		2									1	4
	Collection vehicles Medium (13 m ³)					1		1			2	1	2		7
	Hock lift trucks (10 m ³)										1			1	2
	Containers (10 m ³)										2	2		2	6
	Grapple crane												1		1

(4) Soft Component

Infectious waste management consists of the proper segregation, storage, collection, transportation, treatment, and disposal of infectious waste. In Palestine, the medical institution is responsible for the segregation, discharge and storage of infectious waste, while JSCs are responsible for the collection, transportation, and treatment. In Palestine, based on the provisions of the Medical Waste Ordinance (2012) and the Waste Management Ordinance (2019), medical institutions that generate infectious waste are the recipients of collection services and each JSC is the supplier of services, and operations are carried out based on the beneficiary-pays principle in accordance with paid service contracts concluded between them. The proper management of infectious waste requires that the waste is first properly sorted and stored at the medical facilities where it is generated, then collected and transported by JSCs, sterilized, and disposed of properly at the final disposal site. In an ongoing JICA

technical cooperation project, a manifest system has been introduced to facilitate the monitoring of infectious waste from discharge to disposal. In the project, medical institutions are instructed to discharge of infectious waste separately from municipal solid waste. On the other hand, in order to promote the proper disposal of infectious waste, MoH has revised the law in 2022, and medical institutions are now required to dispose of infectious waste only after proper in-house treatment or, if in-house treatment is not possible, to entrust it to a company that can properly treat and dispose of it. Medical institutions that do not comply with this amendment will have their license to practice medicine revoked. The soft components of this project will be implemented on the premise that infectious waste is properly sorted at the medical facilities where it is generated, with the objectives of improving safety during the collection, transportation, and treatment of infectious waste by the JSCs; enhancing the proper use and maintenance of microwave sterilization equipment installed at the disposal site; and effectively and sustainably utilizing the equipment and materials provided at the disposal site.

(5) Project Period

The project period is estimated to be from March 2023 to January 2025 (23 months in total), and the project will be completed when the equipment comes into service (January 2025).

3. Project Evaluation

(1) Relevance

This project is highly significant because it will contribute to the improvement of environmental sanitation in the target cities through proper management of infectious waste, including its collection, transportation, treatment, and disposal. The project is also expected to have synergistic effects with ongoing technical cooperation projects. Specific details regarding relevance of the implementation of this project are as follows.

1) Improving collection, transportation, intermediate treatment, and final disposal of infectious waste in Palestine

The microwave sterilization equipment to be installed at the two JSCs in this project will, together with the existing facilities, enable the treatment of infectious waste in the entire West Bank area. Currently, the treatment capacity of the existing equipment can only cover the southern (Hebron and Bethlehem), central (Ramallah), and northern (Jenin and surrounding governorates) areas. In order to address the remaining south-central (Jerusalem and Jericho) and north-central (Nablus, Qalqilya, and Salfit) areas of the West Bank, it is necessary to further increase the sterilization capacity. Besides, there is a serious shortage of equipment for sorting, collecting, and transporting infectious waste in the West Bank, but this problem will be solved with the equipment provided in this project. Furthermore, as a result of the increased amount of infectious waste brought to the final disposal site due to the spread of COVID-19, there is a shortage of heavy equipment required for landfilling the additional waste quantity and for the separate disposal of infectious waste and municipal solid waste that are brought in without proper treatment. The heavy equipment to be provided in this project will solve the problem of insufficient disposal capacity at the final disposal site.

2) Strengthening JSCs' overall operational capacity by supporting JSCs' municipal solid waste operation

The provision of municipal solid waste collection and transportation equipment and the strengthening of JSCs' municipal solid waste management capacity under this project will contribute to the proper management of infectious waste by JSCs as any shortfall in the operation of JSCs' municipal solid waste management could have a serious impact on the treatment of infectious waste.

When an infectious disease outbreak occurs, waste materials that can cause the infection to spread, such as masks and PPE, are generated in households and medical facilities, and if these are not properly collected and disposed of, they can cause further spread of infection. This project will support the proper management of municipal solid waste by JSCs to address this issue.

3) Project's consistency with Palestinian Authority policies

This project is in line with the Palestinian Authority's National Policy Agenda (2017-2022) and is positioned as a high priority project in Palestine. The Palestinian Authority has identified "Building resilient communities" as one of the national priorities under the "Sustainable Development" pillar of the agenda and has stated the strengthening of waste management as a means of achieving this goal.

(2) Effectiveness

The effectiveness of the implementation of this project consists of the quantitative and qualitative effects described below.

1) Quantitative Effects

With the implementation of this project, the following target will be achieved in the West Bank in terms of volume of infectious waste treated. The baseline is calculated based on the amount of infectious waste processed at the centralized facilities, and is subject to change, so the values are estimates.

Table: Indicators of Achievement of Targets for the Volume of Infectious Waste Treated

Indicators	Reference value (2022)	Target value (2028)
	West Bank	West Bank
Amount of infectious waste treated (kg/day)	350	2,210

2) Qualitative Effects

The qualitative effects of the implementation of this project are as follows:

- Establishment of an infectious waste management system, including finance, operation and maintenance, through fees collection by JSCs in the West Bank.
- Reduced risk of infectious diseases from infectious waste for the parties involved in infectious waste management.

Based on the above, the project is judged to be highly relevant and effective.

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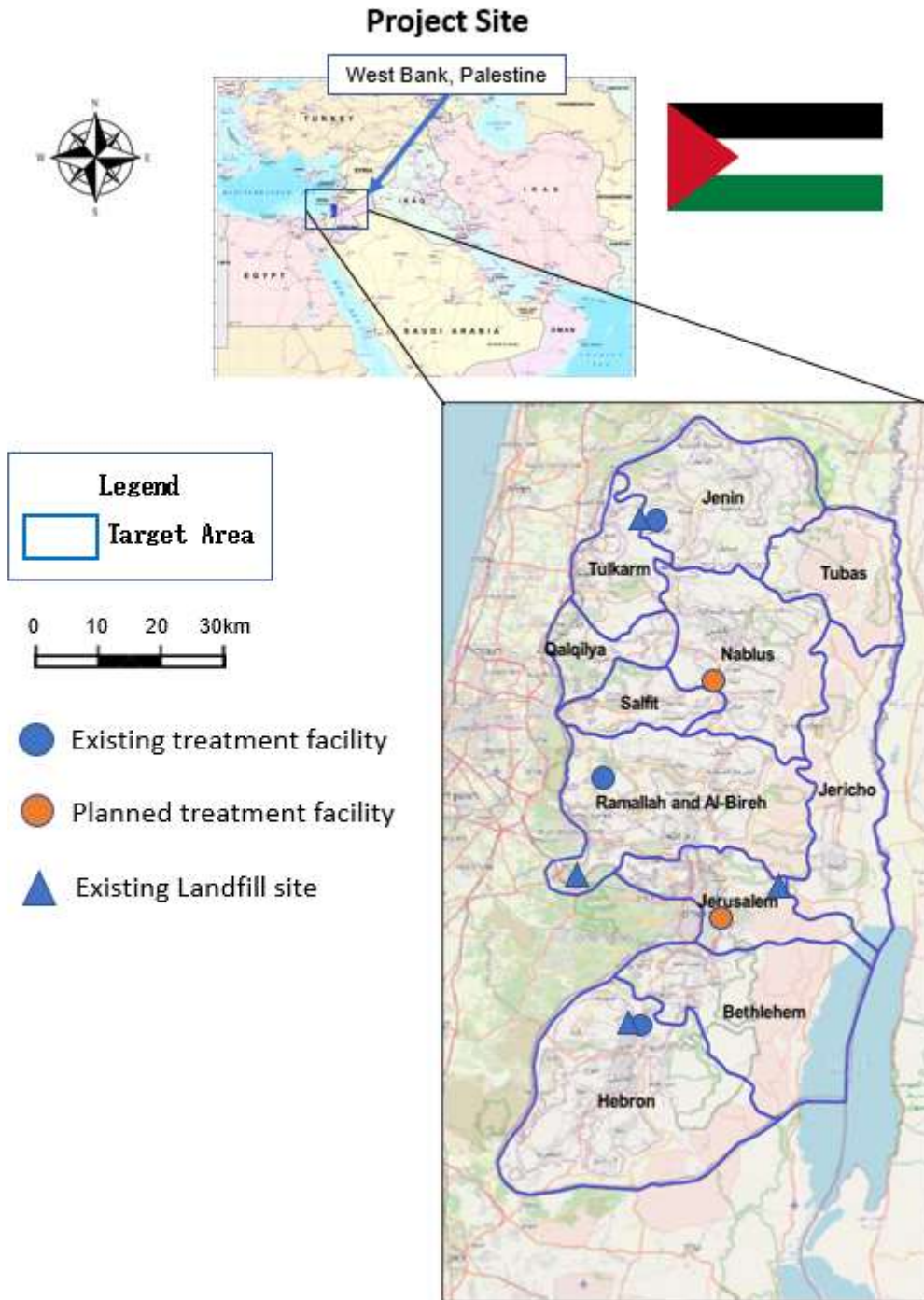
Appendix 3: Schedule of the Field Survey

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Location Map of the Preparatory Survey on the Project for the Improvement of Infectious Waste Management in Palestine

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Abbreviations

Abbreviations	Title
AFD	Agence Française de Développement (French Development Agency)
A/P	Authorization to Pay
B/L	Bill of Lading
B/A	Banking Arrangement
Bank A/C	Bank Account
CE	Conformité Européenne
COGAT	Coordination of Government Activities in the Territories
COVID-19	Coronavirus Disease-2019
DAC	Development Assistance Committee
DFID	Department for International Development
DJSC	Department for JSCs and Regional Integration
EA	Environmental Assessment
EIA	Environmental Impact Assessment
E/N	Exchange of Notes
EQA	Environment Quality Authority
EU	European Union
G/A	Grant Agreement
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German Agency for International Cooperation)
IEC	International Electrotechnical Committee
IEE	Initial Environmental Evaluation
ITA	Israel Tax Authority
IPR	Investment Program for Resilience
JIS	Japan Industrial Standards
JSC	Joint Service Council
KfW	Kreditanstalt für Wiederaufbau (German Development Bank)
KPI	Key Performance Indicator
KRM	Khan Yunis, Rafah, and Middle area
LGU	Local Government Unit
NRTC	Non-Road Transient Cycle
NRSC	Non-Road Steady Cycle
MERS	Middle East Respiratory Syndrome
MDLF	Municipality Development & Lending Fund
MoLG	Ministry of Local Government
MoH	Ministry of Health
MoFP	Ministry of Finance and Planning
OECD	Organization for Economic Cooperation and Development
PCBS	Palestinian Central Bureau of Statistics
PMR	Project Monitoring Report
PPE	Personal Protective Equipment
SARS	Severe Acute Respiratory Syndrome
SDC	Swiss Agency for Development and Cooperation
SIDA	Swedish International Development Cooperation Agency
UNDP	United Nations Development Programme
UNRWA	United Nations Relief and Works Agency for Palestine Refugees in the Near East
VAT	Value Added Tax
VNG	Vereniging van Nederlandse Gemeenten (Association of Netherlands Municipalities)
WB	World Bank

CHAPTER 1 BACKGROUND OF THE PROJECT

1 Background of the Project

1.1 Background and the Overview of the Grant Aid Project

With regard to infectious waste management in the Palestinian Authority (hereinafter referred to as “Palestine”), every medical institutions and Local Government Units (hereinafter referred to as “LGU”) work together under the supervision of the Ministry of Health (hereinafter referred to as “MoH”), the Ministry of Local Government (hereinafter referred to as “MoLG”), the Environment Quality Authority (hereinafter referred to as “EQA”) to provide waste discharge, collection, transportation, intermediate treatment, and final disposal services. In accordance with the Local Government Act (1997), the Regional Government Council Ordinance (2006) and its amendments (2016), and the Waste Management Ordinance (2019), Joint Service Councils (hereinafter referred to as “JSC”) are formed at the governorate unit level to provide administrative services and infectious waste management services, thereby ensuring efficient use of manpower, vehicles, and funds. Japan has been providing assistance in the field of waste management for more than 20 years and has contributed to the development of a regional waste management model, the formulation of a waste management law and national waste management strategy, and the development of an implementation plan through capacity building of JSCs and MoLG. In addition, the Counterpart Fund¹ has enabled the construction of transfer stations, and Grant Aid has provided waste collection vehicles, collection containers, and heavy machinery for disposal sites.

On the other hand, with the spread and prolongation of COVID-19 worldwide, the amount of infectious waste, such as medical equipment and protective clothing used for treatment and examination, increases as the number of infected patients grows, making the proper management of infectious waste an urgent issue. JSC collects, transports, sterilizes, and finally disposes of infectious waste generated from medical facilities. In the Gaza Strip, about 80% of infectious waste is disposed of properly thanks to the provision of equipment by UNDP and vehicles for collection and transport provided by JICA through technical cooperation project in the past. In the West Bank, three JSCs have installed sterilization equipment by June 2022. However, the treatment capacity of this equipment can only cover the southern (Hebron and Bethlehem), central (Ramallah), and northern (Jenin and surrounding governorates) areas. In order to cover the remaining south-central (Jerusalem and Jericho) and north-central (Nablus, Qalqilya, and Salfit) areas of the West Bank, it is necessary to further increase the sterilization capacity. Another urgent issue to address is the shortage of containers and special collection vehicles for separate collection of infectious waste throughout Palestine. Furthermore, as a result of the approximately 30% increase in the amount of infectious waste brought to the final disposal site during the COVID-19 pandemic, there is a shortage of heavy equipment required for the landfilling of the additional waste quantity and for the separate disposal of infectious waste and municipal solid waste.

Under the third pillar “Sustainable Development” of the National Policy Agenda (2017-2022), Palestine has identified “Building resilient communities” as one of the national priorities and calls for strengthening waste management as a means of achieving this goal. This project is consistent with this policy and is positioned as a high priority project in Palestine.

Based on the above background, the purpose of this project is to investigate the appropriateness and necessity of the equipment and other facilities for the collection, transportation, intermediate treatment, and final disposal of infectious waste in Palestine as a grant aid project.

¹ Counterpart fund is the funds provided by foreign governments or international aid organizations in response to the foreign assistance programs. International aid organizations provide funding to developing countries to support their development priorities, and the recipient country provides a match contribution, often in the form of cash or in-kind donations.

Table 1 List of initially requested equipment

Item	Description	Location														Total		
		Nablus	Ramallah	Qalqiya	Jenin	Tubas	Jericho	NE & SE Jerusalem	N&NW Jerusalem	Higher Hebron & Bethlehem	Tulkarem	Salfit	Hebron	Bethlehem	JSC-KRM (Southern Gaza)		JSC-GNG (Northern Gaza)	
Healthcare Equipment & vehicles	Medical waste bulk microwaving or equivalent system 125 kg/hour	1						1										2
	Health care waste collection vehicles	1						1							2	2		6
Supplies	Color-coded leak-proof plastic medical waste containers	350						350						300				1,000
	Non-infectious regular containers	8	8				8	8		8								40
Containers	1.1 cubic meter containers	125	125	125	125	125	125	125	125	-	125	125	125	125				1,500
	240-liter containers	100	100	100	100	100	100	100	100	-	100	100	100	100				1,200
Heavy machinery	Track loader				1						1							2
	Backhoe loader							1			1							2
	Landfill compacting roller machine (BOMAG) 24 tons						1											1
Vehicles for SWM	Transportation vehicles	1						1		1								3
	Tipper truck				4		1	1		4	2							12
	Mobile maintenance workshops (equipped vehicles)	1	1	1	1	1	1	1	1	1	1	1	1					13
	Collection vehicles Small (8m ³)				4						-	1	1	4				10
	Collection vehicles Medium (13m ³)							3	2	-		1	4	4				14
	Collection vehicles Large (21m ³)				1					1	-		2					4
	Hock lift with trailer													1				1
Others	Grapple crane								1		1		1					3
	Baling machine									1								1

Source: Minutes of Discussion on the Preparatory Survey for The Project for the Improvement of Infectious Waste Management

1.2 Current Situation of the Relevant Sectors and Issues

1.2.1 Current Situation and Issues

1.2.1.1 Current situation of municipal solid waste management in the West Bank

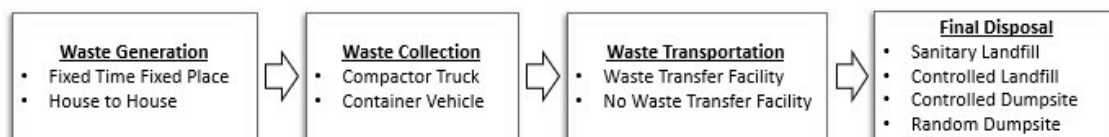
The current situation of municipal solid waste collection, transportation, intermediate treatment, and final disposal in the West Bank is as follows.

There are two main collection methods: Fixed-Time Fixed-Place (FTFP) method and House to House (HtH) method. In FTFP, municipal solid waste generated by households and businesses is discharged and stored in 10 m³ to 240-liter containers located throughout the city, which are collected by compactor trucks on a regular basis. In HtH, a compactor truck collects municipal solid waste discharged and stored in containers of various sizes at individual homes, businesses, and commercial facilities.

There are two methods for transporting municipal solid waste collected by compactor trucks to the final disposal site: the first is through a waste transfer facility, and the second is direct transport to the final disposal site after collection. In the case of a waste transfer facility, the waste is dropped from a platform into 40 m³ open containers (platform method), while in the case of direct transport, the stored waste is loaded into the containers using a wheel loader (flat method).

There are four types of final disposal sites: Sanitary landfill, Controlled landfill, Controlled dumpsite, and Random dumpsite. A sanitary landfill is a final disposal site officially approved by the Environment Quality Authority (EQA), with a leachate collection system, impermeable sheet, treatment facilities, and degassing facilities, and is properly operated and managed with daily soil covering by JSC. Controlled landfills are also officially approved by EQA, but they do not have a leachate treatment system and are only compacted and covered by JSC. A controlled dumpsite is a final disposal site that has not been formally approved by EQA, and only compaction and covering are conducted by JSC, without leachate treatment. Random dumpsites are almost illegal dumping sites.

The general flow of waste from discharge to collection, transportation, and final disposal is shown in the following figure.



Source: JICA Survey Team

Figure 1 The general flow of waste of municipal solid waste management

The flow of municipal solid waste collection, transportation, and final disposal at each JSC is shown in the table below.

Table 2 The flow of municipal solid waste management at each JSC

JSC	Flow of municipal solid waste management
North & North-West Jerusalem	JSC collects and transports the waste and disposes of it at the Beit Anan Controlled Dump Site.
North-East & South-East Jerusalem	JSC collects the waste, transfers it at two transfer facilities (Wadi Alnar and Al Ram), and disposes of it at the Al-Minya Sanitary Landfill site.
Qalqilya	JSC collects the waste, transfers it at a transfer facility (Qalqilya), and disposes of it at the Zahrat Al-Finjan Sanitary Landfill site.
Nablus	JSC collects the waste, transfers it at a transfer facility (Al Sayrafi), and disposes of it at the Zahrat Al-Finjan Sanitary Landfill site.
Tubas	JSC collects the waste, transfers it at a transfer facility (Tubas), and disposes of it at the Zahrat Al-Finjan Sanitary Landfill site.
Tulkarem	JSC collects the waste, transfers it at a transfer facility located several hundred meters from the JSC office and transports it (3 trips/day) to the Zahrat Al-Finjan Sanitary Landfill site for disposal.
North Gaza	North Gaza: The waste is transported to 3 random dumpsites for disposal. Expansion plan of one of the dumpsites is ongoing. Gaza: The waste is transported to Johr Al-Diek controlled dumpsite via a transfer facility.
South Gaza	Deir El Balah: The waste is transported directly to Al-Fukhary (Sofa) landfill site for disposal. Khan Younis: The waste is transported to Al-Fukhary (Sofa) landfill site via a transfer facility for disposal. Rafah: The waste is transported to Al-Fukhary (Sofa) landfill site via a transfer facility for disposal.
Salfit	JSC collects and transports the waste and disposes of it at a random dumpsite in LGU. Using the Sanerya random dumpsite, which was closed by the landowner, as a controlled dumpsite is currently in discussion with EQA.
Jericho	JSC collects the waste and transports it directly to the Jericho Sanitary Landfill site. It is planned to outsource the operation of the Jericho Sanitary Landfill site to the private sector in the future.
Bethlehem	JSC collects and transports the waste and disposes of it at the Al-Minya Sanitary Landfill site. The Al Minya Final Landfill is operated and managed by Higher Hebron & Bethlehem JSC. Al-Fahs Transfer Station is no longer in operation.
Hebron	JSC collects the waste, transfers it at two transfer facilities (Tarqumia and Yatta) and disposes of it at the Al-Minya Sanitary Landfill site. The waste from the southeast area is transported directly to the landfill site.
Jenin	JSC collects and transports the waste and disposes of it at the Zahrat Al-Finjan Sanitary Landfill site. The transfer facility (West Jenin) is currently not in use. Zahrat Al-Finjan Sanitary Landfill site is operated and managed by Jenin JSC. The expansion of the landfill site is planned as the budget is secured.
Ramallah	JSC collects the waste, transfers it at two transfer facilities (Ramallah and Al Bireh) and disposes of it at the Zahrat Al-Finjan Sanitary Landfill site. The Ramallah transfer facility is operated by the private sector. The construction of the Ramallah final disposal site is planned.

Source: JICA Survey Team

1.2.1.2 Current situation of infectious waste management in the West Bank

Medical waste generated from healthcare facilities is classified into infectious and non-infectious waste. Waste that contains pathogens such as blood or body fluids and poses a risk of infection, as well as waste that may pose a risk of infection, is treated as infectious waste. Waste that is not infectious and does not pose a biological, chemical, radiological, or physical hazard is classified as non-infectious waste and is treated in the same manner as municipal solid waste.

Medical facilities in Palestine use yellow bags for infectious waste and black bags for non-infectious waste, and separate infectious waste and non-infectious waste in the hospital. Infectious waste is separated into (1) needles, syringes, and petri dishes used in clinical laboratories, (2) needles and syringes used in each department, (3) blood-stained tubes, needles, and filters used in dialysis rooms, and (4) placentas after childbirth, and the yellow bags are used to dispose of these items.

Medical facilities have containers for infectious and non-infectious waste, which are disposed of separately. While some hospitals store waste in locked containers, many hospitals store waste in open containers that can be touched by anyone from the outside, without fences or other separation, and how

to store waste after it has been collected is a remaining issue. Needles and gloves with blood on them were found under the containers during the field survey. Hospitals using open containers reported that wild dogs and other animals sometimes come to eat organs such as placentas.

Waste is collected by JSCs or municipalities either (1) in case infectious and municipal solid waste is mixed at the time of collection, or (2) in case infectious and municipal solid waste is sorted at source and collected separately using specialized vehicles. In JSCs with microwave sterilization equipment (Jenin and Bethlehem/Hebron districts), case (2) applies but is limited to medical facilities that have already contracted with JSCs for collection and processing services. In Ramallah, a small incinerator has been installed with Japanese assistance, but at present, only a small amount of infectious waste is incinerated daily on a pilot basis, pending approval from Israel and an agreement on collection between MoH and Ramallah JSC.

Infectious waste in the Hebron and Bethlehem areas in southern Palestine is currently collected by a special collection truck owned by the Al-Minya Sanitary Landfill Site and is sterilized by microwave sterilization equipment (after sterilization, it is disposed of as municipal solid waste). The waste generated in the north of the central part of the country is transported to Zahrat Al-Finjan final disposal site in Jenin via a transfer facility in each region for final disposal. Zahrat Al-Finjan final disposal site is also equipped with a microwave sterilization equipment, but collection is currently limited. A training for JSC staff on how to separate infectious waste in medical facilities will soon be delivered by a local consultant specialized in infectious waste management and the collection of infectious waste is planned to start after the training.

1.2.1.3 Current situation of infectious waste management in the Gaza Strip

Currently, two JSCs, 25 LGUs, and the United Nations Relief and Works Agency for Palestine Refugees in the Near East (hereinafter referred to as “UNRWA”) provide waste management services in the Gaza Strip. After primary collection by handcarts or donkeys, JSCs and LGUs provide secondary collection by trucks with cranes, grapple cranes and compactor trucks. The status of waste collection, transport, treatment and disposal in the Gaza Strip is as follows. In North Gaza, waste is transported to and disposed of at the Johr Al-Diek Controlled Dumpsite via a transfer facility. In addition, some municipal solid waste is dumped at three random dumpsites, with expansion plans underway. South Gaza transports its waste via two transfer facilities and disposes of it at the new Al-Fukhary (Sofa) Final disposal site.

For managing infectious waste in the Gaza Strip, an infectious waste treatment system with two modified collection vehicles (one autoclave and one incinerator) was introduced on a trial basis in 2017-18 with the support of JICA, UNRWA, and Qatar Charity, and in 2021, with the support of United Nations Development Programme (hereinafter referred to as “UNDP”), one microwave sterilization equipment, two collection vehicles, and a container for sorting infectious waste were introduced in North Gaza. In addition, one microwave sterilization equipment, two collection vehicles, and a container for sorting infectious waste have been introduced in South Gaza with the support of UNDP and Japan, and a system for collection, transportation, intermediate treatment, and final disposal has already been established in the Gaza Strip.

1.2.2 Development Plan

The development plans relevant to this project include the National Policy Agenda (2017-2022) and the National Strategy on Waste Management (2017-2022). The year 2022 was the final year, but considering the COVID-19 pandemic, the Cabinet decided to extend it to 2023.

1.2.2.1 National Policy Agenda (2017-2022)

The National Policy Agenda (2017-2022), developed in 2017, is a high-level document that outlines the government’s structural reform and development policies to better serve Palestinian citizens with the goal of national independence and improving the quality of life of the population. The year 2022 was the final year, but considering the COVID-19 pandemic, the Cabinet decided to extend it to 2023.

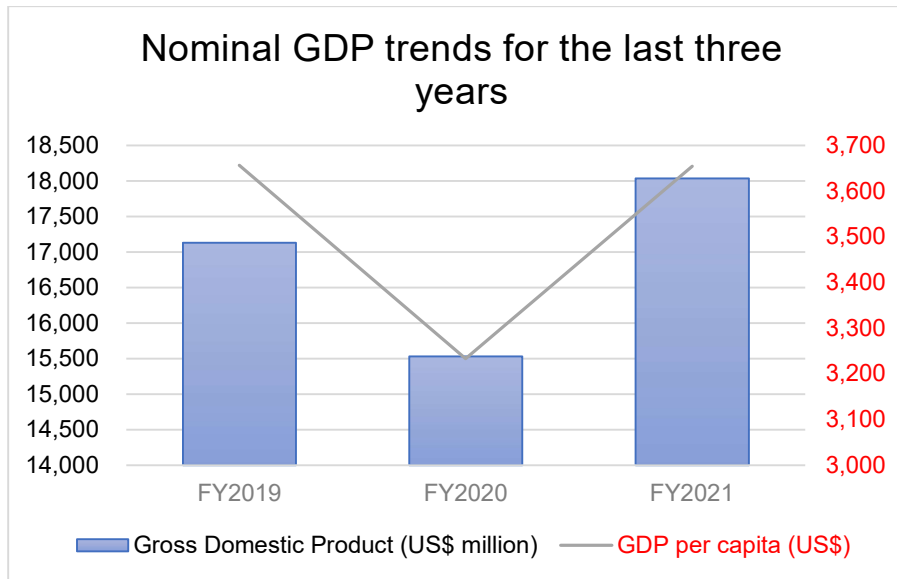
1.2.2.2 National Strategy on Waste Management (2017-2022)

Palestine's first National Strategy on Waste Management was developed in 2010, and the current Strategy was developed in 2017 as the second strategy. The Strategy lists eight strategic objectives and 19 sectoral policies for future waste management based on the challenges facing Palestine. The Strategy sets targets, such as 100% service coverage by JCSs, and aims for safe and environmentally friendly disposal of waste. The year 2022 was the final year, but considering the COVID-19 pandemic, the Cabinet decided to extend it to 2023.

1.2.3 Socio-Economic Conditions

The Palestinian economy is no exception to the impact of the spread of COVID-19, with Palestinian GDP in 2020 declining by over 9% compared to 2019 (with a temporary drop of nearly -20% in the second quarter), and the effects are also reflected in the poverty rate for that year, which jumped to 29.7%, up 8 percentage points from 2016. There are also large regional disparities in economic activity in the West Bank and Gaza Strip. In the West Bank, economic growth rebounded to 7.8% in 2021 as consumption increased due to the relaxation of COVID-19 related measures by the Palestinian government and the number of Palestinians working in Israel and settlements increased from about 125,000 in 2020 to about 153,000 in the fourth quarter of 2021 (World Bank Economic Monitoring Report). On the other hand, regarding the Gaza Strip, the conflict that erupted in May 2021 adversely affected economic activity, destroying an estimated 2% of the capital stock in the area, and the real GDP growth rate for the Gaza Strip was reported at 3.4%. Regional differences are also observed in unemployment rates, with the unemployment rate in the West Bank at 13.2% in the fourth quarter of 2021, while it remains high in the Gaza Strip at 44.7%.

Total GDP for the first and second quarters of 2022 rose 15.52% and 11.54%, respectively, compared to the same periods in 2021, and the Palestinian economy as a whole is expected to continue its recovery, albeit slowly, for the time to come. With the recovery in economic activity, there will be a significant increase in public revenues in 2021, with domestic tax collections for the same year increasing by 28% over the previous year, according to data published by the financial authorities. These increases can be attributed to a 12% and 14% increase in income tax and value-added tax collections, respectively. Regarding the fiscal situation of the Palestinian government, although significant progress has been made in reducing the budget deficit from 21% of GDP to around 7% between 2006 and 2021, fiscal reforms have long been regarded as important. One of the reasons for this is the low revenue of local governments, and the transfer of local government operations has contributed to the deficit in the national treasury. In light of these circumstances, the Palestinian financial authorities have prepared a three-year (2022-2024) revenue strategy that focuses on improving tax administration and compliance, and are moving forward with specific measures, including decisions on renewing utility rates and increasing gas station license fees.



Source: PCBS

Figure 2 Nominal GDP trends for the last three years

1.3 Trend of Japanese ODA

Japan's assistance related to the waste management sector in Palestine includes four technical cooperation and four grant aid projects. A summary of each project is given in the following table.

Table 3 Achievements in Japan's Technical Cooperation Projects

Implementation year	Project name	Summary
July 2021 - June 2022	Project for Infectious Waste Management under the Influence of COVID-19	Strengthening of infectious waste management capacity through the provision of equipment for infectious waste management.
July 2020 - March 2023 (in progress)	Project for Capacity Development in Solid Waste Management Phase 3	Proposal of a legal system and support for the creation of educational tools related to waste generation control / waste reduction and 3R promotion.
January 2015 - July 2019	Project for Technical Assistance in Solid Waste Management Phase 2	Improvement of the capacity of the Ministry of Local Government to develop national policies and plans for waste management, and assistance for infectious waste management in the Gaza Strip.
September 2005 - February 2010	Project for Capacity Development on Solid Waste Management in Jericho and Jordan River Rift Valley in Palestine	Promoting the introduction of a budget system, service fee collection system, and landfill operation and management manual to establish a regional waste management model.

Source: JICA Study Team

Table 4 Achievements in Japan's Grant Aid (Waste Management Sector)

Year of E/N	Project name	Summary
2019	Project for Improvement of Collection and Transport System for Solid Waste Management	Expansion of waste management services through provision of waste collection and transportation equipment.
2012	Project for the Improvement of Solid Waste Management in the West Bank	Expansion of the existing landfill in Jericho and construction of a recycling facility, as well as provision of equipment such as collection trucks and containers for a consortium of five municipalities in the region.
2006	Project for Waste Treatment Equipment for Sanitation Improvement in the West Bank	Provision of waste disposal equipment through emergency grant (via UNDP).
1999	Project for Improvement of Waste Disposal Equipment	Support for the improvement of waste collection and transportation equipment in municipalities and regional disposal sites to improve sanitary conditions.

Source: JICA Study Team

1.4 Assistance from Other Development Partners

In the area of waste management in Palestine, the World Bank is playing a major role with regard to the development of basic infrastructure such as the sanitary landfills currently in use. More recently, in response to the spread of COVID-19, assistance, including for infectious waste management, is being provided mainly by UNDP.

1.4.1 United Nations Development Programme (UNDP)

1.4.1.1 Improvement of Waste Management in the Gaza Strip

The financial support from the Government of Belgium, totaling US\$7.2 million, was signed on December 9, 2021. The main objectives of the project are to improve natural resource management in the Gaza Strip, reduce and manage waste, and create jobs related to the environment (Green jobs) targeting the younger generation. The first phase of the project will examine the establishment of an environmentally and socially appropriate waste management system using new technologies to reduce waste. Through these efforts, the project aims to strengthen the knowledge and capacity of JSC, local governments, and the private sector, and to strengthen the linkage between waste management and the creation of Green jobs through pilot projects.

1.4.1.2 Investment Program for Resilience (IPR)

The project received financial support from the German Development Bank (KfW) for the provision of medical equipment (delivery in July 2021). Out of a total amount of US\$1.7 million, US\$1,364,082 was invested to procure 39 items that have been provided to 16 hospitals.

<Organizations covered> Hospitals (Jenin, Tulkarem, Tubas, Qalqilya, Al-Watani, Rifidia, Jericho, Palestine Medical Complex, Beit Jala, Halhul, Durra, Yatta), COVID-19 centers (Tulkarem, Nablus, Hebron), and Azzoun COVID-19 Center (Qalqilya). Of the above, five hospitals (Beit Jala, Yatta, Jenin, Nablus, and Tulkarem) have been equipped with high-pressure steam sterilizers with a combustion chamber volume of 500 L/hour by the end of September 2022. In addition, on November 23, 2021, an agreement was reached and signed for US\$10 million out of a total of US\$ 29 million.

1.4.2 Municipal Development and Lending Fund (MDLF)

The Municipal Development and Lending Fund (hereinafter referred to as "MDLF") is a quasi-governmental organization established in 2005 under the auspices of the MoLG to promote self-reliance,

decentralization, and creditworthiness of local governments, including JSCs (Council of Ministers Decree No. 32/36/09). The funding partners consist of the World Bank, the European Union (hereinafter referred to as “EU”), European aid agencies (AFD, SIDA, KfW, GIZ, SDC, VNG, DFID), and governments (Denmark and Belgium), and provide assistance through the so-called “common basket approach”.

In the waste management sector, a waste management project is underway in the Gaza Strip to improve primary collection, promote recycling, develop transfer stations and disposal sites, and strengthen the organization. For the Municipal Development Programme - Phase 3, the Basic Grant and Performance Grant are 50% each. The former is evaluated based on population and needs, and the latter on 21 KPIs (Key Performance Indicators), and funds are allocated accordingly. Currently, the agency manages about 20 billion yen in funds.

1.4.3 KfW

The Ramun landfill is currently under planning in Albire, a municipality neighboring Ramallah. Although the project started 10 years ago, there have been long court disputes due to land issues, but construction is now expected to start in the near future. Funding is provided by KfW for a total of US\$14 million. The project area is 208,000 m², consists of four cells, and has a planned life of 20 years. A waste sorting facility is also planned in the landfill site. The landfill site will receive waste from Ramallah JSC (400-450 tons/day).

1.5 Natural Conditions

1.5.1 Location

Palestine is located in the Middle East and consists of the West Bank and the Gaza Strip. The east side of the West Bank faces Jordan, while the Gaza Strip faces the Mediterranean Sea. The West Bank is 5,655 km² and the Palestinian Authority is established in Ramallah. The Gaza Strip measures about 40 km from north to south and 10 km from east to west, and the area is 365 km².²

1.5.2 Weather Conditions

Palestine is in the Mediterranean climate zone, and most of the land is in a semi-arid zone. There is a rainy season and a dry season, with October - April being the rainy season and May - September the dry season. The northern part of the country, such as Jenin and Qalqilya, is rich in water resources. The coastal and hilly areas, including Jerusalem and Ramallah, are semi-humid, while the southern part of the Gaza Strip is a dry desert zone.

Table 5 Climate in Ramallah (2016)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average maximum temperature (°C)	12	14	16	21	25	28	29	29	28	25	19	14
Average minimum temperature (°C)	4	5	7	10	13	16	18	18	17	14	10	6
Average rainfall (mm)	149	121	100	29	4	0	0	0	1	20	67	127
Average humidity (%)	72	69	69	56	51	52	56	60	60	57	61	70

Source: Palestinian Meteorological Department, Ministry of Transport

² Ministry of Foreign Affairs of Japan (mofa.go.jp) Palestine

Table 6 Climate in the Gaza Strip (2016)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average maximum temperature (°C)	18	19	21	26	28	31	32	32	31	28	24	20
Average minimum temperature (°C)	8	8	10	13	15	18	21	21	19	17	12	9
Average rainfall (mm)	87	58	36	15	1	0	0	0	0	15	53	73
Average humidity (%)	70	68	68	63	63	64	66	67	69	67	66	70

Source: Palestinian Meteorological Department, Ministry of Transport

1.5.3 Natural Disasters

Due to its weak infrastructure, Palestine is vulnerable to natural disasters such as earthquakes, floods, landslides and droughts. In 2020, extreme weather caused heavy rains, floods, and cold waves in the West Bank and Gaza Strip, affecting thousands of people.

1.5.4 Topography

The Central Mountains run from north to south, almost in the middle of the West Bank. The elevation of the Central Mountains ranges from 200 m to 800 m, and the limestone strata are eroded by wadis³ and form an undulating terrain. Ramallah, Nablus and Tubas are cities built in basins that have developed into the hills. The Central Mountains slope east-west with ups and downs, and continue to the Israeli coastal plain on the eastern Mediterranean side. The provinces of Qalqilya and Tulkarem are located in the foothills between the Central Mountains and the coastal plain, at an altitude of 100-200 m. The eastern edge of the Central Mountains is a fault associated with the Rift Valley that formed parallel to the Jordan River. This fault clearly divides the alluvial plain along the Jordan Valley (Quaternary Period), forming a fault scarp. The alluvial plain has an elevation of -100 to -300 m and gently slopes from the fault scarp toward the Jordan River. The fault strikes predominantly in the north-south direction, but from the northern part of Jericho Province to Tubas Province, several small faults have also formed in the northeast-southwest direction and intersect with it. The wadis that develop along these small faults erode the Central Mountains and form valleys, in which strata from the Tertiary and Quaternary periods are deposited. The largest of these valleys is Wadi Farra, which runs from Jericho through Nablus to Tubas.

1.5.5 Geology

The geology of the West Bank consists mainly of limestone deposited from the Jurassic Period (Mesozoic Era) to the Eocene Epoch (Paleogene Period), as well as chalk, dolomite and chert. The lowlands along the Jordan River and around the city of Jenin are mainly covered with deposits of the Quaternary Period (Cenozoic Era), and layers of conglomerate from the Miocene to Pliocene Epochs (Neogene Period) are found in some areas.

1.6 Environmental and Social Considerations

1.6.1 Environmental Impact Assessment

1.6.1.1 Project components with environmental and social impacts

This project aims to improve the management of infectious waste in Palestine and consists of the

³“Dry rivers” without running water scattered in desert climate areas and arid areas.

procurement of equipment such as microwave sterilization equipment for sterilizing infectious waste, collection vehicles dedicated to infectious waste, and heavy machinery to be used at final disposal sites. Since the candidate sites where the equipment to be procured will be used are not located in environmentally sensitive areas, it was judged that the potential negative impact on the environment was not significant, and the project was therefore classified as “Category C” by JICA.

(1) Basic Environmental and Social Conditions

1) Land use

Both candidate sites considered for the installation of the microwave sterilization equipment are located near places already dealing with sewage and waste, namely the sewage treatment plant in Nablus and the transfer station of Wadi Alnar in North-East & South-East Jerusalem. Both candidate sites require environmental permits, and it has been agreed that civil engineering and construction work related to the installation of microwave sterilization equipment will be carried out by the JSCs under the supervision of MoLG.

As for heavy machinery, it will mainly be used at the existing final disposal sites of Zahrat Al-Finjan, Al-Minya and Jericho so that additional land is not necessary.

During the field survey, the local traffic conditions, such as access roads to the final disposal sites, have been confirmed. No notable problems were observed under the current situation, and it is judged that there will be no particular impact on the regional traffic.

2) Natural environment

Regarding the candidate sites in Nablus and North-East & South-East Jerusalem, where the installation of microwave sterilization equipment is being considered, no significant impact on the natural environment was identified during the field survey. On the other hand, at the Zahrat Al-Finjan final disposal site, where the procurement of heavy machinery is being considered, problems of offensive odors have been pointed out for some time by residents living in the vicinity. Since about 50,000 residents live within 2-3 km of the final disposal site, measures against offensive odors are deemed necessary. As the heavy machinery planned to be procured by this project is expected to improve the efficiency of rolling compaction and soil covering in the landfills, a betterment of the current odor problem can be expected. Besides, in addition to the heavy machinery mentioned above, the equipment considered in this project also includes vehicles for collection and transportation. In Palestine, regulations on exhaust gas from vehicles apply EU standards, so these must be reflected in the specifications for vehicles.

Specifically, for on-road vehicles such as collection vehicles, the standard is currently EURO VI and it applies in the West Bank. On the other hand, in the Gaza Strip, it is Euro III due to Israeli regulations. For heavy equipment, EURO Stage V applies.

In addition, if a generator is planned to be installed to power the microwave sterilization equipment and the engine of this generator is 560 kW or more, it must conform to the standards shown in the table below (NRSC and NRTC test cycles).

Table 7 NRSC and NRTC Test Cycle Standards

Stage V emission standards for generator set engines above 560 kW (NRG)								
Category	Ign.	Net Power	Date	CO	HC	NOx	PM	PN
		kW						
NRG-v/c-1	All	p>560	2019	3.50	0.19 ^a	0.67	0.035	-
^a A = 6.00 for gas engines								

Source: [Emission Standards: Europe: Nonroad Engines \(dieselnet.com\)](https://www.dieselnet.com)

3) Socio-economic conditions

Among the three final disposal sites targeted by this project, a small number of waste pickers were observed in Al-Minya, but not in the others. On the other hand, in Jericho, a recycling facility that separates, crushes, and collects plastics is established on the landfill site. Several staff members now working in the facility are former waste pickers, thus providing limited employment opportunities.

(2) System and organizations related to environmental and social considerations in Palestine

The framework for protecting the environment, public health and biodiversity in Palestine is regulated by Law No. 7 of 1999 on the Environment. In addition, the Palestinian Environmental Impact Assessment Policy (2000) establishes the environmental assessment process and describes how development activities should be implemented, taking into consideration environmental protection and sustainable development.

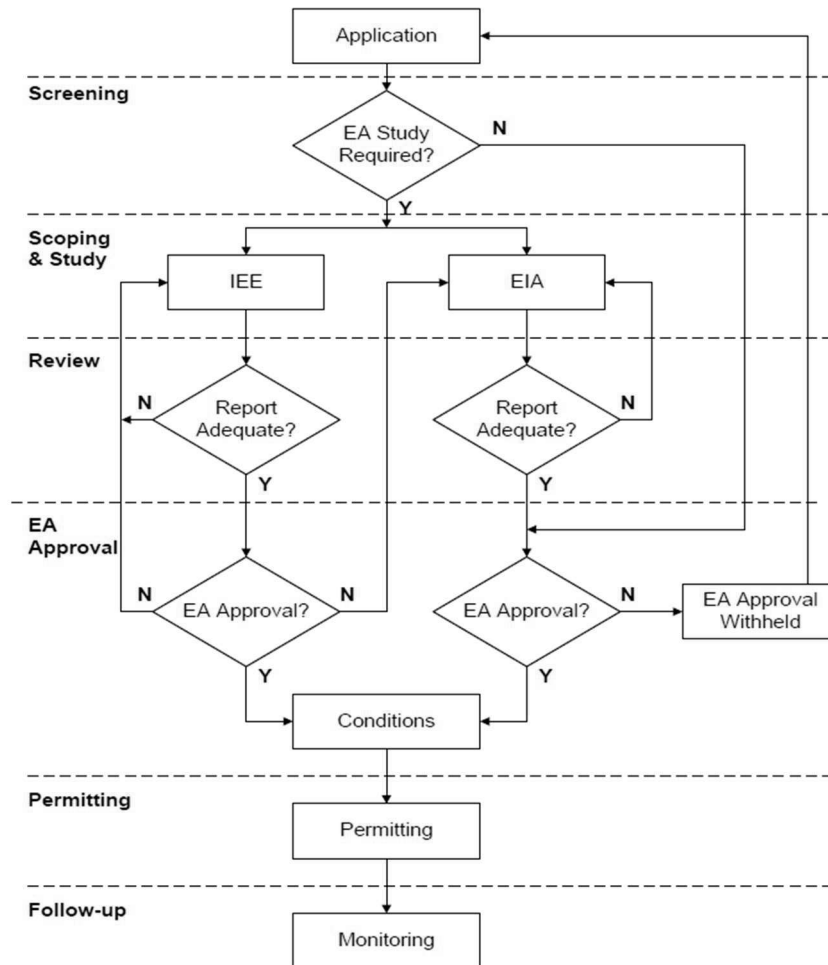
“Environmental Approval” is defined in Article 1 as a conditional and/or unconditional approval, issued by the Environment Quality Authority (EQA), which certifies that all environmental requirements or environmental assessments relating to a development activity have been satisfactorily completed, and which grants environmental approval for the purpose of issuing a permit by the permitting authority without contradicting other applied rules and regulations. When considering the environmental approval of a project, Article 7 stipulates that two types of Environmental Assessment (EA) studies may be required:

a) Initial Environmental Evaluation (IEE), sometimes called Preliminary Environmental Assessment (PEA) in Palestine: For projects where significant environmental impacts are uncertain, or where compliance with environmental regulations must be ensured.

b) Environmental Impact Assessment (EIA): For projects which are likely to have significant environmental impacts and where compliance with environmental regulations must be ensured.

There are three types of EA reports that represent the project life cycle and EA review process: 1) Environmental Approval Request, 2) Initial Environmental Evaluation (IEE) report, and 3) Environmental Impact Assessment (EIA) report.

The flowchart of the EA application procedure is represented in the figure below.



Source: Palestinian Environmental Assessment Policy

Figure 3 EA Application Flowchart

To obtain environmental approval for a project, the following steps must be taken:

1) Submission of the application for environmental approval for the project directly from the public institution or business owner.

2) IEE: After submitting the application for environmental approval, on-site inspections are carried out on the project site to confirm the information contained in the application and to determine what applies to the project with the aim of collating it with the project's environmental screening criteria.

3) Environmental Screening: This process aims to determine whether an IEE or EIA is required, or whether neither of these are required for the proposed development activity. Screening is based on requirements of relevant land use plans, and on whether the project is likely to:

- Use a natural resource in a way that pre-empts other uses of that resource.
- Displace people or communities.
- Be located in or near environmentally sensitive areas, such as natural reserves, wetlands, or registered archaeological and cultural sites.
- Generate unacceptable levels of environmental impact.
- Create a state of public concern.
- Require further, related development activities which may cause significant environmental impacts.

4) After reviewing the project documents (application for environmental approval and IEE), the EQA branch located in the Governorate where the facility subject to the application is located shall express its opinion (conditional approval, rejection, completion of procedures if a IEE or a comprehensive EIA is required) and address it to the General Directorate for Environmental Protection within the period

stipulated in the Environmental Assessment Policy.

The Environmental Approval certificate is an official document issued by EQA that expresses technical opinions on the establishment or implementation of activities that affect the environment.

Usually, an evaluation committee is set up at EQA headquarters two to three months before the Environmental Approval to evaluate the submitted report and make a decision. If the scale of the facility is large, the National Environment Committee for EIA, consisting of 10 ministries and agencies, will be established to discuss and conduct an evaluation.

5) After the General Directorate for Environmental Protection has responded to the letter of the branch office, the Director of the branch office or his representative shall issue the decision of the EQA regarding the project either conditionally approved or rejected, or the completion of special procedures if the project requires a comprehensive EIA or an IEE, whereby the parties concerned are handed the terms of reference for the preparation of the survey.

If the project is rejected, the project owner has the right to lodge a complaint with the EQA and the Minister or his representative must respond in writing within one week.

1.7 Special Remarks

Since the sewage treatment facility in Nablus, where the microwave sterilization equipment is being considered for installation, is in Area C, MoLG is currently applying for approval to construct the building. Since the construction of the building must be completed before the procurement of the microwave sterilization equipment, it is necessary to encourage the Palestinian side to thoroughly manage the progress from the application for approval to the completion of construction. In case the approval cannot be obtained, the municipality of Nablus has stated to provide an alternative site to construct the building in an industrial area located in Area B.

The Wadi Al-Nar transfer facility in North-East & South-East Jerusalem is in Area B, and therefore does not require construction approval from Israel.

CHAPTER 2 CONTENTS OF THE PROJECT

2 Concept of the Project

2.1 Basic Concept of the Project

2.1.1 Project Objective

JICA's technical cooperation "Project for Capacity Development in Solid Waste Management Phase 3" is implementing various activities to reduce the amount of waste landfilled in final disposal sites. The technical cooperation "Project for Infectious Waste Management under the Influence of COVID-19", which corresponds to Output 6 "Improvement of Infectious Waste Management Capacity," has the overall goal of ensuring that infectious waste is properly treated and disposed of throughout Palestine to reduce the risk of waste-derived infections and has established an infectious waste treatment system.

This Grant Aid project focuses on the introduction of equipment for the sterilization of infectious waste in the south-central and north-central regions of the country, as well as the development of equipment necessary for the collection, transportation, and final disposal of infectious waste in the West Bank, in order to establish an infectious waste management system in the region and thereby contribute to preventing the spread of waste-derived infectious diseases.

The project goals are shown in the table below.

Table 8 Project Goals

Item	Summary								
(1) Overall Goal	To ensure that infectious waste is properly treated and disposed of throughout Palestine to eliminate waste-derived infections.								
(2) Project's Purpose	To strengthen the capacity of infectious waste management in Palestine by providing necessary equipment and materials for infectious waste management in the West Bank, thereby contributing to reducing the risk of waste-derived infection and improving comprehensive waste management.								
(3) Expected Outputs	1) A treatment system for infectious waste generated in the West Bank will be established. 2) The infectious waste management capacity of MoLG and JSCs will be improved by upgrading equipment and other facilities for the collection, transportation, intermediate treatment, and final disposal of infectious waste.								
(4) Indicators for Project Outputs	1) Quantitative Effectiveness: (Indicators for outputs that show achievement of the goals of the overall project plan) <table border="1" data-bbox="509 1458 1329 1648"> <thead> <tr> <th>Indicators</th> <th>Target area</th> <th>Reference value (2022)</th> <th>Target value (2028)</th> </tr> </thead> <tbody> <tr> <td>Amount of infectious waste treated (kg/day)</td> <td>West Bank</td> <td>350</td> <td>2,210</td> </tr> </tbody> </table> 2) Qualitative Effectiveness: <ul style="list-style-type: none"> • Establishment of an infectious waste management system, including finance, operation and maintenance, through fees collection by JSCs in the West Bank. • Reduced risk of infectious diseases from infectious waste for the parties involved in infectious waste management. 	Indicators	Target area	Reference value (2022)	Target value (2028)	Amount of infectious waste treated (kg/day)	West Bank	350	2,210
Indicators	Target area	Reference value (2022)	Target value (2028)						
Amount of infectious waste treated (kg/day)	West Bank	350	2,210						

2.1.2 Project Summary

This project will support MoLG and JSCs in improving their infectious waste management capacity

in the West Bank by providing equipment and other facilities for the collection, transportation, intermediate treatment, and final disposal of infectious waste.

2.2 Outline Design of Japanese Assistance

2.2.1 Design policy

The basic policy for the design of this project plan shall be as follows, based on the field survey policy and the results of discussions with the Palestinian counterpart during the field survey.

2.2.1.1 Basic policy

- (1) As COVID-19 spreads and prolongs worldwide, the number of infected patients and the amount of infectious waste generated, such as medical materials and equipment used for treatment and testing, masks, protective clothing, etc., increase, making the proper management of infectious waste an urgent issue. This project will support the development of equipment and other facilities for the collection, transportation, intermediate treatment, and final disposal of infectious waste in Palestine in order to improve the infectious waste management capacity of MoLG and JSCs.
- (2) In Palestine, infectious waste are managed by JSCs as part of municipal solid waste management. If a problem arises in the management of the municipal solid waste, JSC, as the implementing entity, will be overwhelmed with the response, and this may have a serious impact on the management of infectious waste. In order to solve this problem, this project will not only provide support to the parties directly related to infectious waste but also to the JSCs for the proper management of municipal solid waste.
- (3) Infectious diseases such as SARS, MERS, and COVID-19 regularly occur in approximately 10-year cycles. When these infectious diseases spread, a large amount of personal protective equipment (hereinafter referred to as “PPE”) and waste that can contribute to the spread of infection are discharged from homes and offices. If not properly collected and disposed of, they can cause further spread of infection. This project will support the proper management of municipal solid waste by JSCs to prevent this problem.

2.2.1.2 Outline Design Policy

(1) Policy for Selection of Target Area

The target area for the provision of equipment is limited to the West Bank. In the Gaza Strip, JICA and other international organizations started supporting the establishment of an infectious waste management system, human resource development, and service development earlier than in the West Bank, and the Gaza Strip has the capacity to completely cover all infectious waste generated throughout Palestine. In contrast, the West Bank has not yet been able to provide infectious waste treatment services to the entire area due to capacity constraints, so the support will be targeted to the West Bank.

(2) Policy on Collection and Transportation Equipment

The replacement of old equipment will be considered as a top priority, with the aim of maintaining the collection and transportation capacities at the same level as at present in order to properly collect and transport masks, PPE, and other waste that can contribute to the spread of infection, and which are mixed into municipal solid waste.

(3) Policy on Final Disposal Site Operation Equipment

The capacity for proper final disposal of municipal solid waste must be maintained to ensure that infectious waste delivered to the final disposal site is not mixed with municipal solid waste. The replacement of old equipment will be considered as a top priority, with the aim of maintaining the current level of landfill disposal capacities for the proper final disposal of waste.

(4) Policy on Infectious Waste Equipment

In order to achieve the policy goal that all infectious waste generated from medical facilities will be treated by 2028, the processing capacity of the microwave sterilization equipment and the JSCs to which the equipment will be provided will be selected based on the inventory survey on the amount of infectious waste generated by each JSC conducted under the technical cooperation project.

(5) Policies related to the Specifications of Equipment

- Since there are very few equipment, vehicles, and heavy machinery manufactured in Palestine, Japanese or third-country products will be procured. The procurement plan will be contingent on the availability of a local agent to provide after-sales service for maintenance and management of the equipment.
- The vehicles shall have an internal combustion engine that complies with current environmental regulations in Japan, third countries, and recipient country.
- The handling of the new equipment/replacement of existing equipment that has become obsolete should not be significantly different for the implementing agency from the existing equipment.
- Regarding the procurement of third-country products, it should be planned to ensure the same quality as that of Japanese products.

2.2.1.3 Policy for the Natural Environment

No special equipment specifications are required with regard to natural environmental conditions. Since the project area has low annual precipitation, the moisture content of the waste generated is relatively low. In addition, although the average annual temperature is mild (20°C), the average maximum temperature in summer exceeds 30°C. Therefore, it is considered necessary to avoid parking vehicles and equipment under the hot sun for a long period of time.

2.2.1.4 Policy for the Socio-Economic Conditions

Since the amount of waste brought to the landfills has increased due to COVID-19, the waste collection vehicles and heavy equipment required for landfill disposal of the increased amount of waste and for separate landfill disposal of infectious and municipal waste should also be considered.

Due to the impact of the spread of COVID-19, the Palestinian GDP in 2020 is expected to decline by over 9% versus 2019, and the poverty rate for that year has jumped to 29.7%, up 8 percentage points from 2016. Furthermore, there have been strikes in public transportation and public institutions, and the level of provision of public services such as waste collection needs to be fully examined.

2.2.1.5 Policy on Local Agent

(1) Local Suppliers for Equipment Procurement

The survey team confirmed during the field survey that there are local agents of the targeted equipment manufacturers in Ramallah and Nablus, and that these agents have engineers whose skills on equipment operation and installation are sufficient. These agents can also supply spare parts and after-sales services; therefore, it is considered that they can provide sufficient services for the equipment to be procured in this project. Also, in this project, the countries of procurement will be Japanese manufacturers and manufacturers from third countries as there are few equipment, vehicles and heavy

machinery made in Palestine. In this context, there are concerns about whether repair and spare parts can be provided in a timely and uninterrupted manner. Reflecting those concerns, eligible manufacturers will be limited to those who have local agents. By limiting eligible manufacturers to those who have local agents, repair and spare parts supply should be smooth even if the procured products are from Japan or third countries. Considering the special procurement circumstances, the local agents shall also be effectively involved in the installation and initial operation training.

2.2.1.6 Policy for the Project Operation and Maintenance

(1) Policy for Equipment for municipal solid waste

The equipment to be procured under the project will be deployed to each JSC through MoLG, and each JSC will be responsible for operation and maintenance of the equipment. For minor repairs, the JSCs' drivers and mechanics will handle the repairs at repair shops and other facilities. For large-scale repairs, repairs will be outsourced to private companies and LGUs.

The waste collection and transportation equipment and final disposal site management equipment to be procured this time are the same types of equipment that have been used locally up to now, so the basic maintenance and management can be carried out using the methods currently used in each JSC. In addition, the 2019 grant assistance provided maintenance support for the collection and transportation equipment as a soft component, and the technical cooperation project provided training on strengthening the operation and maintenance system of the microwave sterilization equipment. In addition, under the soft components of this project, the Japanese consultants, in consultation with MoLG, will examine and improve the existing manuals and provide guidance to JSCs to properly maintain and manage the heavy machinery for final disposal site management.

As for personnel for the operation of the equipment, one driver and two workers are required for the waste collection vehicles, and one operator is required for the final disposal site management equipment, but since all the equipment will be replaced, there is no need to secure new personnel.

(2) Policy for Equipment for infectious waste

The equipment for infectious waste to be procured in this project is already available at other JSCs in the West Bank, but it will be new equipment for the target JSCs. Therefore, at the time of delivery, the manufacturer's representative engineers will provide initial operation and operational guidance to teach JSC staff how to use and maintain the equipment. In addition, the necessary support (soft components) for maintenance and management of the procured equipment will be provided, and check sheets for daily and periodic inspections will be prepared to ensure that the instructions given at the time of delivery are firmly in place, thereby improving the operation and maintenance management capabilities. In addition, from the perspective of ensuring the safety of personnel in charge of infectious waste treatment, a safety check sheet will be prepared to raise the safety awareness of JSC and personnel in charge, and to ensure that safety management operations are thorough and customary.

Furthermore, through opportunities for initial operation and operational guidance during installation, a liaison system between JSC engineers and local manufacturer's agent engineers will be established to build a relationship that allows for immediate consultation in the event of failure or trouble.

2.2.1.7 Policy on Equipment Standards

(1) Equipment for municipal solid waste

The equipment shall be of the same standard as that used locally and shall be able to be maintained and managed by the existing operating and repair personnel. The field survey did not reveal any vehicles with excessive equipment, and although many of the equipment currently in use in the project area was manufactured more than 10 years ago and is outdated, the operating and repair personnel at each site are highly skilled in the operation and repair of existing equipment.

(2) Equipment for infectious waste

In Palestine, microwave sterilization equipment is already installed at Al-Minya final disposal site in Bethlehem and Zahrat Al-Finjan final disposal site in Jenin, through the support of the Japanese government, and the current situation of infectious waste treatment and equipment used at these existing facilities were well examined to decide the standard of infectious waste treatment equipment for this project. In addition to the current situation in existing facilities, the projected processing capacity at North-East & South-East Jerusalem JSC and Nablus JSC where microwave sterilization equipment is to be installed was considered.

In addition to the above elements, the standard of the equipment under the project was also considered from the perspective of procurement and maintenance. Although this project is an equipment procurement project which is targeting only Palestine, it is necessary to obtain permissions for import and inland transportation from Israel. For the appropriate and continuous utilization of the equipment under these irregular circumstances, it is assumed that the equipment will be procured only from manufacturers who have local agents which: 1) are located in Palestine, 2) have engineers with high maintenance skills, 3) can secure suitable procurement routes of spare parts and consumables.

2.2.2 Basic Plan

2.2.2.1 Target Equipment

(1) List of equipment to be procured

The equipment planned to be procured in this project is shown in the following table.

Table 9 Equipment planned to be procured

Item	Description	Location													
		Nablus	Ramallah	Qalqilya	Jenin	Tubas	Jericho	NE & SE Jerusalem	N&NW Jerusalem	Higher Hebron & Bethlehem	Tulkarem	Salfir	Hebron	Bethlehem	Total
Equipment for infectious waste	Microwave sterilization equipment (125 kg/hour)	1													1
	Microwave sterilization equipment (75 kg/hour)							1							1
	Healthcare waste collection vehicles	1					1	1			1				4
	Color-coded leak-proof plastic medical waste containers	350						350							700
	Regular Containers for non-infectious (4 m ³)	8	8				8	8		8					40
Containers	1.1 m ³ containers	200	200	200	200	200	200	200	200	-	200	200	200	200	2,400
	240-liter containers	100	100	100	100	100	100	100	100	-	100	100	100	100	1,200
Heavy machinery	Track loaders				1					1					2
	Backhoe loader							1							1
	Landfill compacting roller machine									1					1
	Tipper trucks				1			1		1					3
Equipment and Vehicles for waste collection	Collection vehicles Small (8 m ³)		1		2									1	4
	Collection vehicles Medium (13 m ³)					1		1			2	1	2		7
	Hock lift truck (10 m ³)										1			1	2
	Containers (10 m ³)										2	2		2	6
	Grapple crane												1		1

(2) Equipment plan

The types and quantities of equipment to be procured were discussed and reviewed with MoLG based on the results of the field survey. The basis for calculating the quantity of each planned equipment is attached in Appendix 7.

2.2.3 Procurement Plan

2.2.3.1 Procurement Policy

(1) Basic Policy

The project shall be implemented in accordance with the scheme of the Japanese Grant Aid. The Grant Aid shall be used for the procurement of the products and services for the project which is agreed upon in the Exchange of Notes (hereinafter referred to as “E/N”) between the Government of Japan and the Palestinian Authority. Following the E/N, the Grant Agreement (hereinafter referred to as “G/A”) of the project shall be concluded between the Palestinian Authority and JICA. The application of Grant Aid to a particular project funded by the Grant will be stipulated in the G/A. The rights and obligations of the Palestinian Authority and the providers of the products and services for the project are governed by the tender documents, and by the contracts signed by the Palestinian Authority with the providers of the products and services. The roles of the concerned parties, including the Government of Japan, JICA, consultants and contractors in relation to the implementation of the project under the Grant Aid are understood as follows.

- The Government of Japan decides the Grant shall be extended to the Palestinian Authority in accordance with the relevant laws and regulations of Japan.
- JICA extends the Grant to the Palestinian Authority in accordance with the relevant laws and regulations of Japan and within the scope of the E/N and pays serious attention to ensure the accountability and that the Grant is used properly and effectively for the project.
- The Palestinian Authority is the recipient of the Grant and is responsible for the execution of the project. As the client or the buyer, the Palestinian Authority conducts the procurement of the products and services necessary for the project implementation using the Grant provided by JICA.
- The Consultant is the firm who renders services to the Palestinian Authority with regard to designing, cost estimating, tendering and supervising the procurement and the construction works for the project in accordance with the contract with the Palestinian Authority.
- The Contractor is the firm who provides the products and services necessary for the project in accordance with the contract with the Palestinian Authority.

1) Services before the tender

The Consultant shall review the survey results produced by the Preparatory Survey of the project, and ensure consistency of services.

2) Services in the tender stage

The Consultant shall execute the following services in the tender stage of the project:

- Compilation of the tender documents
- Support for the tender
- Support for preparation of answers to the questions from tender participants and amendment drafts regarding the tender
- Support for production of technical evaluations and evaluation tables/evaluation reports
- Evaluation of tender prices, production of evaluation tables/evaluation reports and determination of winner of the tender to enter the first round of contract negotiations
- Support for the contract negotiations of the project

3) Services at the stage of procurement supervising works

In order to ensure the quality of procurement, it is necessary to assign Japanese engineers. Procurement supervision and coordination between the relevant agencies on the Palestinian side, procurement contractors, and other related parties are planned to be implemented.

The Consultant shall supervise the Contractors for the adequate and smooth execution of the contracts relating to the project. The Consultant supervision for the project shall aim to monitor whether or not the procurement is being implemented correctly, while ensuring the level of quality prescribed in documents such as specifications and design drawings in the project contracts. The Consultant shall also confirm whether qualities, standards and the actual dimensions of the facilities meet those prescribed in the project contracts. In addition, the Consultant shall also supervise whether or not the Contractors are controlling and storing documents concerning their working records such as quality control data, photos and equipment procurement adequately. Besides, the Consultant shall visit each manufacturing place at the time of assembly, if necessary, in order to prevent finding discrepancies after the delivery of the materials and equipment.

4) Contractors

According to the Japan's Grant Aid scheme, Japanese Contractors who are selected through a bidding procedure will implement the equipment procurement works for the project.

Even after the equipment are handed over, it is still necessary to contact the Contractors regarding after-sale services, repair and maintenance. Thus, the Contractors shall make arrangements for the above services.

2.2.3.2 Procurement Conditions

The following items are to be considered in the procurement under this project, and the procurement plan should be developed with these considerations.

(1) Schedule management

Although this project is an equipment procurement project for Palestine, permissions for the import and inland transportation of the equipment are required from Israel, and it could be subject to restrictions. In addition, the permit applications and approval procedures are complicated, sometimes beyond all

reason, so that the time required for the above process will largely depend on the conditions of the Israeli side. It is essential to plan ahead with enough time and to share the schedule closely with the Palestinian side, and the Palestinian side shall check and follow up the current status of application procedures with Israel if necessary.

(2) Dispatch of Technicians for Equipment Installation

It is extremely important to impart knowledge and skills regarding appropriate operation and maintenance of the equipment so as to contribute to post-project proper operation of the procured equipment as well as collection, transportation, treatment and disposal of infectious waste. For that purpose, technicians who are thoroughly familiar with the operation of the equipment will be selected, and enough time for explanation of equipment handling (operation techniques, simple repair techniques, inspection methods, etc.) shall be taken. The level of comprehension of the participants shall be confirmed carefully during training.

(3) General circumstances regarding procurement

1) Import duty

<Where to apply> Israel Tax Authority (hereinafter referred to as “ITA”) via Ministry of Finance and Planning (hereinafter referred to as “MoFP”)

<Procedure>

- i. MoLG submits an application document of import duty exemption to MoFP (the list of equipment whose import duty is to be exempted and a supporting letter from JICA local office (original)).
- ii. MoFP submits the application of import duty exemption to ITA.
- iii. ITA issues approval to MoFP (after that, transportation of equipment and materials from Israeli ports to Palestine can start).

<Required time> 1 to 2 month(s)

<Points of attention>

Since the Israeli government is in charge of customs duties on goods imported into Palestine, an application must be made to ITA via MoFP. However, Israel has strict security controls in place to ensure that equipment and materials imported into Palestine are not diverted for military purposes, and the Israeli Ministry of Defense will conduct security checks at the same time as the customs duty exemption screening. Therefore, it could take some time for approval depending on the kind of equipment and materials. According to MoLG, there are no cases in which Israel took a long time for the import of microwave, heavy machinery or vehicles. In the event that equipment and materials arrive before the approval is obtained, they must be stored at a port in Israel, which may charge demurrage costs. Hence, it is important to note that the transportation of equipment and materials from Japan or third countries should take place only after the approval of import permission is issued.

2) VAT

<Where to apply> MoFP

<Procedure>

- i. The Japanese Contractor submits the contract (copy), local agent registration number, etc. to the JICA local office.
- ii. JICA local office submits a request letter for VAT exemption to MoFP.
- iii. VAT exemption letter will be issued by MoFP to the local agent (CC: JICA local office).

<Required time> Maximum 1 month

3) Import permit procedure

Equipment destined for Palestine must be approved by Israel, and the procedure is quite complicated. The following procedure will be applied to all the equipment and heavy machinery even when they are

purchased from local agents in Palestine as the equipment will be imported from third countries.

STEP 1: Obtaining a donation number

<Time of procedure> Immediately after the Supplier is selected

<Necessary documents>

- Donation Letter (JICA to ITA COGAT (Coordination of Government Activities in the Territories, hereinafter referred to as “COGAT”)): A letter giving proof that the equipment and heavy machinery are a donation from the Japanese government.
- Request letter for tax exemption from Palestine MoFP.
- Equipment information from the Supplier: purchase orders, invoices, packing lists, and equipment and machinery catalogue

<Procedure>

- i. MoLG will submit a donation letter request to Palestine MoFP with a set of equipment information obtained from the Supplier.
- ii. MoFP of the West Bank submits the complete set of required documents to COGAT.
- iii. ITA issues a donation number.

<Points of attention>

If equipment is shipped from more than one country, a donation number is required for each shipment. Also, even if the shipments are made from one country, a donation number is required for each shipment if there are multiple shipments.

<Required time> Approximately 1 week

STEP 2: Green Light Request

<Time of procedure>

Immediately after the confirmation of transportation method and shipping port of each equipment/machinery

<Necessary documents>

- Equipment information from the Supplier, shipping documents (invoice, packing list, bill of lading (B/L), donation number, equipment catalog, final delivery address)

<Procedure>

- i. The Japanese Contractor or local agent submits the necessary documents to COGAT via a Palestinian clearance agent. This application is to be made for each shipment (= each donation number). The clearance agent’s processing fee is around US\$500 per donation number.
- ii. COGAT gives a permit to the Supplier

<Required time> 2 to 16 weeks

<Points of attention>

It should be noted that the time required to obtain a permit varies depending on the equipment. In the past, MoLG has obtained permits for vehicles, heavy machinery and/or microwave in about two weeks.

2.2.3.3 Scope of Works

(1) Transportation Plan

1) Procurement from Japan or third countries

Based on the procedures described in “2.2.3.2 Procurement Conditions”, an application for import permit should be submitted. As mentioned earlier, a permit from Israel is required for the import of equipment and inland transportation; therefore, it is important to work closely with the Palestinian implementing agency in order to ensure smooth procedures.

2) Procurement from local agents

In the case of local procurement, the local agents handle the import permit procedures. Most of the local agents are familiar with these procedures, and arrange a transportation company and

customs clearance agents and take responsibility for transporting the equipment to the site.

(2) Installation of equipment

After the delivery of equipment, the Japanese Consultant will provide the initial trainings on infectious waste collection vehicles and treatment equipment and on heavy machinery for the final disposal site.

(3) Scope of Works

The project is carried out under mutual cooperation between Japan and Palestine, and implemented under Japan's Grant Aid. The scope of works undertaken by the Governments of each country is described below.

Table 10 Scope of Works

Items	Japan	Palestine
1. Site securing, removal of existing facilities and trees, and site preparation		✓
2. Facility construction		
(1) Obtaining a permit for the construction of the infectious waste treatment facility		✓
(2) Construction of the infectious waste treatment facility		✓
(3) Preparation of gates and fences around the infectious waste treatment facility		✓
(4) Preparation of access roads inside the infectious waste treatment facility		✓
(5) Preparation of access roads outside of the infectious waste treatment facility		✓
3. Infrastructure		
(1) Electricity		
1) Drawing electrical power from major roads to the infectious waste treatment facility		✓
2) Wire connections and wiring in the facility		✓
3) Installation of circuit breakers and transformers, and site wiring		✓
(2) Water supply		
1) Installation of water supply pipes from a main distribution pipe to the proposed construction site		✓
2) Water piping in the treatment facility and preparation of water supply facility (receiving tanks, elevated water tanks, fire water tanks)		✓
(3) Drainage		

Items	Japan	Palestine
1) Main drainage pipe		✓
2) Drainage facility in the site (rainwater drainage)		✓
(4) Furniture and tools		
1) General furniture and tools		✓
2) Special equipment/tools for the project	✓	
4. Transportation and customs clearance		
(1) Transportation of equipment to Palestine	✓	
(2) Customs clearance	✓	✓
(3) Transportation of equipment to the site	✓	
5. Tax exemption		✓
6. Vehicle registration and vehicle insurance		✓
7. Provision of the necessary arrangements for Japanese and/or physical persons of third countries concerned by the project for their embarkation, disembarkation and stay in Palestine		✓
8. Appropriate and effective operation and management of procured equipment/heavy machinery		✓
9. Necessary permit procedures for the implementation of this project		✓
10. Costs of related work that is not included in the grant aid		✓
11. Commission fees for Banking Arrangement (B/A)		
(1) Issuance of Authorization to Pay (A/P)		✓
(2) Expenses for the above bank procedures		✓
12. Procedures for environmental and social considerations		✓

2.2.3.4 Consultant Supervision

(1) Procurement Supervision Policy

Under the grant aid policy of the Government of Japan, based on the concept of the outline design, the Consultant forms a team that has continuous responsibility to execute the project, including preparation of the detail design, to achieve smooth and successful implementation. The procurement supervision policy for the project is outlined below.

- i. To keep close contact with the persons in charge of the project and related representative organizations of both countries so that the installation of equipment will be completed without delay.
- ii. To provide quick and appropriate advice and suggestions from a neutral standpoint to the Supplier(s) and other parties concerned.
- iii. To provide appropriate guidance and suggestions regarding operation and management after handing over.
- iv. To confirm that procurement work has been completed and the terms of contract are fulfilled and to observe handing over the equipment and obtain approval of receipt from the Palestinian side.

The project includes Soft Components (short term technical assistance) in addition to equipment procurement. Therefore, it is important to complete the procurement within the planned period in accordance with the implementation plan of each component in order to carry out the entire process without delay. The progress of work borne by the Palestinian side should be monitored as it is essential for the smooth implementation of the project, and the status should be fully grasped during the implementation.

(2) Procurement Supervision Plan

1) Supervision before shipping

The procurement countries for this project are Japan, Palestine and third countries. When the equipment is shipped from Japan or third countries, the pre-shipment inspection(s) will be conducted by a third-party inspection agent at the port of embarkation. The Consultant will confirm the contents of the inspection certificate submitted by the inspection agent in writing. The Consultant will issue the inspection report and submit it to MoLG right after the inspection(s).

2) Supervision on equipment quality, specifications and installation, and operation trainings

The person in charge at MoLG, the Supplier and the Consultant will conduct an acceptance inspection for all procured equipment, vehicles and heavy machinery after installation and initial operation training and hand them over. Model name, country of origin, manufacturer name, ODA sticker, appearance of the equipment and performance tests, etc. will be confirmed during the acceptance inspection(s).

3) Dispatch of Consultants

The equipment will be provided by the Contractor. The following consultants will be dispatched for procurement supervision.

Table 11 Details of procurement supervision

Personnel	Duties	Period of dispatch
Chief Consultant	Kick-off discussions, acceptance inspection and handover	As appropriate
Facility Planning Engineer	On-site supervision of construction progress	As appropriate
Supervisory Engineer 1	On-site procurement supervision (microwave sterilization equipment)	As appropriate
Supervisory Engineer 2	On-site procurement supervision (heavy machinery and vehicles)	As appropriate
Inspection Engineer 1	Meeting with the Contractors, confirmation of equipment drawings, and verification inspection before shipment	As appropriate
Inspection Engineer 2	Inspection before expiration of manufacturer warranty period	As appropriate

2.2.3.5 Quality Control Plan

Under this project, in addition to Japanese manufacturers, the countries of procurement will be expanded to third countries. However, as it is necessary to avoid having the equipment selected only for its price, the quality of equipment will be secured by putting in place certain safeguards, such as limiting to products from DAC or OECD member countries and/or designated countries, and requiring equipment to comply with JIS, CE, IEC and other international standards.

As ready-made equipment will be procured for this project, the quality control of procured equipment will be also secured through pre-shipment inspections. The pre-shipment inspections will be conducted at designated warehouses at the seaport (or airport) for equipment/heavy machinery procured in Japan and third countries.

2.2.3.6 Equipment Procurement Plan

(1) Procurement Plan

There are few equipment, vehicles and heavy machinery made in Palestine; therefore, products from Japan or third countries will be procured. Reflecting this situation, the procurement conditions will require local agents located in Palestine and able to provide the necessary spare parts and consumables as well as maintenance services as aftersales services. In the event that the scope of eligible countries for sourcing the products is expanded to third countries, the quality of the products should be of equivalent level with Japanese products.

In past projects, MoLG has experienced that the local agents had no engineers who were capable of handling defects, and it took a long time for repairs to be made despite the existence of local agents. Given this background, attention should be paid to the skill level and procurement experience of the local agents, and it may be considered to request a certificate proving the number of engineers and their skill levels for the bidding if necessary.

(2) Procurement plans of spare parts and consumables

There are local agents in Ramallah and Nablus who have experience in procuring most of the planned equipment and heavy machinery, and they have engineers capable of repairing. Regarding vehicles and heavy machinery, many of the local agents have their own workshops and warehouses, and they can take care of most of the defects by themselves. In case the local agents do not have stocks in their warehouses, they can directly order the spare parts to the headquarters, and the parts will be delivered within about 10 days. Regarding the microwave sterilization equipment, there are local agents who have experience in procurement and installation. These local agents have engineers who can repair, and it was confirmed that there was no problem for purchasing spare parts.

(3) Method of transportation and delivery point

The transportation plan for the equipment to be procured from Japan and third countries will include ocean transportation to the Ashdod Port and air transportation to the Ben Gurion International Airport in Israel, and inland transportation from the ports to each site in the West Bank. Regarding the inland transportation, the local special circumstances will be carefully considered to ensure that it proceeds smoothly and safely.

2.2.3.7 Operational Guidance Plan

(1) Equipment for municipal solid waste

The equipment to be procured this time for waste collection and transportation and final disposal site management is the same type of equipment that has been used locally up to now, so that basic operation can be performed using the methods currently used in each JSC. Regarding the initial operation of the equipment to be procured, it is necessary to instruct safe and appropriate operation techniques for the waste collection vehicles and heavy machinery. Therefore, initial operation guidance will be provided by the procurement manufacturer's technical experts. Initial operational guidance will be provided to the drivers of the waste collection vehicles and operators of the heavy machinery at the disposal site after the project is completed. The initial operating instruction shall include instruction on operation and daily maintenance.

(2) Equipment for infectious waste

As North-East & South-East Jerusalem JSC and Nablus JSC where the procurement of microwave sterilization equipment is planned under the project have no experience in handling the infectious waste treatment equipment, it is necessary to provide operation and maintenance trainings by engineers from the manufacturers or local agents to the engineers in charge of the operation in both JSCs. Therefore, engineers who have sufficient knowledge on the procured equipment will be dispatched from manufacturers or local agents at the time of equipment installation. The Consultant will supervise to ensure that the trainings are conducted appropriately and confirm whether the responsible persons who have received the trainings have understood it sufficiently at the time of handover.

2.2.3.8 Soft Component Plan

Infectious waste management in Palestine consists of the proper segregation, storage, collection, transportation, treatment, and disposal of infectious waste, with the medical institution responsible for the segregation and storage of infectious waste and the JSC responsible for the collection, transportation, and treatment. In Palestine, based on the provisions of the Medical Waste Ordinance (2012) and the Waste Management Ordinance (2019), medical institutions that generate infectious waste are the recipients of collection services and each JSC is the supplier of services, and operations are carried out based on the beneficiary-pays principle in accordance with paid service contracts concluded between them. For proper infectious waste management, infectious waste must first be correctly sorted and stored at the medical facilities where it is generated, then collected and transported by JSC, sterilized, and disposed of appropriately at the final disposal site. In an ongoing JICA technical cooperation project, MoLG, MoH, EQA, and JSCs are collaborating to develop standard operating procedures for medical waste from discharge to disposal, and a manifest system has been introduced to facilitate the monitoring of infectious waste from discharge to disposal. In the project, MoH trains relevant staffs on the procedures and instructs medical facilities to store and discharge infectious waste separately from municipal solid waste. On the other hand, in order to promote proper disposal of infectious waste, MoH has revised the law in 2022 and medical institutions are now required to dispose of infectious waste only after proper in-house treatment or, if in-house treatment is not possible, to entrust it to a company that can properly treat and dispose of it. Medical institutions that do not comply with this amendment will have their license to practice medicine revoked. The soft components of this project will be implemented on the premise that infectious waste is properly sorted at the medical facilities where it is generated,

with the objectives of improving safety during the collection, transportation, and treatment of infectious waste by the JSCs; enhancing the proper use and maintenance of microwave sterilization equipment installed at the disposal site; and effectively and sustainably utilizing the equipment and materials provided at the disposal site.

Details are shown in the soft component plan in Appendix 5.

2.2.3.9 Implementation Schedule

The implementation schedule of equipment/heavy machinery procurement of the project is as follows.

Table 12 Schedule of Detail Design and Supervision

Work Items	2023												2024												2025												2026		
	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
Contract	<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p>▲ Ramadan From 22 March to 29 April</p> <p>▲ Ramadan From 10 March to 8 April</p> </div> <div style="width: 60%; text-align: center;"> <p>Ramadan From 10 March to 8 April</p> </div> <div style="width: 20%;"></div> </div>																																						
Japanese Cabinet	▲																																						
Exchange of Notes	▲																																						
Grant Agreement	▲																																						
Consultant Agreement	▲ Consultant Agreement																																						
Site Survey	■																																						
Detail Design	□																																						
Preparation of Bidding Documents	□																																						
OD/DD Comparison	△ OD/DD Comparison																																						
Approval of Bidding Documents	■																																						
Explanation on Bidding Documents and Drawings	□																																						
Bidding	□																																						
Bidding Evaluation	■																																						
Contract with a Contractor	▲ Contract with Contractor																																						
Procurement	□																																						
Shipping	□																																						
Transportation	▨																																						
Inspection and Handover	■																																						
Handover	▲ Handover																																						
Soft Component	■																																						
Inspection before Expiration of Manufacture Warranty Period	▲																																						

2.2.4 Security Plan

Information on entry into Palestine and action plans at the site will be shared with JICA Palestine Office in advance. Also, the Consultant will join the safety measure online meetings that are regularly held by JICA while working in Japan and make efforts to grasp the local safety situations. Before and during the visit to Palestine, the Consultant will obtain the latest information through local partners. It is also important to secure a system that allows constant communication with JICA Palestine Office and to consider how to respond to emergencies. Especially when visiting the northern area of the West Bank, where the security situation is currently unstable, the action plans will be shared in advance, and detour routes should be confirmed just in case the roads to be used for travel are closed.

2.3 Obligations of Recipient Country

2.3.1 General Undertakings to be taken by the Palestinian Side

The general items to be implemented and borne by the Palestinian side when carrying out this project are as follows. It is only after their implementation that the results of this project can be expected to materialize.

- 1) Prompt implementation of the necessary procedures for landing, customs clearance, and domestic transportation of the products to be purchased based on the Grant at the port of unloading.
- 2) Exemption from customs duties, domestic taxes, and other fiscal charges on goods and services imposed on Japanese nationals in Palestine.
- 3) Provide Japanese nationals with the necessary arrangements to enter and stay in Palestine in order to carry out the work related to the provision of products and services.
- 4) Ensure that the equipment purchased through grant aid is properly and effectively maintained and used for the implementation of the project.
- 5) Bear all expenses necessary for the implementation of the project, except those covered by the grant aid.
- 6) Take charge of all procedures and fees related to bank arrangements and payment authorizations.

2.3.2 Major Undertakings to be taken by the Palestinian Side

Specific obligations of the Palestinian side which have been confirmed during the site survey are described below.

Table 13 Work to be done by the Palestinian side

Before Bidding	<ul style="list-style-type: none"> ▪ Open a Bank Account (bank a/c) ▪ Pay the following commissions to a bank in Japan for the banking services based upon the bank a/c <ul style="list-style-type: none"> ➤ Advising commission of A/P ➤ Payment commission for A/P
During the Project Implementation until Handover	<ul style="list-style-type: none"> ▪ Prepare the microwave installation sites (land, building and facility). ▪ Secure a parking area for the heavy machinery and vehicles to be procured. ▪ Issue A/P to a bank in Japan (the Agent Bank) for the payment to the Supplier(s). ▪ Ensure prompt unloading and customs clearance of procured equipment and heavy machinery at ports of disembarkation. ▪ Ensure entry and stay permits for Japanese or third-countries nationals for the construction of facilities and provision of services for the project. ▪ Ensure that customs duties, domestic taxes and other fiscal levies which may be imposed in Palestine on the purchase of products and/or services are exempted. ▪ Bear all the expenses, other than those covered by the Grant, necessary for the implementation of the project, such as tables and chairs for general use, etc. ▪ Remove existing equipment and heavy machinery and rehabilitate facilities and utilities (electricity, water supply). ▪ Obtain vehicle registration and vehicle insurance. ▪ Prepare and submit the project Monitoring Report (PMR). ▪ Prepare and submit the final PMR upon completion of the works. ▪ Allocate necessary personnel for appropriate operation. ▪ Secure expenses for operation of procured equipment/heavy machinery. ▪ Secure expenses for maintenance of procured equipment/heavy machinery. ▪ Accumulate depreciation and amortization.
After the Project	<ul style="list-style-type: none"> ▪ Secure maintenance cost for proper use and management of procured equipment/heavy machinery. ▪ Organize the operation and maintenance structure. ▪ Implement daily check and regular inspection of procured equipment.

2.3.3 Feasibility and Appropriateness of Undertakings to be taken by Palestinian side

An agreement was made and signed in the Minutes of Discussions dated July 14, 2022, during the site survey regarding the work to be borne by the Palestinian side as part of this Grant Aid Project by Japan.

2.4 Project Operation Plan

2.4.1 Equipment for Municipal Solid Waste

2.4.1.1 Operation Plan

JSC is the implementing agency for waste management and will use the equipment for collection and disposal provided by this project. JSC is an organization that has been actually operating the collection and disposal site since 1997, and has an established management structure and organization, as it is in the process of strengthening the capacity of its staff through a concurrent technical cooperation project. Since all equipment for municipal solid waste to be procured for this project will be replaced, there is no need to secure new personnel. JSC has skilled workers, drivers, etc., and an administrative department, which should be sufficient to handle the project.

2.4.2 Equipment for Infectious Waste

2.4.2.1 Operation Plan

(1) Operational structure and organization

MoLG, as the implanting agency for the project, will supervise and support the work of JSCs and coordinate with related agencies. The two project sites (North-East & South-East Jerusalem JSC and Nablus JSC) currently do not have microwave sterilization equipment, so machine operators will be hired and allocated before installation of the equipment. On the other hand, MoLG has three facilities that have already started operating microwave sterilization equipment. As MoLG has basic skills and knowledge for operation and management of microwave sterilization equipment, MoLG will support the said two JSCs to allocate new staffs before the operation of the equipment.

(2) Personnel Plan

For the operation and maintenance of the microwave sterilization equipment, one engineer and two workers are required, whereas, for the operation and maintenance of infectious waste collection vehicles, one driver and one worker are needed. The above-mentioned two JSCs will need to hire and allocate necessary staffs before the procurement of the equipment with the assistance of MoLG.

(3) Operation Plan of Collection and Disposal

After confirmation of discharge requirements, discharge location, waste volume, and service fees will be confirmed between each JSC and medical facilities who wish infectious waste treatment services, and a contract for service provision will be agreed and signed by each JSC and medical facilities. The optimal collection route will then be studied and decided, and collection from the target medical facilities will begin. After collection, the infectious waste will be sterilized by the microwave sterilization equipment at each JSC, and the treated waste will be sent to the designated disposal site.

Infectious waste collected by North-East & South-East Jerusalem JSC and Jericho JSC will be treated by North-East & South-East Jerusalem JSC and then sent to the final disposal site in the Al-Minya area. Infectious waste collected by Nablus JSC and Salfit JSC will be sterilized in Nablus and then sent to the final disposal site at Zahrat Al-Finjan by Nablus JSC.

2.4.2.2 Maintenance Plan

Since the equipment for infectious waste management will be newly procured, personnel cost and operation and maintenance cost will be accrued. MoH is responsible for the treatment cost of infectious waste generated from public medical facilities, whereas that from private medical facilities is paid at their own expenses. MoLG and JSCs shall reach an agreement on the unit cost of collection based on the personnel cost and operation and maintenance cost required to operate and maintain the procured

equipment and then conclude a service contract.

2.5 Project Cost Estimation

2.5.1 Approximate Project Cost

Based on the calculation conditions in (2) below, the breakdown of the expenditures to be borne by the Palestinian side can be estimated as follows. This cost estimation is provisional.

(1) Cost to be borne by the Palestinian side

The cost to be borne by the Palestinian side is shown in the table below.

Table 14 Cost to be borne by the Palestinian side

Item	USD	JPY	Implementation period	Responsible agency
Opening a bank account for Grant Aid	13	1,911	Within 1 month after G/A is signed	MoLG
Issuance of Authorization to Pay	50	7,350	Within 1 month after G/A is signed	MoLG
Preparation of installation sites for infectious waste sterilization equipment (land and facility)	200,000	29,402,000	Before the equipment handover	JSC
Total	200,063	29,411,261		

(2) Calculation Conditions

Time of Estimation: As of July 2022

Conversion Rate: USD1 = JPY130.72 (TTS rate)

EUR1 = JPY139.75 (TTS rate)

NIS1 = JPY38.75 (TTS rate)

Procurement Period: As shown in the Project Implementation Schedule

Others: Project implementation is intended to be in compliance with the Grant Aid scheme of the Government of Japan.

2.5.2 Operational and Maintenance Cost

2.5.2.1 Operational and Maintenance Cost of Equipment for Municipal Solid Waste

There will be no increase in personnel and operation and maintenance (O&M) costs because the equipment for municipal solid waste to be procured this time will replace aging vehicles and equipment.

JSCs' assumed personnel cost, operation and maintenance cost, and other (overhead) costs in 2018 are shown in the table below.

Table 15 JSCs' expenditures in 2021 and 2028

JSC	Items	JSC's expenditures in 2021 (Actual basis)	JSC's expenditures in 2028 (Prediction)
1. North & North-West Jerusalem	Personnel	809,252	809,252
	O&M	875,559	875,559
	Others	175,478	175,478
Total		1,860,289	1,860,289
2. North-East & South-East Jerusalem	Personnel	562,600	748,600
	O&M	2,887,660	3,028,942
	Others	2,707,600	2,707,600
Total		6,157,860	6,485,808
3. Qalqiliya	Personnel	618,749	618,749
	O&M	2,667,599	2,667,599
	Others	171,461	171,461
Total		3,457,808	3,457,808
4. Nablus	Personnel	1,705,632	1,891,632
	O&M	4,549,141	4,690,423
	Others	2,858,884	2,858,884
Total		9,113,657	9,440,939
5. Tubas	Personnel	862,095	862,095
	O&M	2,078,777	2,078,777
	Others	96,302	96,302
Total		3,037,174	3,037,174
6. Tulkarem	Personnel	2,512,591	2,512,591
	O&M	3,389,146	3,389,146
	Others	2,081,376	2,081,376
Total		7,983,113	7,983,113
7. Salfit	Personnel	760,995	844,995
	O&M	1,526,151	1,580,633
	Others	66,352	66,352
Total		2,353,499	2,491,981
8. Jericho	Personnel	1,408,958	1,492,958
	O&M	1,214,180	1,268,662
	Others	916,283	916,283
Total		3,539,421	3,677,903
9. Higher Hebron & Bethlehem	Personnel	4,049,552	4,049,552
	O&M	18,282,148	18,282,148
	Others	6,666,800	6,666,800
Total		28,998,500	28,998,500
10. Bethlehem	Personnel	3,719,167	3,719,167
	O&M	3,456,748	3,456,748
	Others	321,608	321,608
Total		7,497,523	7,497,523
11. Hebron	Personnel	3,278,612	3,278,612
	O&M	12,133,740	12,133,740
	Others	930,815	930,815
Total		16,343,167	16,343,167
12. Jenin	Personnel	11,621,105	11,621,105
	O&M	10,049,516	10,049,516
	Others	720,686	720,686
Total		22,391,307	22,391,307
13. Ramallah	Personnel	1,872,014	1,872,014
	O&M	3,891,445	3,891,445
	Others	1,554,658	1,554,658
Total		7,318,118	7,318,118

2.5.2.2 Operational and Maintenance Cost of Equipment for Infectious Waste

(1) Annual equipment maintenance cost

Equipment maintenance cost consists of personnel cost, cost for electricity and fuel, and cost for spare parts. For the operation and maintenance of the infectious waste sterilization equipment, one engineer and two workers are needed, while one driver and one worker are necessary for the operation and maintenance of an infectious waste collection vehicle. The costs of electricity and fuel were calculated based on Palestine market unit price. As the price of spare parts is different depending on the manufacturer, the cost was calculated with averages.

Table 16 Maintenance cost for infectious waste treatment equipment

Item	Unit cost (USD)	Quantity	Subtotal (USD)	Note
1. Personnel cost	10,680	5 units	53,400	The unit cost is the average cost of 1 engineer, 3 workers, and 1 driver
2. Cost for electricity and fuel	36,000	2 units	72,000	
3. Cost for maintenance (spare parts)	7,400	2 units	14,800	Blades, filters, etc.
Total			140,200	Annual operation cost

2.5.2.3 Budgetary Provision

(1) Budgetary measures for equipment related to municipal solid waste

In principle, JSCs aim to operate on a self-financing basis, and their revenue comes from fees (tariffs) for the collection, transportation, and disposal of waste, which are collected from residents (including some private companies) through LGUs. However, it is sometimes difficult to cover all the costs of the services provided, so MoLG, which is in a position to supervise and instruct JSCs, is working to minimize the gap by providing financial support and equipment as described below.

- i. Grants from MoLG and others
- ii. Support from foreign donors
- iii. Support for tariff revision to enable cost recovery

Regarding grants from MoLG, according to the budgetary documents of each JSC for 2021, four JSCs (Jenin, Tubas, Nablus, and Bethlehem) have received grants from the central government. The amounts are small, ranging from NIS10,000 to NIS70,000, except for Nablus JSC.

In terms of support from foreign donors, JICA has made a significant contribution through Grant Aid to all JSCs who received equipment for collection and transport, as well as heavy machinery for use at the landfill sites. Some JSCs also procured equipment through MoLG and received financial support from the Common Basket Fund (MDLF), which was established mainly by European countries. Waste management equipment is not mass-produced according to uniform specifications, but rather specifications are set based on local conditions, resulting in a relatively high price per unit. Since the

cost of operation and maintenance rises in proportion to the aging of equipment, the introduction of new equipment is also efficient in terms of reducing the costs associated with it.

On the other hand, since leaving the acquisition of major equipment to foreign donors is problematic from the perspective of “self-financing” and sustainability, as mentioned above, each JSC is strongly expected to secure its own budget needed for future renewal. In 2022, the minister of MoLG urged all JSCs to establish an account to accumulate depreciation expenses for equipment, thus securing the initial cost of future equipment replacement. Some JSCs (Jericho, Ramallah, Higher Bethlehem & Hebron) have improved their budgetary plans by including depreciation expenses (around 10% of total expenditures).

(2) Budgetary measures for equipment related to infectious waste

The initial costs that need to be secured by North-East & South-East Jerusalem JSC and Nablus JSC, which will install the microwave sterilization equipment, are those related to the building and infrastructure concerned (electricity, water, sewer, etc.). Both JSCs have committed to securing these costs (at least approximately USD100,000) at their own expense or through MoLG. The tariff for infectious waste treatment services will incorporate these initial investment costs and operational costs such as labor and maintenance.

On the other hand, the operation of the microwave sterilization equipment and collection vehicles will require hiring new personnel and training them in operation and maintenance before the services begin, thus incurring personnel costs even before the costs are collected through the provision of the services. New personnel to be hired are described in “2-4-2 Equipment for Infectious Waste”. An estimate of the costs to be incurred in advance is shown below. Both JSCs plan to cover the following costs with their own budgets. Since the costs to be borne should not be significant, their allocation should not be an issue. However, if the equipment delivery is delayed from the plan, the labor cost cannot be covered by the cost recovery from the service, which may result in a larger burden.

Table 17 Labor cost per month to operate infectious waste equipment

Medical waste bulk microwaving or equivalent system (125 kg/hour)			
Staff	Monthly wage	Number of staff	Subtotal (USD)
Engineer	1,300	1	1,300
Worker	750	2	1,500
Infectious waste collection vehicle			
Staff	Monthly wage	Number of staff	Subtotal (USD)
Driver	900	1	900
Worker	750	1	750
Grand total (USD) per month			4,450

CHAPTER 3 PROJECT EVALUATION

3 Project Evaluation

3.1 Preconditions

The preconditions for the implementation of the project consist of general and project-specific matters that must be taken care of by the partner country. The table below describes the status or plan of preconditions for project implementation as of February 2023.

Table 18 Preconditions for project implementation and their status or plan

	Preconditions	Implementation Status or Plan as of February 2023	Implementing agency
1	Establishment of facilities for microwave sterilization equipment (in North-East & South-East Jerusalem transfer station) <ul style="list-style-type: none"> ● Securing land for building the facility ● Civil works (ground leveling, drainage, paving) ● Construction of building facilities (building construction, electrical work, water supply and drainage) 	Before the start of construction	JSC
2	Establishment of facilities for microwave sterilization equipment (in Nablus Sewage Treatment Plant) <ul style="list-style-type: none"> ● Securing land for building the facility ● Civil works (access road construction, ground leveling, drainage, paving) ● Construction of building facilities (building construction, electrical work, water supply and drainage) ● Installation of power supply 	Before the start of construction	JSC
3	Parking location for heavy machinery and vehicles	Prior to arrival of equipment	JSC
4	Fees related to banking arrangements	At the time of each contract	MoLG
5	Customs procedures	When materials and equipment pass through customs	MoLG
6	Tax exemption	As appropriate	MoLG

3.2 Necessary Inputs by Recipient Country

The necessary input from the Palestinian Counterpart to accomplish this project is the establishment of an organization to operate infectious waste treatment equipment and the deployment of personnel to carry out collection, transportation, treatment, and disposal. The following table lists the target cities for this project and the required input from the Palestinian Counterpart.

Table 19 Inputs required from the Palestinian Counterpart to accomplish this project

Target Cities	Input
North-East & South-East Jerusalem Nablus	<ul style="list-style-type: none"> ● Establishment of an operating organization for microwave sterilization equipment ● Assignment of operational workers
Jenin, Tubas, Tulkarem Qalqilya Nablus, Salfit Jericho, Ramallah, North and Northwest Jerusalem North-East & South-East Jerusalem, Higher Hebron & Bethlehem, Bethlehem, Hebron	<ul style="list-style-type: none"> ● Drivers and operators for the new collection vehicles and heavy equipment to be provided

3.3 Important Assumptions

The important assumptions of the project are as follows:

- No major policy changes will occur in the waste management administration of the Palestinian Authority.
- The collection and transportation system utilizing the JSC system for waste management will continue.
- No unexpected environmental changes or natural disasters, such as major flooding, will occur in the vicinity of the site.
- No major changes or alterations in relevant Palestinian policies.
- No extreme deterioration of security or change in the political situation in Palestine and the JSCs covered by this project.
- MoH, which bears the cost of disposal for public medical institutions, and private medical institutions pay JSCs for the disposal of infectious waste.

3.4 Project Evaluation

3.4.1 Relevance

This project is highly significant because it will contribute to the improvement of environmental sanitation in the target cities through proper management of infectious waste, including its collection, transportation, treatment, and disposal. The project is also expected to have synergistic effects with ongoing technical cooperation projects. Specific details regarding relevance of the implementation of this project are as follows.

3.4.1.1 Improving collection, transportation, intermediate treatment, and final disposal of infectious waste in Palestine

The microwave sterilization equipment to be installed at the two JSCs in this project will, together with the existing facilities, enable the treatment of infectious waste in the entire West Bank. Currently, the treatment capacity of the existing equipment can only cover the southern (Hebron and Bethlehem), central (Ramallah), and northern (Jenin and surrounding governorates) areas. In order to cover the remaining south-central (Jerusalem and Jericho) and north-central (Nablus, Qalqilya, and Salfit) areas of the West Bank, it is necessary to further increase the sterilization capacity. Besides, there is a serious shortage of equipment for sorting, collecting, and transporting infectious waste in the West Bank, but this problem will be solved with the equipment provided in this project. Furthermore, as a result of the increase in the amount of infectious waste brought to the final disposal site due to the spread of COVID-19, there is a shortage of heavy equipment required for landfill disposal of the additional amount of waste and for sorting and landfilling infectious waste and municipal solid waste that was brought in without proper treatment. The heavy machinery to be provided in this project will solve the problem of insufficient disposal capacity at the final disposal site.

3.4.1.2 Strengthening JSCs' overall operational capacity by supporting JSCs' municipal solid waste operations

The provision of municipal solid waste collection and transportation equipment and the strengthening of JSCs' municipal solid waste management capacity under this project will contribute to the proper management of infectious waste by JSCs as any shortfall in the operation of JSCs' municipal solid waste management could have a serious impact on the management of infectious waste.

When an infectious disease outbreak occurs, waste materials that can cause the infection to spread, such as masks and PPE, are generated, and if these are not properly collected and disposed of, they can cause further spread of infection. This project will support the proper management of municipal solid waste by JSCs to address this issue.

3.4.1.3 Project's consistency with Palestine policies

This project is in line with the Palestinian Authority's National Policy Agenda (2017-2022) and is positioned as a high priority project in Palestine. The Palestinian Authority has identified "Building resilient communities" as one of the national priorities under the "Sustainable Development" pillar of the agenda and has stated the strengthening of waste management as a means of achieving this goal.

3.4.2 Effectiveness

The effectiveness of the implementation of this project consists of the quantitative and qualitative effects described below.

3.4.2.1 Quantitative Effects

With the implementation of this project, the following target will be achieved in the West Bank in terms of amount of infectious waste treated. The baseline is calculated based on the amount of infectious waste treated at the centralized facilities, and is subject to change, so these are estimates.

Table 20 Indicators for achievement of targets for the amount of infectious waste treated

Indicators	Reference value (2022)	Target value (2028)
	West Bank	West Bank
Amount of infectious waste treated (kg/day)	350	2,210

3.4.2.2 Qualitative Effects

The qualitative effects of the implementation of this project are as follows:

- Establishment of an infectious waste management system, including finance, operation and maintenance, through fees collection by JSCs in the West Bank.
- Reduced risk of infectious diseases from infectious waste in the for the parties involved in infectious waste management.

Based on the above, the project is judged to be highly relevant and effective.

APPENDICES

1. Member List of Survey Team
2. List of Parties Concerned in the Recipient Country
3. Schedule of the Field Survey
4. Minutes of Discussions (M/D)
5. Soft Component Plan
6. List of Existing Equipment
7. Equipment Plan

Appendices

Appendix 1: Member List of the Study Team

Name	Responsibility	Affiliation
<u>(Dr.) YOSHIDA Mitsuo</u>	Leader	JICA International Cooperation Expert
<u>(Mr.) MORI Tatsuo</u>	Cooperation Plan	Environmental Management Team 2, Global Environment Department, JICA
<u>(Dr.) SATO Naofumi</u>	Project Manager/Waste Management Plan	EX Research Institute Ltd.
(Mr.) HIRAGA Ryo	Equipment and Maintenance Plan 1	EX Research Institute Ltd.
<u>(Mr.) MORITA Takashi</u>	Equipment and Maintenance Plan 2	INTEM Consulting, Inc.
<u>(Mr.) KANACHI Akifumi</u>	Infectious Waste Management	EX Research Institute Ltd.
<u>(Mr.) ISHIJIMA Norio</u>	Organizational Structure/Finance 1	EX Research Institute Ltd.
(Ms.) NAGAYASU Mie	Organizational Structure/Finance 2	EX Research Institute Ltd.
<u>(Ms.) ARITA Kyoko</u>	Healthcare System/Infectious Disease Control	INTEM Consulting, Inc.
<u>(Ms.) OHARA Misato</u>	Procurement Planning/Estimating	INTEM Consulting, Inc.
(Ms.) YOLIN Christine	Environmental and Social Considerations	EX Research Institute Ltd.

The members whose names are underlined participated in the field survey.

Appendix 2: List of Parties Concerned in the Recipient Country

Organization	Name
Ministry of Local Government	
Minister	Mr. Majdi Al-Saleh
Deputy Minister	Mr. Tawfiq Budeiri
Acting General Director, Department of JSCs	Mr. Suleiman Abu Mfareh
Manager of Human Resource, Department of JSCs	Mr. Ziad Tawafsheh
Ministry of Health	
Director of International Cooperation	Ms. Maria Yousef Al-Aqra
Director of Environmental Health Department	Mr. Nader Barhash
Engineer of Environmental Health Department	Mr. Mahmoud Othman
Financial Department, Ministry of Health	
General Director of Financial Affairs	Mr. Hakem M. Salahat
Manager Director of Budget Department	Ms. Willy Rasras
Manager Director of Budget Department	Ms. Baher Walweel
Jenin JSC	
Executive Director	Eng. Hani Shawahni
Technical Manager	Eng. Mohammad Alsaadi
Nablus JSC/Nablus Municipality	
Executive Director of Nablus JSC	Eng. Saad Abu Zanat
Engineer at Nablus Municipality	Eng. Saad Salem
Nablus Municipality	Dr. Zahra Badawi Ali Wawi
Higher Hebron & Bethlehem JSC	
Executive Director	Mr. Ahmad Sukar
Medical Waste Project Manager	Eng. Ramzi Barbari
Landfill Technical Manager	Eng. Mustafa Haliqah
Ramallah JSC	
Executive Director	Eng. Husain Abuoun
Technical & Operation Manager	Eng. Said Al Hudairi
Accountant	Ms. Arwa Nassar
NE&SE Jerusalem JSC	
Executive Manager	Mr. Saad Rabee
N&NW Jerusalem JSC	
Executive Director	Eng. Mostafa Hameed
Jericho JSC	
Executive Director	Eng. Mohammed Isayed
Hebron JSC	
Executive Director	Mr. Abdullhay Arafa
Technical Engineer	Mr. Anas Dasrawi
Bethlehem JSC	
Executive Director	Mr. Iyad Aburdeineh
Tulkarem JSC	
Head of Tulkarem JSC	Dr. Eng. Reyad Awad
Executive Director	Eng. Aktham Badran
Maintenance	Eng. Mohammad Abu Shanab
Procurement Manager	Mr. Tareq Hanoon
Salfit JSC	
Head of Salfit JSC	Mr. Nasfat Khoffash
Secretary of the Finance Committee	Mr. Osama Althaher
Executive Director	Mr. Ahmed Shouaibi
Tubas JSC	
Executive Director	Eng. Basel Bani Odeh
Qalqilya JSC	
Executive Director	Eng. Ateid Afaneh
Ramallah	
City Director	Mr. Ahmed K. Abulaban
Palestine Medical Complex	
Quality Coordinator	Mr. Ayman Abu Muhsen
Beit Jala	
Director	Mr. Mahmoud Ibrahim
Manager Director	Mr. Nafez Sarhan
Quality Coordinator	Mr. Abdel Nasser Qisi
Administrative Manager	Mr. Mohammad Thweib

Organization	Name
Yatta	
General Manager	Mr. Zeyad Abu Zahra
Nursing Director	Mr. Ibrahim Mughnamin
Quality Coordinator	Mr. Radwan Juda'
Jericho	
Director	Mr. Naser Anani
Administration Director	Mr. Mohmmad Hijazi
Tulkarem	
Quality & Patient Safety Coordinator	Mr. Rami Sdan Elayyan
Jerusalem Health Directorate	
Director Of Health	Dr. Maher Awwad
Quality Coordinator	Ms. Rashail Faraon
Head of Society Health and Continuous Education	Dr. Nahed Al Halabiya
Jerusalem Primary Health Care	
Dentist	Dr. Shihab Qaolamani
Nablus Health Directorate	
Acting Director of Nablus Health Directorate	Dr. Ramez Dwekat
Infection Prevention Coordinator	Ms. Einaff Ahmed Kiraneh
Quality Coordinator	Ms. Dal al Abu Es'sood
Arab-Care Hospital	
Medical Engineer Department	Mr. Abdel Rauof Afaneh
Environment Quality Authority	
Chairman	Dr. Nisreen Tamimi
Director	Mr. Yaser Abu Shamab
Head of Hazardous & Solid Waste Department	Mr. Ibrahim Absa
United Nations Development Programme (UNDP)	
National Staff	Mr. Husam Tubail
Municipality Development & Lending Fund (MDLF)	
Director General	Mr. Mohammad A. D. Ramahi
Head of Gaza Branch	Mr. Nouredin Al Madhoun
Representative Office of Japan to Palestine	
Ambassador	Mr. Masayuki Magoshi
Second Secretary	Mr. Yusuke Tsutsumi
JICA Palestine Office	
Chief Representative	Mr. Toshiya Abe
Senior Representative	Mr. Mitsutaka Hoshi
Project Formulation Advisor	Ms. Eina Ueno
Project Formulation Advisor	Ms. Ikumi Ogiwari

Appendix 3: Schedule of the Field Survey

Date			Leader	Cooperation Plan	Project Manager / Waste Management Plan	Equipment and Maintenance Plan 2	Infectious Waste Management	Organizational Structure / Finance 1	Healthcare System / Infectious Disease Control	Procurement Planning / Estimating
			Work 11	Work 11	Work 18	Work 23	Work 27	Work 27	Work 23	Work 20
2022/7/5	Tue	5			Departure Haneda		Departure Haneda	Departure Haneda		Departure Haneda
2022/7/6	Wed	6	Discussion with the MoLG Internal Meeting	Discussion with the MoLG Internal Meeting	Arrival Ramallah		Arrival Ramallah	Arrival Ramallah		Arrival Ramallah
2022/7/7	Thu	7	Discussion with the MoLG	Discussion with the MoLG	Discussion with the MoLG		Discussion with the MoLG	Discussion with the MoLG		Discussion with the MoLG
2022/7/8	Fri	8	Internal Meeting	Internal Meeting	Internal Meeting		Internal Meeting	Internal Meeting		Internal Meeting
2022/7/9	Sat	9	Internal Meeting	Internal Meeting	Internal Meeting	Departure Haneda	Internal Meeting	Internal Meeting	Departure Haneda	Internal Meeting
2022/7/10	Sun	10	Internal Meeting	Internal Meeting	Internal Meeting	Arrival Ramallah	Internal Meeting	Internal Meeting	Arrival Ramallah	Internal Meeting
2022/7/11	Mon	11	Interview with JICA Local Consultant	Interview with JICA Local Consultant	Interview with JICA Local Consultant	Interview with JICA Local Consultant	Interview with JICA Local Consultant	Interview with JICA Local Consultant	Interview with JICA Local Consultant	Interview with JICA Local Consultant
2022/7/12	Tue	12	Internal Meeting	Site Visit in Jenin and Nablus	Site Visit in Jenin and Nablus	Site Visit in Jenin and Nablus	Internal Meeting	Internal Meeting	Internal Meeting	Internal Meeting
2022/7/13	Wed	13	Site Visit in Bethlehem, East Jerusalem, and Ramallah	Site Visit in Bethlehem, East Jerusalem, and Ramallah	Site Visit in Bethlehem, East Jerusalem, and Ramallah	Site Visit in Bethlehem, East Jerusalem, and Ramallah	Site Visit in Bethlehem, East Jerusalem, and Ramallah	Site Visit in Bethlehem, East Jerusalem, and Ramallah	Site Visit in Bethlehem, East Jerusalem, and Ramallah	Site Visit in Bethlehem, East Jerusalem, and Ramallah
2022/7/14	Thu	14	Discussion with the MoLG Meeting at ROJ Meeting at JICA	Discussion with the MoLG Meeting at ROJ Meeting at JICA	Discussion with the MoLG Meeting at ROJ Meeting at JICA	Discussion with the MoLG Meeting at ROJ Meeting at JICA	Discussion with the MoLG Meeting at ROJ Meeting at JICA	Discussion with the MoLG Meeting at ROJ Meeting at JICA	Discussion with the MoLG Meeting at ROJ Meeting at JICA	Discussion with the MoLG Meeting at ROJ Meeting at JICA
2022/7/15	Fri	15	Departure Ramallah	Departure Ramallah	Internal Meeting	Internal Meeting	Internal Meeting	Internal Meeting	Internal Meeting	Internal Meeting
2022/7/16	Sat	16	Arrival Haneda	Arrival Haneda	Internal Meeting	Internal Meeting	Internal Meeting	Internal Meeting	Internal Meeting	Internal Meeting
2022/7/17	Sun	17			Site Visit NE&SE Jerusalem	Discussion with the MoH	Site Visit NE&SE Jerusalem	Discussion with JICA Local Consultant	Discussion with the MoH	Site Visit NE&SE Jerusalem
2022/7/18	Mon	18			Site Visit Jericho	Other Project	Site Visit Jericho	Site Visit Jericho	Site Visit Jericho	Other Project
2022/7/19	Tue	19			Site Visit Ramallah and NW & W Jerusalem JSC	Site Visit Hospitals in Bethlehem and Hebron	Site Visit Ramallah and NW & W Jerusalem JSC	Site Visit Hospitals in Bethlehem and Hebron	Site Visit Hospitals in Bethlehem and Hebron	Discussion with Local Agency
2022/7/20	Wed	20			Site Visit Tulkarem and Salfit JSC	Site Visit Hospitals in Jericho and Clinics in Jerusalem	Discussion with Local Agency	Site Visit Tulkarem and Salfit JSC	Site Visit Hospitals in Jericho and Clinics in Jerusalem	Discussion with Local Agency
2022/7/21	Thu	21			Site Visit Bethlehem and Hebron JSC Departure Ramallah	Discussion with Local Agency Site Visit Hospital in Ramallah	Site Visit Bethlehem and Hebron JSC	Site Visit Bethlehem and Hebron JSC	Site Visit Jerusalem Medical Center and Hospital in Ramallah	Discussion with Local Agency Surve for Tax Exemption and Transportation
2022/7/22	Fri	22			Arrival Haneda	Internal Meeting	Internal Meeting	Internal Meeting	Internal Meeting	Departure Ramallah
2022/7/23	Sat	23			Internal Meeting	Internal Meeting	Internal Meeting	Internal Meeting	Internal Meeting	Flight Canceled
2022/7/24	Sun	24				Discussion with Hospital in Ramallah	Discussion with the EQA	Discussion with the EQA	Discussion with Hospital in Ramallah	Arrival Haneda
2022/7/25	Mon	25				Discussion with the MoH	Discussion with the MoLG Site Visit Qalqilya JSC	Discussion with the MoLG Site Visit Qalqilya JSC	Discussion with the MoH	
2022/7/26	Tue	26				Discussion with the MoH in Nablus	Discussion with the MoLG	Discussion with the MoLG and the UNDP	Discussion with the MoH in Nablus	
2022/7/27	Wed	27				Discussion with the Hospital	MDLF/ Site visit Tubas	MDLF/ Site visit Tubas	Discussion with the Hospital	
2022/7/28	Thu	28				Discussion with JICA and the MoLG	Discussion with JICA and the MoLG	Discussion with JICA and the MoLG	Discussion with JICA and the MoLG	
2022/7/29	Fri	29			Internal Meeting	Internal Meeting	Internal Meeting	Internal Meeting	Internal Meeting	
2022/7/30	Sat	30			Departure Ramallah	Departure Ramallah	Departure Ramallah	Departure Ramallah	Departure Ramallah	
2022/7/31	Sun	31			Arrival Haneda	Arrival Haneda	Arrival Haneda	Arrival Haneda	Arrival Haneda	

Minutes of Discussion
on the Preparatory Survey for
The Project for the Improvement of Infectious Waste Management

Based on several preliminary discussions between the Palestine Authority (hereinafter referred to as “Palestine”) and Japan International Cooperation Agency (hereinafter referred to as “JICA”) with reference to the Draft Proposal of November 2021, JICA dispatched the Preparatory Survey Team for the Outline Design (hereinafter referred to as “the Team”) of The Project for the Improvement of Infectious Waste Management (hereinafter referred to as “the Project”) to Palestine. The Team held a series of discussions with the officials of the Palestine and conducted a field survey. In the course of the discussions, both sides have confirmed the main items described in the attached documents.

Ramallah, 14 July 2022



Dr. Mitsuo Yoshida
Leader
Preparatory Survey Team
Japan International Cooperation Agency
Japan



Eng. Majdi Al-Saleh
Minister
Ministry of Local Government
Palestinian Authority

ATTACHMENT

1. Objective of the Project

The objective of the Project is to improve the management of infectious waste in Palestine by providing the necessary equipment and materials, thereby contributing to reducing the risk of waste-related infections.

2. Title of the Preparatory Survey

Both sides confirmed the title of the Preparatory Survey as “the Preparatory Survey for the Project for the Improvement of Infectious Waste Management”.

3. Project site

Both sides confirmed that the site of the Project is in Palestine, which is shown in Annex 1.

4. Responsible authority for the Project

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

- 4-1. The Ministry of Local Government (hereinafter referred to as “MoLG”) will be the executing agency for the Project. MoLG shall coordinate with all the relevant authorities to ensure smooth implementation of the Project and ensure that the undertakings for the Project are managed by the relevant authorities properly and on time. The organization charts are shown in Annex 2.

5. Items requested by the Palestine

- 5-1. As a result of discussions, both sides confirmed that the items requested by the Palestine are as shown in Annex 1.
- 5-2. JICA will assess the feasibility of the above request 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.
- 5-3. The Palestine shall submit an official request to the Government of Japan through a diplomatic channel before the appraisal of the Project, which is scheduled for August 2022.

6. Procedures and Basic Principles of Japanese Grant

- 6-1. The Palestine side agreed that the procedures and basic principles of the Japanese Grant (hereinafter referred to as “the Grant”) as described in Annex 3 shall be applied to the Project. With regard to the monitoring of the implementation of the Project, JICA requires the Palestine side to submit the Project Monitoring Report, a template of which is attached as Annex 4.
- 6-2. The Palestine side agreed to take the necessary measures, as described in Annex 5, for smooth implementation of the Project. The contents of Annex 5 will be elaborated and refined during the Preparatory Survey and agreed upon during the mission dispatched for explanation of the Draft Preparatory Survey Report.

The contents of Annex 5 will be updated as the Preparatory Survey progresses, and eventually, will be used as an attachment to the Grant Agreement.

7. Schedule of the Survey

- 7-1. The Team will proceed with further surveys in Palestine until February 2023 and conduct a field survey in two phases, namely in July 2022 and August 2022. The second field survey might be implemented online depending on the progress and situation of remaining issues.
- 7-2. An official request to the Government of Japan will be submitted before August 2022.
- 7-3. JICA will prepare a draft Preparatory Survey Report in English and dispatch a mission to Palestine in order to explain its contents around the end of August 2022.
- 7-4. If the contents of the draft Preparatory Survey Report is accepted and the undertakings for the Project are fully agreed by the Palestine side, JICA will finalize the Preparatory Survey Report and send it to Palestine around the end of February 2023.
- 7-5. The above schedule is tentative and subject to change.

8. Environmental and Social Considerations

- 8-1. The Palestine side confirmed that it will give due attention to environmental and social considerations before and during implementation, and after completion of the Project, in accordance with the JICA Guidelines for Environmental and Social Considerations (January 2022).
- 8-2. The Project is categorized as “C” from the following considerations:
Not located in a sensitive area, nor has it sensitive characteristics, nor falls it into sensitive sectors under the Guidelines, and its potential adverse impacts on the environment are not likely to be significant.

9. Other Relevant Issues

9-1. Tax Exemption for the Project

The Palestine side agreed that MoLG will provide relevant information on exempted items and summarize the detailed procedure on how to exempt these items on the Tax Exemption Information Sheet. MoLG will also make the necessary arrangements with the relevant agency for the tax exemption procedure for the Project regarding corporate tax, income tax, indirect taxes such as VAT (Value Added Tax), custom duties, other taxes and levies.

9-2. Undertakings of Palestine

Although general undertakings of the Palestine side are listed in Annex 5, the Team emphasized the responsibility of the Palestine side to ensure the following measures and the Palestine side agreed to it.

(1) Securing the necessary lands and infrastructure

The Palestine side will secure the lands for the construction of facilities to install the procured equipment and parking lots for the procured vehicles, as well as infrastructure such as water

supply, electricity and drainage. The Palestine side will submit a land certificate and/or relevant document and map for securing the candidate land.

(2) Proper maintenance for equipment and vehicles

The Palestine side agreed that the equipment and the vehicles to be provided shall be maintained in proper manner with appropriate spaces as described below. The Palestine side also agreed that institutions for proper operation and maintenance, such as securing sufficient budget and personnel, would be considered as one of the prioritization criteria for the Grant.

(3) Ownership and exclusive use

The equipment procured by the Project shall be exclusively used for waste collection, transportation and disposal services carried out by Joint Service Council (hereinafter referred to as "JSC") only in the project site, and JSC shall not transfer the ownership of the equipment procured by the Project.

(4) Monitoring for appropriate management

Both sides confirmed that MoLG will supervise and periodically monitor the progress status of the Project.

9-3. Needs for Technical Assistance (Soft Component)

The Palestine side expressed that it would be desirable to receive technical assistance for the improvement of operation and maintenance, along with the procurement of equipment for intermediate treatment and the vehicles for waste collection/transportation within the framework of the Project. The Team agreed with these needs and took note of this request.

9-4. Synergy with the Technical Cooperation Project

The Team requested the Palestine side to make efforts to achieve a synergy effect between the Grant and Technical Cooperation Projects, namely the Project for Capacity Development in Solid Waste Management Phase III and the Project for Infectious Waste Management under the Influence of COVID-19, which are currently conducted by JICA to strengthen the capacity for waste reduction and infectious waste management in Palestine.

9-5. Safety and Security

Both sides confirmed that MoLG shall take the necessary measures to ensure and maintain the security of the Project site and the persons related to the implementation of the Project, in cooperation with the relevant authorities during the Project period. Such security measures shall reasonably reflect the needs of the Consultant/the Contractor engaging in the Project, as shown in Annex 5.

Both sides agreed that in the event that additional security costs are necessary for the implementation of the Project, such costs shall be borne by the Recipient without using the Grant.

9-6. Gender Mainstreaming

Both sides confirmed that following gender elements shall be duly reflected in the scope of Preparatory Survey.

- (a) Collection of information and gender-disaggregated data for assessment of gender needs.
- (b) Examination of gender-responsive measures based on the assessment, such as:
 - Implementation of soft-component activities that promote women's empowerment.

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Annex 1: Requested Equipment List

Annex 2: Project Site

Annex 3: Organization Chart

Annex 4: Japanese Grant

Annex 5: Project Monitoring Report (template)

Annex 6: Major Undertakings to be made by the Palestine Authority

Annex 7: Financial Flow of Grant

Annex 8: Flow Chart of Japanese Grant Procedure

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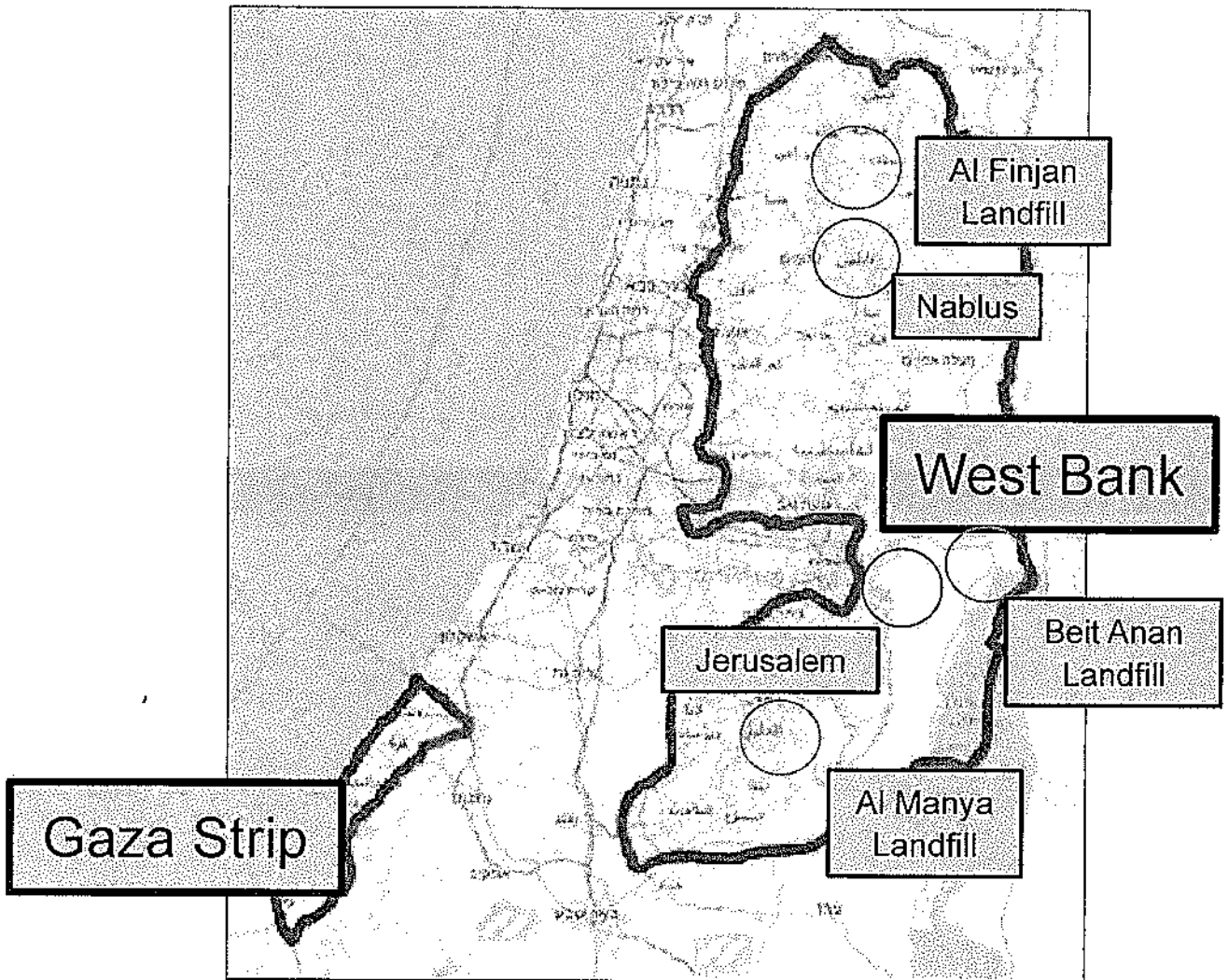
Requested Equipment List

Item	Description	Location													Total		
		Nablus	Ramallah	Qatqalia	Jenin	Tubas	Jericho	NE & SE Jerusalem	N&NW Jerusalem	Higher Hebron & Bethlehem	Tulkarm	Salfit	Hebron	Bethlehem		JSC-KRM (Southern Gaza)	
Healthcare Equipment & vehicles	Medical waste bulk microwaving or equivalent system 125 kg/hour	1						1									2
	Health care waste collection vehicles	1						1							2		4
Supplies	Color-coded leak-proof plastic medical waste containers	350						350							300		1,000
	Non-infectious regular containers	8	8				8	8		8							40
Containers	1.1 cubic meter containers	125	125	125	125	125	125	125	125	-	125	125	125	125			1,500
	240-liter containers	100	100	100	100	100	100	100	100	-	100	100	100	100			1,200
Heavy machinery	Track loader				1					1							2
	Backhoe loader							1			1						2
	Landfill compacting roller machine (BOMAG) 24 tons						1										1
Vehicles for SWM	Transportation vehicles	1						1		1							3
	Tipper truck				4		1	1		4	2						12
	Mobile maintenance workshops (equipped vehicles)	1	1	1	1	1	1	1	1	1	1	1	1	1			13
	Collection vehicles Small (8m ³)				4					-	1	1	4				10
	Collection vehicles Medium (13m ³)							3	2	-	1	4	4				14
	Collection vehicles Large (21m ³)				1				1	-		2					4
	Hock lift with trailer													1			1
Others	Grapple crane								1		1		1				3
	Baling machine									1							1

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Project site



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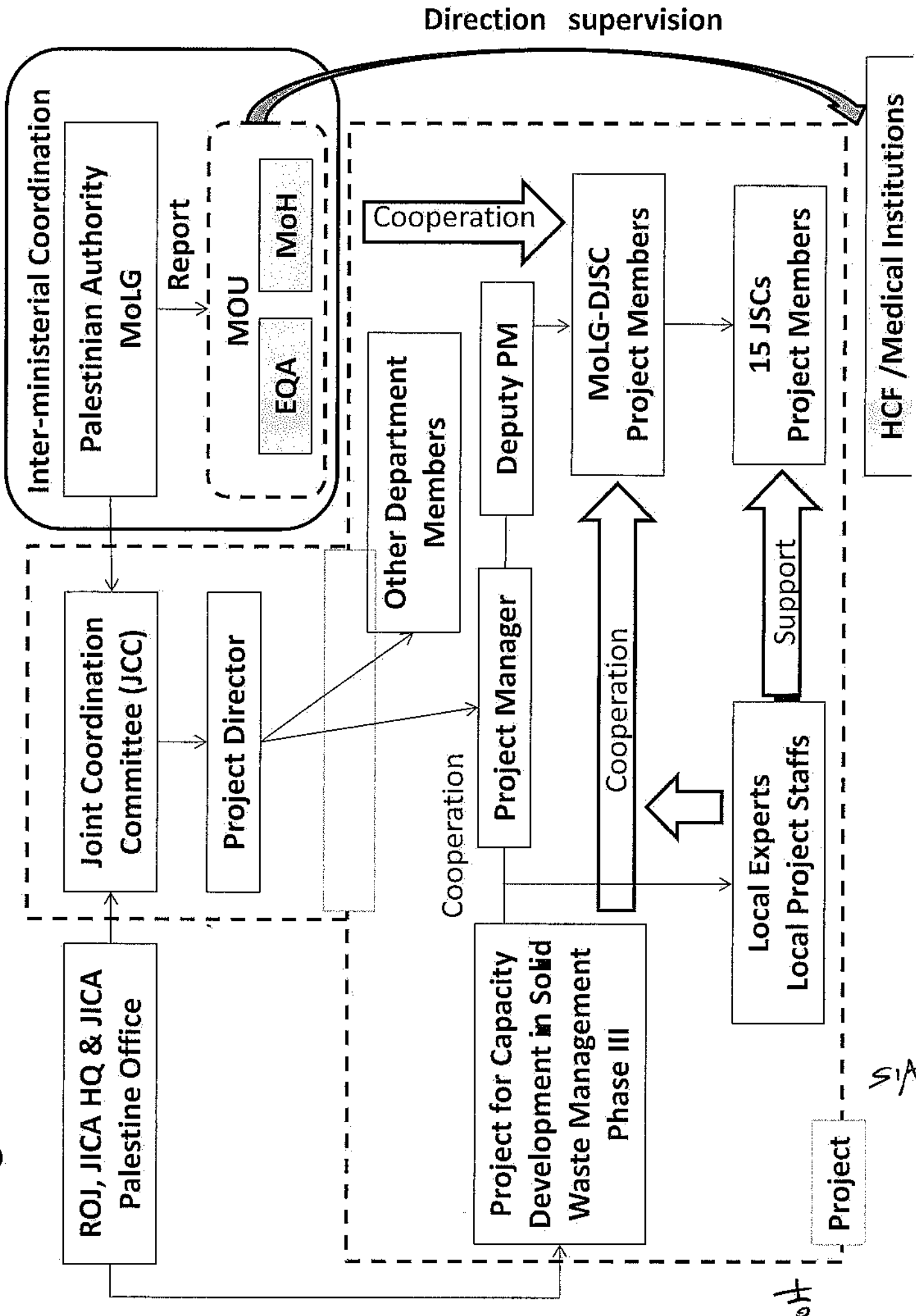
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Organization Chart

Annex 3



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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.

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- 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)

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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

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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 (January, 2022).

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) Measures to ensure more efficient implementation of the Grant

- i) In the event that the E/N and the G/A concerning a project cannot be signed by the end of the following Japanese fiscal year of the cabinet decision concerned by the GOJ, the authorities concerned of the two Governments will discuss the cancellation of the project.
- ii) In the event that the period, specified in the G/A, during which the grant is available expires before the completion

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of the disbursement, the authorities concerned of the GOJ will thoroughly review the status, situation and perspective of the implementation of the project concerned before extending the said period. The authorities concerned of the two Governments will discuss the termination of the project including a refund, unless there are concrete prospects for its completion.

iii) Regardless of the period mentioned in ii) above, the authorities concerned of the two Governments will, in the event that five years have passed since the cabinet decision concerned by the GOJ before the completion of the disbursement, except as otherwise confirmed between them, discuss the termination of a project including a refund, unless there are concrete prospects for its completion.

4) 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.

5) Export and Re-export

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

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Project Monitoring Report
 on
Project Name
Grant Agreement No. XXXXXXXX
 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 (_____): _____

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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).

(PMR)

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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	Cost (Million Yen)			
	Original (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	Cost (1,000 Taka)			
	Original (proposed in the outline design)	Actual (in case of any modification)	Original ^{1),2)} (proposed in the outline design)	Actual
1.				

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- 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.

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

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.)

<p>Original (at the time of outline design)</p>
<p>Actual (PMR)</p>

3-2 Budgetary Arrangement

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

Original (at the time of outline design)

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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.

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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
Item 1	●●t	●	●	●	●	●
Item 2	●●t	●	●	●		
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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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%)	

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Major Undertakings to be made by the Palestine Authority

1. Specific obligations of the Palestine Authority which will not be funded with the Grant

(1) Before the Tender

NO	Items	Deadline	In charge	Estimated Cost
1	To sign the banking arrangement (B/A) with a bank in Japan (the Agent Bank) to open bank account for the Grant	within 1 month after the signing of the G/A	MoLG	
2	To issue Authorization to pay (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(s)	MoLG	
3	To bear the following commissions to the Agent Bank for the banking services based upon B/A:			
4	1) Advising commission of A/P	within 1 month after the signing of the contract(s)	MoLG	
5	2) Payment commission for A/P	every payment	MoLG	
6	To approve IEE/EIA(Conditions of approval should be fulfilled, if any) and secure the necessary budget for implementation	within 1 month after the signing of the contract(s)	MoLG	
7	To secure the necessary budget to construct facility to install Microwaving treatment unit.	before delivery of tender	MoLG	
8	To secure and clear lands to install Microwaving treatment unit and to store heavy equipment and collection vehicle.	before notice of the bidding documents	MoLG	
9	To secure the necessary budget for electricity, water supply and drainage in lands where Microwaving treatment unit will be installed.	before notice of the bidding documents	MoLG	
10	To submit Project Monitoring Report (with the result of Detailed Design)	before preparation of bidding document(s)	MoLG	

(2) During the Project Implementation

NO	Items	Deadline	In charge	Estimated Cost
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)	MoLG	
2	To bear the following commissions to the Agent Bank for the banking services based upon the B/A:			
3	1) Advising commission of A/P	within 1 month after the signing of the contract(s)	MoLG	
4	2) Payment commission for A/P	every payment	MoLG	

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5	To ensure prompt unloading and customs clearance at ports of disembarkation in the country of the Recipient and to assist the Supplier(s) with internal transportation therein	during the Project	MoLG	
6	To accord Japanese physical persons 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 Palestine territories and stay therein for the performance of their work	during the Project	MoLG	
7	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the Palestine territories with respect to the purchase of the products and/or the services be exempted	during the Project	MoLG	
8	To construct for facility to install for Microwaving treatment unit	during the Project	MoLG	
9	To provide facilities for distribution of electricity, water supply and drainage and other incidental facilities necessary for the operation implementation of the procured equipment.	during the Project	MoLG	
10	1) Electricity The distributing line to the site	before start of the construction	MoLG	
11	2) Water Supply The city water distribution main to the site	before start of the construction	MoLG	
12	3) Drainage The city drainage main (for storm, sewer and others) to the site	6 months before completion of the construction	MoLG	
13	To ensure the safety of persons engaged in the implementation of the Project	during the Project	MoLG	
14	Securing the parking spaces for the procured vehicles	during the Project	MoLG	
15	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project	during the Project	MoLG	as necessary
16	To notify JICA promptly of any incident or accident, which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public or workers.	during the construction	MoLG	as necessary
17	To submit the Project Monitoring Report to JICA after completion of each work under the contract(s), such as shipping, hand over and operational training	within one month after completion of each work	MoLG	
18	To submit the Project Completion Report to JICA	within six month after completion of the Project	MoLG	

(3) After the Project

NO	Items	Deadline	In-charge	Estimated Cost
1	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid 1) Allocation of personnel and budget for operation and maintenance 2) Operation and maintenance structure. 3) Routine check/Periodic inspection 4) Coordination with MoH to ensure appropriate implementation of dispose of infectious waste. 5) Supervision for JSC to ensure appropriate maintenance for procured equipment	After completion of the construction	MoLG/ JSCs	

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2	To submit results of environmental monitoring to JICA, by using the monitoring form, semiannually - The period of environmental monitoring may be extended if any significant negative impacts on the environment are found. The extension of environmental monitoring will be decided based on the agreement between MoLG and JICA.	for 3 years after the Project	MoLG	as necessary
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2. Other obligations of the PA funded with the Grant

NO	Items	Deadline	Amount (Million Japanese Yen)*
1	To conduct the following transportation 1) Marin (Air) transportation of the products from Japan(a third country) to the country of the Recipient.	during the Project	/
2	To implement detailed design, bidding support and procurement supervision (Consulting Service)		
3	Contingencies		

* The Amount is provisional. This is subject to the approval of the Government of Japan.

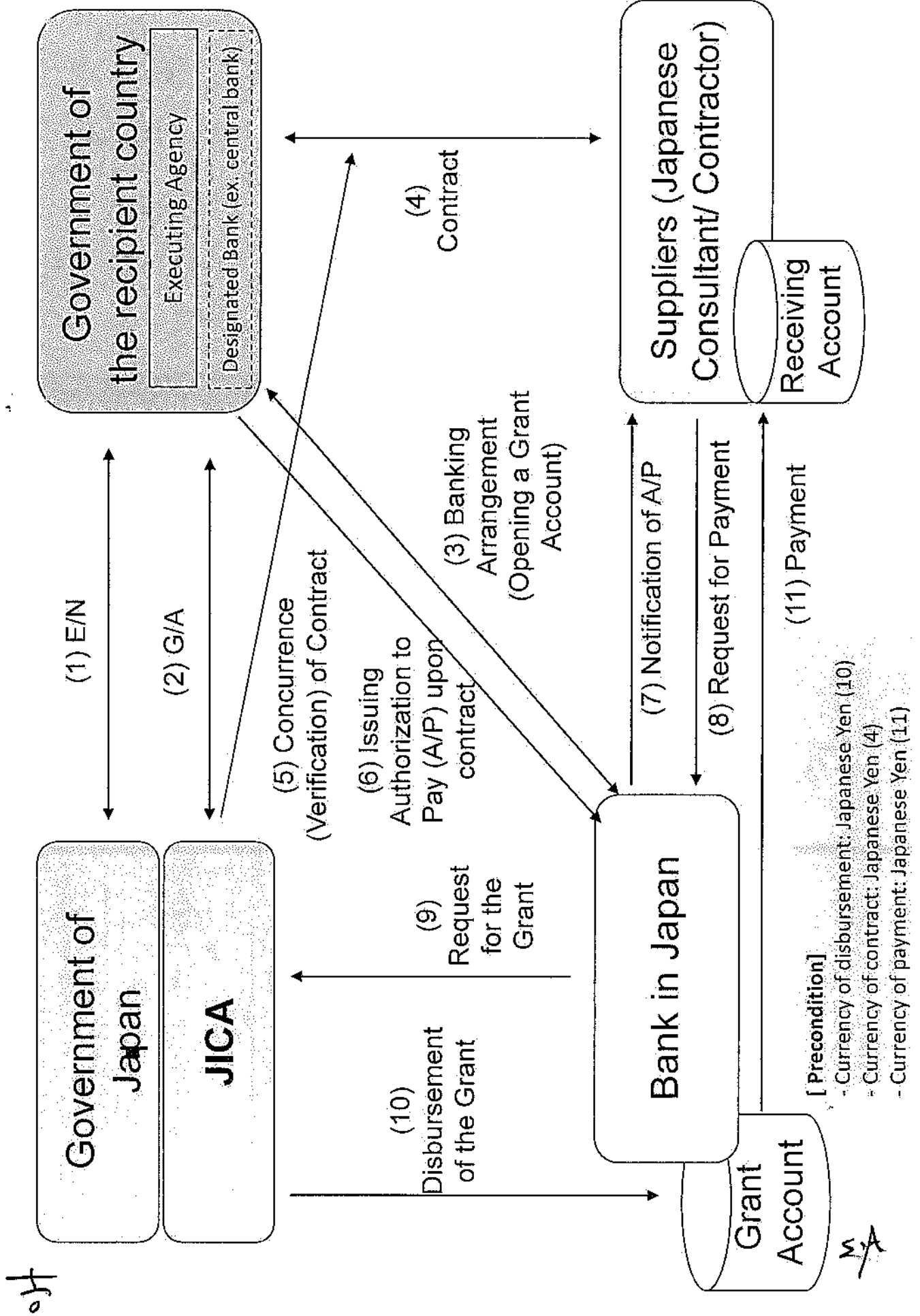
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Financial Flow of Japanese Grant (A/P Type)



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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 Explanation of draft outline design, including cost estimate, undertakings, etc.		x		x	x		
2. Appraisal	(2) 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)			
	(3) Approval by the Japanese cabinet			x				
3. Implementation	(4) Exchange of Notes (E/N)		x	x				
	(5) Signing of Grant Agreement (G/A)		x		x			
	(6) Banking Arrangement (B/A)	Need to be informed to JICA.	x					x
	(7) Contracting with consultant and issuance of Authorization to Pay (A/P)	Concurrence by JICA is required	x			x		x
	(8) Detail design (D/D)		x			x		
	(9) Preparation of bidding documents	Concurrence by JICA is required	x			x		
	(10) Bidding	Concurrence by JICA is required	x			x	x	
	(11) Contracting with contractor/supplier and issuance of A/P	Concurrence by JICA is required	x				x	x
	(12) Construction works/procurement	Concurrence by JICA is required for major modification of design and amendment of contracts.	x			x	x	
	(13) Completion certificate		x			x	x	
4. Ex-post monitoring & evaluation	(14) Ex-post monitoring	To be implemented generally after 1, 3, 10 years of completion, subject to change	x		x			
	(15) 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.

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Minutes of Discussions
on
the Preparatory Survey
for
The Project for the Improvement of Infectious Waste Management in Palestine
(Explanation on Draft Preparatory Survey Report)

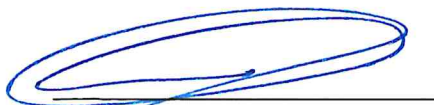
With reference to the minutes of discussions signed between the Ministry of Local Government (hereinafter referred to as "MoLG") and the Japan International Cooperation Agency (hereinafter referred to as "JICA") on 14th July, 2022 and in response to the request from the Palestinian Authority (hereinafter referred to as "Palestine") dated 22nd August, 2022, JICA dispatched the Preparatory Survey Team (hereinafter referred to as "the Team") for the explanation of the Draft Preparatory Survey Report (hereinafter referred to as "the Draft Report") for the Project for Improvement of Infectious Waste Management in Palestine (hereinafter referred to as "the Project").

As a result of the discussions, both sides agreed on the main items described in the attached sheets.

Ramallah, 14 9-, 2022



Mr. ABE Toshiya
Chife Representative
Japan International Cooperation Agency
Palestine office
Japan



Dr. Tawfiq Budeiri
Deputy Minister
Ministry of Local Government
Palestinian Authority

ATTACHEMENT

1. Objective of the Project

The objective of the Project is to strengthen the infectious waste management system for treatment and sterilization through installing the necessary equipment and materials for infectious waste management, thereby contributing to prevent the risk of waste-derived infection.

2. Title of the Preparatory Survey

Both sides confirmed the title of the Preparatory Survey as “the Preparatory Survey for the Project for the Improvement of Infectious Waste Management”.

3. Project site

Both sides confirmed that the site of the Project is in the West Bank in Palestine, which is shown in Annex 1.

4. Responsible authority for the Project

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

- 4-1. The Ministry of Local Government (hereinafter referred to as “MoLG”) is 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 charts are shown in Annex 2.

5. Contents of the Draft Report

After the explanation of the contents of the Draft Report by the Team, the Palestinian side agreed to its contents. JICA will finalize the Preparatory Survey Report based on the confirmed items. The report will be sent to the Palestine around March 2023.

6. Cost estimate

Both sides confirmed that the cost estimate explained by the Team is provisional and will be examined further by the Government of Japan for its approval.

7. Confidentiality of the cost estimate and technical specifications

Both sides confirmed that the cost estimate and technical specifications of the Project should never be disclosed to any third parties until all the contracts under the Project

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are concluded.

8. Timeline for the project implementation

The Team explained to the Palestinian side that the expected timeline for the project implementation is as attached in Annex 4.

9. Expected outcomes and indicators

Both sides agreed that key indicators for expected outcomes are as follows. The Palestine will be responsible for the achievement of agreed key indicators targeted in year 2028 and shall monitor the progress for Ex-Post Evaluation based on those indicators.

[Quantitative indicators]

“Infectious waste treatment rate” and “Infectious waste treated amount” are set as indicator of the quotative effect of the project as shown in Table-1.

Table-1 Quantitative Effects Expected from the Implementation of the Project

Indicator	Year 2021 (Baseline)	Year 2028 (Target)
Infectious waste treated amount (kg/day)	450	2,210

Data Source: Compiled from the data provided by MoLG-JICA Technical Cooperation Project for Capacity Development in Solid Waste Management in Palestine (Phase III) by JICA Survey Team

[Qualitative indicators]

- Establishment of an infectious waste management system through in finance, operation and maintenance through fees collection by JSC in West Bank.
- Reduction of the risk of infectious diseases from infectious waste in the relevant parties

10. Ex-Post Evaluation

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

11. Technical assistance (“Soft Component” of the Project)

Considering the sustainable operation and maintenance of the products and services granted through the Project, following technical assistance is planned under the Project. The Palestinian side confirmed to deploy necessary number of counterparts who are appropriate and competent in terms of its purpose of the technical assistance as described in the Draft Report.

- 11-1. Provide support for the proper storage and discharge of separated infectious waste within each medical facility.
- 11-2. Provide technical support for proper final disposal of the treated infectious waste.
- 11-3. Provide technical support for proper maintenance and management of heavy equipment for final disposal site management.

12. Undertakings of the Project

Both sides confirmed the undertakings of the Project as described in Annex 5. As for exemption of customs duties, internal taxes and other fiscal levies as stipulated in in (2)-5 of Annex 5, both sides confirmed that such measures shall be clarified in the bid documents by MoLG during the implementation stage of the Project.

The Palestinian side assured to take the necessary measures and coordination including securing clear land and allocation of the necessary budget for electricity, water supply, drainage, construction of the facility, preconditions of the implementation of the Project. It is further agreed that the costs are indicative, i.e. at Outline Design level. More accurate costs will be calculated at the Detailed Design stage.

Both sides also confirmed that the Annex 5 will be used as an attachment of G/A and the undertakings.

Both sides confirmed that MoLG shall take necessary measures to ensure and maintain the security of the Project site and the persons related to the implementation of the Project, in cooperation with relevant authorities during the Project period. Such security measures shall reasonably reflect needs of the Consultant engaging in the Project, as shown in Annex 5.

Both sides agreed that in case the additional security cost would be necessary for the implementation of the Project, such cost shall be borne by the Palestine side without using the Grant.

13. Monitoring during the implementation

The Project will be monitored by the Executing Agency and reported to JICA by using the form of Project Monitoring Report (PMR) attached as Annex 6. The timing

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of submission of the PMR is described in Annex 6.

14. Project completion

Both sides confirmed that the Project completes when all equipment procured by the Grant are in operation. The completion of the Project will be reported to JICA promptly, but in any event not later than six months after completion of the Project.

15. Environmental and Social Considerations

The Team explained that 'JICA Guidelines for Environmental and Social Considerations (January 2022)' (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.

16. Other Relevant Issues

16-1. Disclosure of Information

Both sides confirmed that the Preparatory Survey Report from which project cost is excluded will be disclosed to the public after completion of the Preparatory Survey. The comprehensive report including the project cost will be disclosed to the public after all the contracts under the Project are concluded.

16-2. Synergy with the Technical Cooperation Project

The Team also explained that a Technical Cooperation Project is implemented to strengthen the capacity of solid waste management including infectious waste management in Palestine and requested the Palestinian side to make efforts to achieve the synergy effects of these Grant Aid and Technical Cooperation Projects.

16-3. Priority of Equipment

The Team also explained that priority of equipment. This priority is below

- (1) Infectious waste treatment facility, Infectious waste collection vehicles and supplies
- (2) Heavy machinery and tipper truck
- (3) Containers
- (4) Collection vehicles

16-4. Contract between JSC and Medical facility

The cost of maintenance and operation for intermediate treatment equipment will be contracted directly between JSC and medical facilities for fee collection. Technical cooperation project will support these activities.



Annex 1 Project Site

Annex 2 Organization Chart

Annex 3 Japanese Grant

Annex 4 Project Implementation Schedule

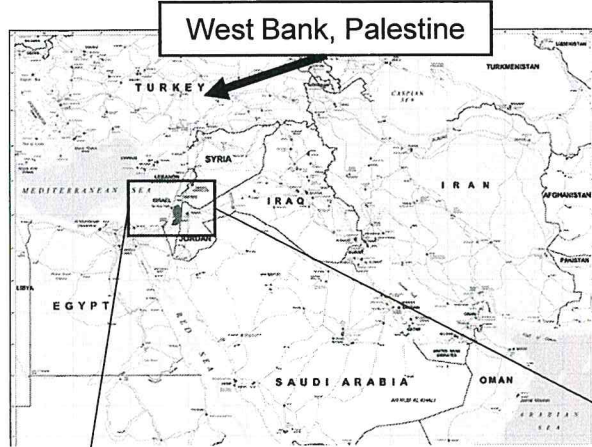
Annex 5 Major Undertakings to taken by the Palestine Authority

Annex 6 Project Monitoring Report (template)


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Project Site

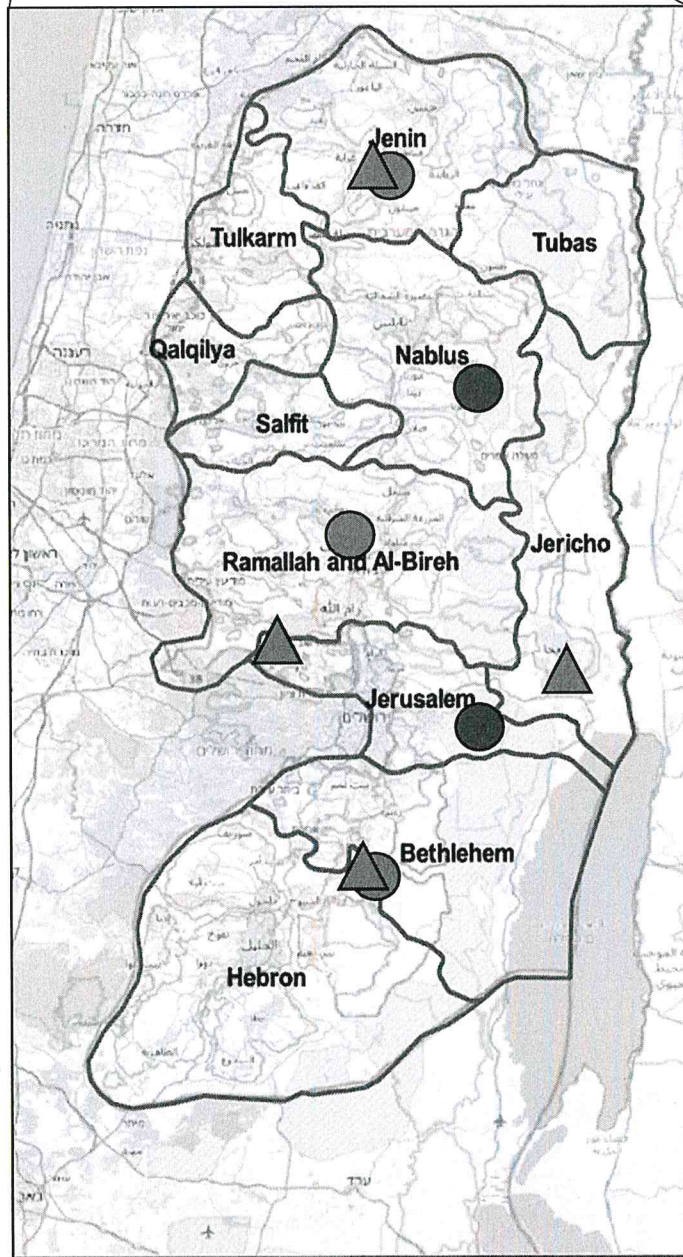


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 Target Area



-  既存処理施設
-  計画処理施設
-  既存処分場

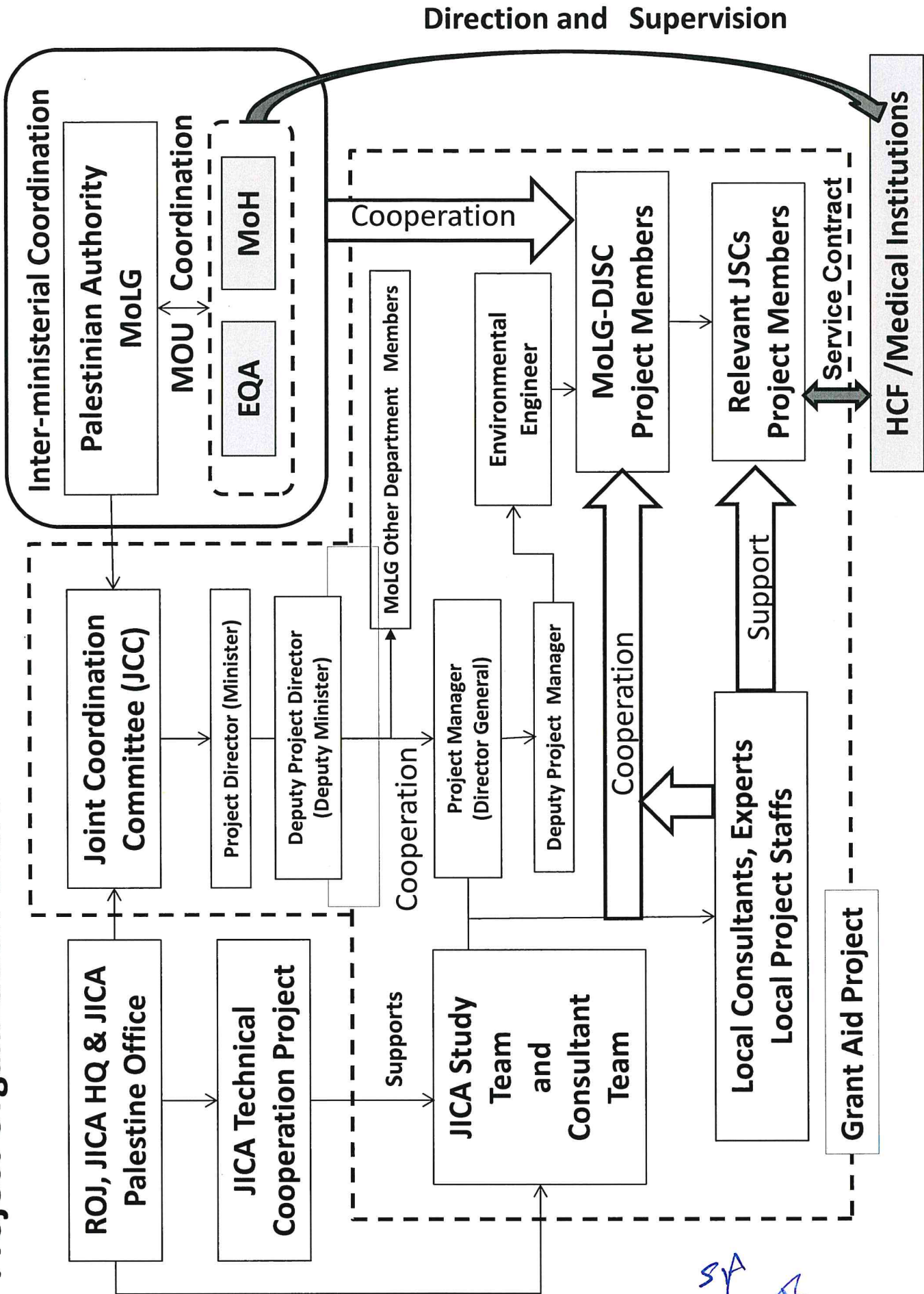


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Project Organization Chart

Annex 2



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.

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- 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 (January, 2022).

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) Measures to ensure more efficient implementation of the Grant

i) In the event that the E/N and the G/A concerning a project cannot be signed by the end of the following Japanese fiscal year of the cabinet decision concerned by the GOJ, the authorities concerned of the two Governments will discuss the cancellation of the project.

ii) In the event that the period, specified in the G/A, during which the grant is available expires before the completion

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of the disbursement, the authorities concerned of the GOJ will thoroughly review the status, situation and perspective of the implementation of the project concerned before extending the said period. The authorities concerned of the two Governments will discuss the termination of the project including a refund, unless there are concrete prospects for its completion.

iii) Regardless of the period mentioned in ii) above, the authorities concerned of the two Governments will, in the event that five years have passed since the cabinet decision concerned by the GOJ before the completion of the disbursement, except as otherwise confirmed between them, discuss the termination of a project including a refund, unless there are concrete prospects for its completion.

4) 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.

5) Export and Re-export

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

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Major Undertakings to be made by the Palestinian Authority

1. Specific obligations of the Palestinian Authority which will not be funded with the Grant**(1) Before the Tender**

NO	Items	Deadline	In charge	Estimated Cost	Ref
1	To sign the banking arrangement (B/A) with a bank in Japan (the Agent Bank) to open bank account for the Grant	within 1 month after the signing of the G/A	MoLG	13	
2	To issue A/P to the Agent Bank for the payment to the consultant	within 1 month after the signing of the contract(s)	MoLG	50	
3	To bear the following commissions to the Agent Bank for the banking services based upon B/A				
	1) Advising commission of A/P	within 1 month after the signing of the contract(s)	MoLG		
	2) Payment commission for A/P	every payment	MoLG		
4	To secure and clear lands and leveling of ground by concrete for construction of facility to install Microwave treatment unit.	before notice of the bidding documents	MoLG	20,000	
5	To secure the necessary budget to construct facility to install Microwaving treatment unit.	before delivery of tender		80,000	
6	To secure the necessary budget for electricity, water supply and drainage in lands where Microwave treatment unit will be installed.	before notice of the bidding documents	MoLG	Including in item 4	
7	To submit Project Monitoring Report (with the result of Detailed Design)	before preparation of bidding document(s)	MoLG		

(2) During the Project Implementation

NO	Items	Deadline	In charge	Estimated Cost	Ref
1	To issue A/P to the Agent Bank for the payment to the supplier and the contractor	within 1 month after the signing of the contract(s)		0	
2	To bear the following commissions to the Agent Bank for the banking services based upon the B/A				
	1) Advising commission of A/P	within 1 month after the signing of the contract(s)	MoLG	50	
	2) Payment commission for A/P	every payment	MoLG		
3	To ensure prompt unloading and customs clearance at ports of disembarkation in the Palestine territories and to assist the Supplier(s) with internal transportation therein	during the Project	MoLG		
4	To accord Japanese physical persons and/or physical persons of third countries whose services may be required in connection with the supply of the products and the	during the Project	MoLG		

	services such facilities as may be necessary for their entry into the Palestine territories and stay therein for the performance of their work				
5	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the Palestine territories with respect to the purchase of the products and/or the services be exempted	during the Project	MoLG		
6	To construct for facility to install for Microwave treatment unit	during the Project	MoLG		
7	To provide facilities for distribution of electricity, water supply and drainage and other incidental facilities necessary for the operation implementation of the procured equipment.	during the Project	MoLG		
	1) Electricity The distributing line to the site	before start of the construction	MoLG		
	2) Water Supply The city water distribution main to the site	before start of the construction	MoLG		
	3) Drainage The drainage for facility main (for storm, sewer and others) to Nabuls and northeast southeast Jerusalem treatment facility.	6 months before completion of the construction	MoLG		
8	To ensure the safety of persons engaged in the implementation of the Project	during the Project	MoLG		
9	Securing the parking spaces for the procured vehicles	during the Project	MoLG		
10	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project	during the Project	MoLG	as necessary	
11	To submit the Project Monitoring Report to JICA after completion of each work under the contract(s), such as shipping, hand over and operational training	within one month after completion of each work	MoLG		
12	To submit Project Monitoring Report (final) (including equipment list, photographs, etc.)	within 1 month after issuance of Certificate of Completion for the works under the contract(s)	MoLG		
13	To submit the report concerning completion of the Project	within six months after completion of the Project	MoLG		

(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 personnel and budget for operation and maintenance 2) Operation and maintenance structure 3) Routine check / Periodic inspection	After completion of the construction	MoLG		

S.A.B

2. Other obligations of the PA funded with the Grant

NO	Items	Deadline	Amount (Million Japanese Yen)*
1	To conduct the following transportation 1) Marin (Air) transportation of the products from Japan (a third country) to the Palestine territories 2) Internal transportation of the products from port of disembarkation to the project site		/
2	To implement detailed design, bidding support, procurement supervision, technical assistance (soft component) (Consulting Service)		
Total			

* The Amount is provisional. This is subject to the approval of the Government of Japan.

S.A TB

Project Monitoring Report
on
Project Name
Grant Agreement No. XXXXXXXX
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 (_____): _____

5/1/13

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

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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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S.A. B

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.				

SIA

- 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:

	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.

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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.

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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.

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S.A B

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)

S/A
B

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)

7 S.A

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	(A/D%)	(B/D%)	(C/D%)	
Cost 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%)	

AS

Preparatory Survey Report
on
the Project for the Improvement of Infectious
Waste Management
in Palestinian Authority

Soft Component Plan

February 2023

Japan International Cooperation Agency
EX Research Institute Ltd.
INTEM Consulting, Inc.

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1 Background for Planning Soft Components

This project aims to establish an infectious waste management system in the West Bank of the Palestinian territories (hereinafter referred to as "Palestine") by providing the necessary equipment for detoxification, collection, transportation, and final disposal of infectious waste, thereby contributing to the prevention of the spread of waste-derived infections. In Palestine, under the supervision of the Ministry of Health (hereinafter referred to as "MoH"), Ministry of Local Government (hereinafter referred to as "MoLG"), and Environmental Quality Authority (hereinafter referred to as "EQA"), each medical institution and each local government cooperate to provide waste collection and disposal services. Medical institutions that cannot dispose of their own medical waste, including infectious waste, are required by law to contract with the local government for the collection, transportation, treatment, and disposal of such waste. Under the Local Government Act (1997), the Regional Government Council Ordinance (2006) and its amendments (2016), and the Waste Management Ordinance (2019), Local Government Units (hereinafter referred to as "LGUs") at the governorate level is required to form a Joint Service Council (hereinafter referred to as "JSC") to provide administrative services, and the JSC is also responsible for infectious waste management, thereby ensuring efficient use of personnel, vehicles, and funds.

Infectious waste management consists of the proper segregation, storage, collection, transportation, treatment, and disposal of infectious waste, with the medical institution responsible for the segregation and storage of infectious waste and the JSC responsible for the collection, transportation, and treatment. In Palestine, based on the provisions of the Medical Waste Ordinance (2012) and the Waste Management Ordinance (2019), medical institutions that generate infectious waste are the recipients of collection services and each JSC is the supplier of services, and operations are carried out based on the beneficiary-pays principle in accordance with paid service contracts concluded between them. In order for infectious waste to be properly treated and disposed of, it must first be properly sorted and stored at the medical facilities where it is generated, then collected and transported by JSC, detoxified, and disposed of properly at the final disposal site. An ongoing JICA technical cooperation project is supporting the introduction and operation of a manifest system for medical waste from discharge to disposal. In the project, medical institutions are instructed to discharge medical waste separately from general waste. On the other hand, in order to promote proper disposal of medical waste, the MoH has revised the law in 2022, which requires medical institutions to dispose of medical waste only after proper in-house treatment or, if in-house treatment is not possible, to entrust it to a company that can properly treat and dispose of it. Medical institutions that do not comply with this revision are subject to strict regulations that may result in the revocation of their license to practice medicine. This soft component will be implemented on the premise that infectious waste is properly sorted at the medical facilities where it is generated, with the objectives of improving safety related to the collection, transportation, and treatment of infectious waste by the JSC; enhancing the proper use and maintenance of microwave sterilization equipment installed at the disposal site; and effectively and sustainably utilizing the equipment and materials provided at the disposal site.

The soft component is scheduled to be implemented around March 2023, when the Project for Capacity Development in Solid Waste Management Phase 3 has already been completed. The soft component should be based on an understanding of the technical cooperation project, and the activities should be consistent with the monitoring and reporting system established by the project and the grant assistance. The consistency between the technical cooperation project and the grant assistance is shown in the figure below.

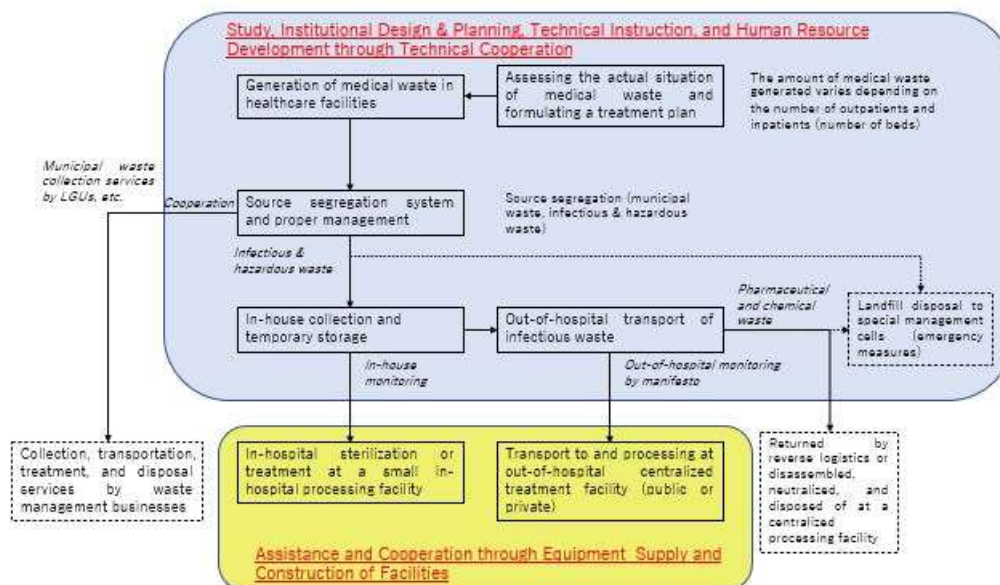


Figure 1 Consistency between Technical Cooperation Project and Grant Aid

2 Soft Component Objective

The goals of the soft components to be implemented in this project to strengthen the capacity of infectious waste management in Palestine are as follows.

- i. Infectious waste treatment facilities are properly maintained.
- ii. Infectious waste is safely collected, transported, and disposed of.
- iii. The discharge, collection, transportation, and disposal of infectious waste is properly monitored.
- iv. Proper final disposal of infectious waste after treatment is ensured.
- v. Heavy equipment for final disposal site management is properly maintained.

3 Expected Outcomes

Expected outcomes by the implementation of Soft Component are as follows.

3.1 To develop JSCs' appropriate maintenance system for infectious waste treatment equipment

At the time of installation, the equipment manufacturer will provide initial operation trainings to JSC staffs on the operation of microwave for infectious waste treatment. As daily and periodical maintenance by JSCs is necessary for continuous and safe use of the equipment, the Consultants will discuss with MoLG regarding daily and periodical maintenance system. Through the discussion, communication system between JSC and local distributors for maintenance will be established so that JSC will be able to develop a proper maintenance system for infectious waste treatment equipment. The maintenance system should be thoroughly based on a preventive approach; each role of JSC and manufacture engineer/local distributor should be made clear regarding the daily inspection and maintenance that should be done by JSC and the serious repair that requires manufacture distributor.

3.2 To acquire the safe processes of collection, transportation and treatment for infectious

waste by JSC

Infectious waste separated and stored properly at medical facilities will be collected in sealed collection containers and be transported and then treated by microwave. The Consultants will discuss with MoLG and provide trainings on safety measures on collection, transportation and treatment of infectious waste, which will result in JSC's safe collection, transportation and treatment processes of infectious waste.

3.3 The medical facilities and JSCs learn the manifest system to discharge, collect, transport, and intermediate treatment of infectious waste

Infectious waste is discharged from medical facilities, then collected and transported by JSCs, and detoxified at treatment facilities. The ongoing technical cooperation project (2023) is guiding the operation of the manifest system for each JSC. Soft Component's Japanese consultant will review the manifest system described in the MoLG, MoH and EQA and the Standard Operating Procedures (SOPs.), and will instruct JSC to implement the manifest system when using the equipment to be procured under this project. The MoH will provide guidance on the implementation of the manifest system when using equipment procured under this project. For medical facilities, the MoH will instruct them on the procedures of the manifest system. Currently, untreated infectious waste collected is mixed with municipal solid waste and disposed of at final disposal sites. The Japanese consultant will prepare a manual for the operation of the final disposal site in consultation with the MoLG and guide the JSC based on this manual, so that the JSC will acquire the techniques to dispose of properly treated infectious waste.

3.4 JSC will acquire the skills to properly maintain and manage heavy equipment for final disposal site management.

Currently, there is a simple maintenance manual and heavy equipment is maintained based on this manual. The Japanese consultant will consult with MoLG to review and improve the existing manual and provide guidance to JSC based on this review and improvement, so that JSC will acquire the skills to properly maintain and manage heavy equipment for final disposal site management.

4 Targets for Soft Component Implementation

The soft component will be implemented in seven JSCs involved in the installation of microwave sterilizers and the collection of infectious waste. The microwave sterilizers will be installed at candidate sites adjacent to the sewage treatment plant in Nablus (under the jurisdiction of the Nablus JSC) and at the East Jerusalem Transfer Station site (under the jurisdiction of the Northeast and Southeast Jerusalem JSC), respectively. Infectious waste collected in the Qalqiliya and Salfit areas will be transported to the candidate site in Nablus, and infectious waste collected in the Jericho area will be transported to the candidate site in East Jerusalem for processing. The soft component will target JSC managers and engineers who will install infectious waste treatment equipment, collection vehicles, and final disposal site heavy equipment, as well as workers who will directly operate and maintain the treatment equipment. A breakdown of the seven targeted JSCs and their procured materials is as follows.

- Nablus JSC: Infectious waste treatment equipment and collection vehicles
- Kalkilya JSC: No infectious waste collection vehicle is planned but will work with Nablus JSC to collect infectious waste.
- Salfit JSC: Infectious waste collection vehicles
- Northeast and Southeast Jerusalem JSC: Infectious waste treatment equipment and collection vehicles
- Jericho JSC: Infectious waste collection vehicles
- Jenin JSC: Zahrat Al-Finjan Final Landfill: Heavy equipment for disposal
- Upper Hebron Bethlehem JSC: Al-Minya Final Disposal Site: Heavy equipment for

disposal

Table 1 Target facilities and equipment, and soft components

Name of JSC	Component 1	Component 2	Component 3	Component 4	Component 5
Nablus*	✓	✓	✓		
Qalqilya	✓	✓	✓		
Salfeet	✓	✓	✓		
NE&SE Jerusalem*	✓	✓	✓		
Jericho	✓	✓	✓		
Jenin				✓	✓
Higher Hebron & Bethlehem				✓	✓

*JSC which is planned to install a microwave sterilization equipment

5 Soft Component Outcomes and Verification Methods

Specific activities and outcomes of the soft component are as follows.

Table 2 Activities and outcomes

Component	Activity	Outcome	Method of confirmation
1. Infectious waste treatment facilities are properly maintained.	Instruction on maintenance and management of infectious waste treatment equipment	JSC will acquire procedures for the safe collection, transport, and disposal of infectious waste.	1. Preparation of safety check sheet 2. Preparation of explanatory materials on infectious waste discharge requirements
2. Infectious waste is safely collected, transported, and disposed of.	Instruction on safety measures in the collection, transport, and disposal of infectious waste	The medical institution and JSC will acquire a manifest system to discharge, collect, transport, and dispose of infectious waste.	1. Preparation of safety check sheet 2. Preparation of explanatory materials on infectious waste discharge requirements
3. The discharge, collection, transportation, and disposal of infectious waste is properly monitored.	Instruction to JSC and medical institutions on the manifest system described in the SOPs	JSC will acquire techniques for proper final disposal of properly treated infectious waste.	1. Record of instruction 2. Manifest form
4. Proper final disposal of infectious waste after treatment.	Instruction to heavy equipment operators on proper disposal method and supervision of landfill operations	JSC will acquire the skills to properly maintain and manage heavy equipment for landfill management.	1. Formulation of landfill plans for treated infectious and municipal waste 2. Preparation of standard landfill operation manuals 3. Preparation of safety work manuals 4. Preparation of manuals for handling emergencies (e.g., fire, untreated infectious waste brought in, etc.)
5. Heavy equipment for landfill management is properly maintained.	Instruction on the formulation of operating rules and regulations, including procedures for the maintenance and management of heavy equipment for landfill, work rules, and health and safety implementation items	JSC will acquire procedures for the safe collection, transport, and disposal of infectious waste.	1. Preparation of daily inspection/cleaning item list and implementation record chart 2. Preparation of periodic maintenance item lists and implementation records, and inventory management of spare parts and consumables 3. Preparation of maintenance and repair record sheets, analysis of results, and methods of improvement

6 Activities of soft component (Input plan)

Table 3 Activities of soft component (Input plan)

Component	Activities	Details
1. Infectious waste treatment facilities are properly maintained.	Instruction on maintenance and management of infectious waste treatment equipment	Assist JSC to continuously perform daily and periodic inspections of infectious waste treatment equipment based on the instruction on initial operation and subsequent full-scale operation. <ul style="list-style-type: none"> ● Preparation of daily inspection check sheet ● Preparation of periodic inspection check sheet
2. Infectious waste is safely collected, transported, and disposed of.	Instruction on safety measures in the collection, transport, and disposal of infectious waste	Assist JSC staff to be fully aware of the risks for handling infectious waste and to safely collect, transport, and dispose of it. <ul style="list-style-type: none"> ● Preparation of safety check sheet ● Preparation of explanatory materials on infectious waste discharge requirements
3. The discharge, collection, transportation, and disposal of infectious waste is properly monitored.	Instruction to JSC and medical institutions on the manifest system described in the SOPs	Explain the manifest system described in the SOPs, together with the MoLG and MoH, to the JSC and medical institutions, and instruct them on the actual operation of the manifest afterwards. <ul style="list-style-type: none"> ● Record of instruction ● Manifest form
4. Proper final disposal of infectious waste after treatment.	Instruction to heavy equipment operators on proper disposal method and supervision of landfill operations	Provide instructions on the transport and disposal of treated infectious waste to the proper disposal area of the existing landfill sites. <ul style="list-style-type: none"> ● Formulation of landfill plans for treated infectious and municipal solid waste ● Preparation of standard landfill operation manuals ● Preparation of safety work manuals ● Preparation of manuals for handling emergencies (e.g., fire, untreated infectious waste brought in, etc.)
5. Heavy equipment for landfill management is properly maintained.	Instruction on the formulation of operating rules and regulations, including procedures for the maintenance and management of heavy equipment for landfill, work rules, and health and safety implementation items	Heavy equipment is essential to landfill operations at sanitary landfills, and minimizing these breakdowns not only prolongs the life of heavy equipment and increases the efficiency of landfill operations, but also reduces landfill costs. Preventive maintenance measures should be necessary. <ul style="list-style-type: none"> ● Preparation of daily inspection/cleaning item list and implementation record chart ● Preparation of periodic maintenance item lists and implementation records, and inventory management of spare parts and consumables ● Preparation of maintenance and repair record sheets, analysis of results, and methods of improvement

6.1 Trainings on maintenance of infectious waste treatment equipment.

Daily maintenance of equipment is essential for continuous use of the equipment. As the microwave to be procured under this Project is new for both JSCs, the JSCs' staffs who are in charge will receive initial operation trainings to learn the operation and maintenance of the equipment. In this Soft Component, check sheets for daily and periodical inspection will be developed in order that the training contents given at the initial operation training to become established.

6.2 Safety training on collection, transportation and treatment for infectious waste.

Concerning the collection, transportation and treatment of infectious waste, it is significantly important that the infectious waste is transported to the treatment facility in a surly sealed condition and then sterilized. Also, ensuring the safety of personnel who handles the infectious waste is crucial. Therefore, in this Soft Component, safety check sheets and explanatory material on the disposal requirements of infectious waste will be developed, with the assistance from MOH if necessary.

The trainings on maintenance of infectious waste treatment equipment and the safety training on collection, transportation and treatment for infectious waste will be held at the same time as the target sites and participants of these trainings are the same. The required personnel and duration assumed for the technical assistance are as follows. From the viewpoints of independence development and effective

learning, these trainings will be held through participatory workshops.

- i. Preparation works in Japan: Consultant 1 person, for 3 days (0.15 person-month)
Local consultant (preparation work: coordination of the schedules with relevant agencies, document preparation, research on the current situations etc.), for 16 days
- ii. Works in Palestine: Consultant 1 person, for 23 days (0.77 person-month),
Local consultant/interpreter 1 person, for 15 days (0.50 person-month)
- iii. Post works in Japan: Consultant 1 person, for 2 days (0.10 person-month)

Table 4 The number of days for implementation of the trainings on maintenance of infectious waste treatment equipment and the safety training on collection, transportation and treatment for infectious waste

Training items	Implementation time	Consultant	Interpreter (Local consultant)	JSC	
				Nablus Qalqilya Salfit	Northeast & Southeast Jerusalem Jerico
● Plenary workshop	Year: 2024 Month: TBD	1 day	1 day	-	-
● Discussion on safety check sheets ● Discussion on disposal requirements 1 st day: Discussion on the explanatory material on the disposal requirements 2 nd day: Practical training by using the check sheets and explanatory material 3 rd day: Finalization (reconsideration and modification)		6 days	6 days	3 days	3 days
● Discussion on daily inspection sheet ● Discussion on periodical inspection sheet 1 st day: Discussion on the daily inspection sheet 2 nd day: Discussion on the periodical inspection sheet 3 rd day: Practical trainings on daily and periodical inspection 4 th day: Finalization (reconsideration and modification)		8 days	8 days	4 days	4 days
Total (actual working days)		15 days	15 days	7 days	7 days
Total (required days)		23 days	15 days	-	-

*Traveling: 4 days round trip, documentation for 4 days

Table 5 The implementation schedule for the trainings on maintenance of infectious waste treatment equipment and the safety training on collection, transportation and treatment for infectious waste

Day	Training contents	Target site and participants	The number of assumed participants
1	Fri	Traveling (Tokyo→Istanbul→)	
2	Sat	Traveling (Istanbul→Tel Aviv)	
3	Sun	Plenary workshop	Target JSCs (relevant agencies)
4	Mon	Kick-off meeting Discussion on the safety check sheet Discussion on the disposal requirements	Nablus JSC, Qalqilya JSC, Salfit JSC 6 persons
5	Tue	Practical training by using the check sheets and explanatory material	Nablus JSC, Qalqilya JSC, Salfit JSC 6 persons
6	Wed	Finalization of the safety check sheets and disposal requirements (reconsideration and modification)	Nablus JSC, Qalqilya JSC, Salfit JSC 6 persons
7	Thu	Discussion on the daily inspection sheet	Nablus JSC, Qalqilya JSC, Salfit JSC 6 persons
8	Fri	Documentation	
9	Sat	Documentation	
10	Sun	Discussion on the periodical inspection sheet	Nablus JSC, Qalqilya JSC, Salfit JSC 6 persons
11	Mon	Practical trainings on daily and periodical inspection	Nablus JSC, Qalqilya JSC, Salfit JSC 6 persons
12	Tue	Finalization of daily and periodical inspection check sheets (reconsideration and modification), summary	Nablus JSC, Qalqilya JSC, Salfit JSC 6 persons
13	Wed	Kick-off meeting Discussion on the safety check sheet Discussion on the disposal requirements	North-East & South-East Jerusalem JSC, Jerico JSC 4 persons
14	Thu	Practical training by using the check sheets and explanatory material	North-East & South-East Jerusalem JSC, Jerico JSC 4 persons
15	Fri	Documentation	
16	Sat	Documentation	
17	Sun	Finalization of the safety check sheets and disposal requirements (reconsideration and modification)	North-East & South-East Jerusalem JSC, Jerico JSC 4 persons
18	Mon	Discussion on the periodical inspection sheet	North-East & South-East Jerusalem JSC, Jerico JSC 4 persons
19	Tue	Discussion on the daily inspection sheet	North-East & South-East Jerusalem JSC, Jerico JSC 4 persons
20	Wed	Practical trainings on daily and periodical inspection	North-East & South-East Jerusalem JSC, Jerico JSC 4 persons
21	Thu	Finalization of daily and periodical inspection check sheets (reconsideration and modification), summary	North-East & South-East Jerusalem JSC, Jerico JSC 4 persons
22	Fri	Reporting to MoLG, traveling (Tel Aviv→Istanbul)	
23	Sat	Traveling (Istanbul→Tokyo)	

*Traveling: 4 days round trip, documentation for 4 days

6.3 Guidance to JSCs and medical facilities on the manifest system described in SOPs

The users of the manifest system are medical facilities and JSCs, and their supervisory bodies are mainly the MoH and EQA. A workshop will be held at the start of the soft component to explain the SOP's manifest system to the medical facilities by the MoH and to the JSC by the MoLG. After the explanation of the system, the Japanese consultants will check the actual operation of the manifest for discharge, collection, transportation, and intermediate treatment of infectious waste, and point out any inadequacies to the MoH and MoLG for improvement.

The person-months required for Japanese consultant expected to provide technical guidance are as follows;

- i Domestic work: 1 Japanese consultant for 1 day (0.05 person-month)
- ii Local work: 1 Japanese consultant for 9 days (0.30 person-month), 1 local consultant / 1 interpreter for 7 days (0.23 person-month)
- iii Domestic work: 1 Japanese for 0.5 days (0.025 person-month)

Table 6 Number of days to provide guidance to JSCs and medical facilities on the manifest system described in SOPs

Contents of Instruction	Period	Japanese consultant	Interpreter (Local consultant)
● Explanatory Workshop of SOP Manifest System	Year: 2024 Month: TBD	1 day	1 day
● Confirm SOP Manifest System with MoLG, MoH, and EQA		1 day	1 day
● Guidance on the operation of the Manifest and formulation of a manual for its use (Instruction to one JSC per day) 1 st day: Nablus JSC 2 nd day: Qalqilya JSC 3 rd day: Salfit JSC 4 th day: NE&SE Jerusalem JSC 5 th day: Jericho JSC		5 days	5 days
Total (Actual working days)		7 days	7 days
Total (Required days)*		9 days	7 days

*Record under “Guidance to disposal site SVs and heavy equipment operators on proper disposal methods” because the same Japanese consultant will be in charge of this project as “Guidance to disposal site SVs and heavy equipment operators on proper disposal methods”.

*2 days to organize materials

Table 7 Process for implementing the guidance to JSCs and medical facilities for the manifest system described in SOPs

Days	Date	Contents of Instruction	Target Facility / Target Organization	Expected number of participants
1	Sun	Workshop	Target JSCs (Relevant organizations invited by JSCs)	
2	Mon	Confirm SOP manifest system with MoLG, MoH, and EQA	MoLG, MoH, EQA	6
3	Tue	Guidance on the operation of the Manifest and formulation of a manual for its use	Nablus JSC	6
4	Wed	Guidance on the operation of the Manifest and formulation of a manual for its use	Qalqilya JSC	6
5	Thu	Guidance on the operation of the Manifest and formulation of a manual for its use	Salfit JSC	6
6	Fri	Internal Discussion		
7	Sat	Internal Discussion		
8	Sun	Guidance on the operation of the Manifest and formulation of a manual for its use	NE&SE Jerusalem JSC	6
9	Mon	Guidance on the operation of the Manifest and formulation of a manual for its use	Jericho JSC	6

6.4 Instruction of disposal site supervisors and heavy equipment operators on proper disposal methods

A final disposal operation manual will be developed for the disposal of infectious waste, which will

be used to instruct JSC's disposal site supervisors and heavy equipment operators on proper disposal methods.

(1) Preparation of landfill plans for treated infectious waste and general waste

Short-term and long-term landfill plans should be developed depending on the waste to be delivered. The short-term plan should be formulated monthly to determine the landfill sites, preparation of soil cover and covering plan, and to monitor whether the plan has been implemented as planned. Long-term plans, on the other hand, are developed on an annual basis and include plans for closure of the current disposal site and preparation for future sites. These plans will include plans for the maintenance and procurement of heavy equipment and will serve as the basis for obtaining the necessary budget.

(2) Development of standard landfill operation manual

Basic daily landfill operations include spreading and compacting waste unloaded from collection vehicles and covering the waste with heavy equipment. Specific operation manuals should be prepared to make these landfill operations easy for operators of heavy equipment to understand.

(3) Development of safety operation manual

Since work using heavy machinery involves many risks such as accidents, in addition to the work manuals mentioned above, a new manual that contributes to raising awareness of occupational safety and health in general is to be developed and disseminated to all concerned.

(4) Development of emergency response manual

Waste collapse and fire accidents occur at improper waste landfills. To prevent these, it is necessary to formulate the manual mentioned above, but it is also necessary to consider what to do if an accident should occur. Furthermore, while there is no problem if the infectious waste treatment facility is operating properly, the final disposal site should consider alternative means of disposal if the treatment facility becomes inoperable. For example, a landfill site dedicated to infectious waste that can be isolated from the outside world should be prepared. A manual should be developed for each risk to provide emergency measures in the event of such a risk.

The man-months required for Japanese technicians envisaged for technical guidance are as follows.

- i Domestic work: 1 Japanese consultant for 1 day (0.05 person-month)
- ii Local work: 1 Japanese consultant for 26 days (0.87 person-month), 1 local consultant/interpreter for 16 days (0.53 person-month)
- iii Domestic work: 1 Japanese for 0.5 days (0.025 person-month)

Table 8 Number of days planned to implement instruction to heavy equipment operators on proper landfill method and supervision of landfill operations

Contents of Instruction	Scheduled Period	Japanese Consultant	Interpreter (local employee)	Sanitary Landfill	
				Zahrat Al-Finjan	Al-Minya
				【Person to be instructed at each landfill】 Engineer: 1 person Landfill manager: 2 persons Heavy equipment operator: 1 person	
Study on operational procedures for a sanitary landfill	Year: 2024 Month: TBD	2 days	2 days	1 day	1 day
Formulation of landfill plans for treated infectious and municipal waste		1 day	1 day	Half day	Half day
Preparation of standard landfill operation manuals		1 day	1 day	Half day	Half day
Preparation of safety work manuals		1 day	1 day	Half day	Half day
Preparation of manuals for handling emergencies		1 day	1 day	Half day	Half day
Practical instruction on the operation of heavy equipment at sanitary landfill site		10 days	10 days	5 days (Day 1: Explanation of the manuals and instruction of landfill disposal Day 2-Day5: Instruction of landfill disposal)	5 days (Same as left)
Total (actual working day)		16 days	16 days	8 days	8 days
Total (necessary working day)*	26 days	16 days	-	-	

*Travel: 4 days, Documentation, and internal meeting (combined with the work in 6.3): 6 days

Table 9 Implementation schedule of instruction to heavy equipment operators on proper landfill method and supervision of landfill operations

No.	Day	Contents of Instruction	Target Facilities (SLF*)	Expected Number of Participants
1	Fri	Travel **(Tokyo – Istanbul)		
2	Sat	Travel (Istanbul – Tel Aviv)		
	Sun			
	Mon			
	Tue	Instruction to JSC and medical institutions on the manifest system described in the SOPs		
	Wed			
	Thu			
	Fri			
	Sat			
	Sun			
	Mon			
3	Tue	Study on operational procedures for a sanitary landfill	Zahrat Al-Finjan	5 persons
4	Wed	<ul style="list-style-type: none"> ■ Formulation of landfill plans for treated infectious and municipal waste ■ Preparation of standard landfill operation manuals 	Zahrat Al-Finjan	5 persons
5	Thu	<ul style="list-style-type: none"> ■ Preparation of safety work manuals ■ Preparation of manuals for handling emergencies 	Zahrat Al-Finjan	5 persons
6	Fri	Documentation and internal meeting** (as needed)		
7	Sat	ditto		
8	Sun	Explanation of the manuals and instruction of landfill disposal	Zahrat Al-Finjan	5 persons
9	Mon	Instruction of landfill disposal	Zahrat Al-Finjan	5 persons
10	Tue	Instruction of landfill disposal	Zahrat Al-Finjan	5 persons
11	Wed	Instruction of landfill disposal	Zahrat Al-Finjan	5 persons
12	Thu	Instruction of landfill disposal	Zahrat Al-Finjan	5 persons
13	Fri	Documentation and internal meeting (as needed)		
14	Sat	ditto		
15	Sun	Survey on operational procedures for a sanitary landfill	Al-Minya	5 persons
16	Mon	<ul style="list-style-type: none"> ■ Formulation of landfill plans for treated infectious and municipal waste ■ Preparation of standard landfill operation manuals 	Al-Minya	5 persons
17	Tue	<ul style="list-style-type: none"> ■ Preparation of safety work manuals ■ Preparation of manuals for handling emergencies 	Al-Minya	5 persons
18	Wed	Explanation of the manuals and instruction of landfill disposal	Al-Minya	5 persons
19	Thu	Instruction of landfill disposal	Al-Minya	5 persons
20	Fri	Documentation and internal meeting (as needed)		
21	Sat	ditto		
22	Sun	Instruction of landfill disposal	Al-Minya	5 persons
23	Mon	Instruction of landfill disposal	Al-Minya	5 persons
24	Tue	Instruction of landfill disposal	Al-Minya	5 persons
25	Wed	Travel (Tel Aviv – Istanbul)		
26	Thu	Travel (Istanbul – Tokyo)		

*SLF: Sanitary Landfill

** Travel: 4 days, Documentation, and internal meeting: 6 days

6.5 Guidance on the development of operating rules and regulations, including procedures for the maintenance and management of heavy equipment at the disposal site, work rules, and health and safety implementation items.

A manual on the maintenance of heavy equipment for final disposal site management will be developed and JSC will be guided by this manual.

(1) Development of manuals for daily inspection/cleaning item tables and implementation record lists

Before the start of work, the operator visually checks the operation of heavy equipment to find any defects early and adjust and maintenance to minimize breakdowns. Since much of the work at the final disposal site is done in dust (sand), cleaning should be performed by blowing compressed air on radiators and other areas prone to contamination. A manual for conducting such daily inspections and cleaning should be prepared and implemented.

(2) Development of manuals for periodic maintenance item list, implementation record list, and inventory control of spare parts and consumables

Regular inspections by mechanics, tensioning of belts and caterpillars, and replacement of filters and other parts, oil and grease, hydraulic fluid, etc. will reduce breakdowns and increase the life of heavy equipment. Since an inventory of spare parts and consumables is essential for these preventive maintenance activities, an inventory list and inventory control are necessary.

(3) Preparation of maintenance and repair record sheets, and development of manuals for analysis and remediation methods

Periodic preventive maintenance is basically planned and performed according to the manufacturer's recommendations, but in special environments such as final waste disposal sites, the maintenance cycle and content may need to be changed to suit the site. In addition, since problems due to improper handling of heavy equipment can be expected, a list of past and future breakdowns, repairs, and maintenance can be compiled and analyzed to provide more effective maintenance plans and training materials for operators.

The man-months required for Japanese technicians envisaged for technical guidance are as follows.

- i. Domestic work: 1 Japanese for 2 days (0.10 person-month)
- ii. Local work: 1 Japanese for 34 days (1.13 person-month), 1 local consultant/interpreter for 22 days (0.73 person-month)
- iii. Domestic work: 1 Japanese for 1 day (0.05 person-month)

Table 10 Number of days planned to implement on the formulation of operating rules and regulations, including procedures for the maintenance and management of heavy equipment for landfill, work rules, and health and safety implementation items

Contents of Instruction	Scheduled Period	Japanese Consultant	Interpreter (local employee)	Sanitary Landfill	
				Zahrat Al-Finjan	Al-Minya
				【Person to be instructed at each landfill】 Engineer: 1 person Landfill manager: 2 persons Heavy equipment operator: 2 persons	
Study on maintenance and management for a sanitary landfill	Year: 2024 Month: TBD	4 days	4 days	2 days	2 days
Preparation of manuals for daily inspection/cleaning item list and implementation record chart		4 days	4 days	2 days	2 days
Preparation of periodic maintenance item lists and implementation records, and inventory management of spare parts and consumables		4 days	4 days	2 days	2 days
Preparation of manuals for maintenance and repair record sheets, analysis of results, and methods of improvement		4 days	4 days	2 days	2 days
Practical instruction on sanitary landfill operation		6 days	6 days	3 days (Day 1: daily inspection, cleaning Day 2: inventory management of spare parts and consumables Day 3: maintenance and repair record)	3 days (Same as left)
Total (actual working day)		22 days	22 days	11 days	11 days
Total (necessary working day) *	34 days	22 days	-	-	

* Travel: 4 days, Documentation, and internal meeting: 8 days

Table 11 Implementation schedule of Instruction on the formulation of operating rules and regulations, including procedures for the maintenance and management of heavy equipment for landfill, work rules, and health and safety implementation items

No.	Day	Contents of Instruction	Target Facilities (SLF*)	Expected Number of Participants
1	Fri	Travel (Tokyo – Istanbul)		
2	Sat	Travel (Istanbul – Tel Aviv)		
3	Sun	Study on maintenance and management for sanitary landfill	Zahrat Al-Finjan	
4	Mon	ditto	Zahrat Al-Finjan	
5	Tue	Preparation of manuals for daily inspection/cleaning item list and implementation record chart	Zahrat Al-Finjan	
6	Wed	ditto	Zahrat Al-Finjan	
7	Thu	Preparation of periodic maintenance item lists and implementation records, and inventory management of spare parts and consumables	Zahrat Al-Finjan	
8	Fri	Documentation and internal meeting (as needed)		
9	Sat	ditto		
10	Sun	Preparation of periodic maintenance item lists and implementation records, and inventory management of spare parts and consumables	Zahrat Al-Finjan	
11	Mon	Preparation of manuals for maintenance and repair record sheets, analysis of results, and methods of improvement	Zahrat Al-Finjan	
12	Tue	ditto	Zahrat Al-Finjan	5 persons
13	Wed	Practical instruction on sanitary landfill operation (daily inspection, cleaning)	Zahrat Al-Finjan	5 persons
14	Thu	Practical instruction on sanitary landfill operation (inventory management of spare parts and consumables)	Zahrat Al-Finjan	5 persons
15	Fri	Documentation and internal meeting (as needed)		
16	Sat	ditto		
17	Sun	Practical instruction on sanitary landfill operation (maintenance and repair record)	Zahrat Al-Finjan	5 persons
18	Mon	Survey on operational procedures for sanitary landfill	Al-Minya	5 persons
19	Tue	ditto	Al-Minya	5 persons
20	Wed	Preparation of manuals for daily inspection/cleaning item list and implementation record chart	Al-Minya	5 persons
21	Thu	ditto	Al-Minya	5 persons
22	Fri	Documentation and internal meeting (as needed)		
23	Sat	ditto		
24	Sun	Preparation of periodic maintenance item lists and implementation records, and inventory management of spare parts and consumables	Al-Minya	5 persons
25	Mon	ditto	Al-Minya	5 persons
26	Tue	Preparation of manuals for maintenance and repair record sheets, analysis of results, and methods of improvement	Al-Minya	5 persons
27	Wed	ditto	Al-Minya	5 persons
28	Thu	Practical instruction on sanitary landfill operation (daily inspection, cleaning)	Al-Minya	5 persons
29	Fri	Documentation and internal meeting (as needed)		
30	Sat	ditto		
31	Sun	Practical instruction on sanitary landfill operation (inventory management of spare parts and consumables)	Al-Minya	5 persons
32	Mon	Practical instruction on sanitary landfill operation (maintenance and repair record)	Al-Minya	5 persons
33	Tue	Travel (Tel Aviv – Istanbul)		
34	Wed	Travel (Istanbul – Tokyo)		

7 Methods for Procuring Resources to Implement the Soft Component

This soft component will be a hybrid of direct support by Japanese consultants and local consultant support. The software components will support the confirmation of procedures for the maintenance of microwave sterilizers and the preparation of daily and periodic inspection check sheets, the proper final disposal of infectious waste after treatment by JSC, and the maintenance of heavy equipment for the management of final disposal sites by JSC. The project is based on the dispatch of three Japanese

consultants with expertise in these fields, with the addition of one local consultant and one local interpreters (English-Arabic) to provide effective technical guidance in a short period of time.

8 Soft Component Output

Table 12 Soft Component Output

Deliverables	Users	Language	Remarks
1. Instruction on maintenance and management of infectious waste treatment equipment			
<ul style="list-style-type: none"> ● Daily inspection check sheet ● Periodic inspection check sheet 	Nablus JSC Qalqilya JSC Salfeet JSC NE & SE Jerusalem JSC Jericho JSC	English/Arabic	<p><u>Daily inspection check sheet:</u> Set and describe inspection items and check them before and after operation. Place the sheet on the control panel of the microwave sterilizer. 1 sheet of A4-size paper/month.</p> <p><u>Periodic inspection check sheet:</u> Set and describe inspection items including information such as replacement parts and other items, replacement dates, stock status, ordering dates, and contact information for maintenance. Place the sheet at the workshop or office in charge of maintenance. 1 sheet of A4-size paper/month.</p>
2. Instruction on safety measures in the collection, transport, and disposal of infectious waste			
<ul style="list-style-type: none"> ● Safety check sheet ● Explanatory materials on infectious waste discharge requirements 	Nablus JSC Qalqilya JSC Salfeet JSC NE & SE Jerusalem JSC Jericho JSC	English/Arabic	<p><u>Safety check sheet:</u> Set and describe items to be checked and check them at the time of collection. Place the sheet in the collection vehicles. 1 sheet of A4-size paper/month (pouch processing for waterproof).</p> <p><u>Explanatory materials on infectious waste discharge requirements</u> Describe and explain improvements related to discharge incidents that lead to infection incidents. Place the materials in the collection vehicles. 1 sheet of A4-size paper.</p>
3. Instruction to JSC and medical institutions on the manifest system described in the SOPs			
<ul style="list-style-type: none"> ● Manifest user manual 	Nablus JSC Qalqilya JSC Salfeet JSC NE & SE Jerusalem JSC Jericho JSC	English/Arabic	If there is an existing manifest user manual, update it as needed.
4. Instruction to heavy equipment operators on proper disposal method and supervision of landfill operations			
<ul style="list-style-type: none"> ● Standard landfill operation manuals ● Safety work manuals ● Manuals for handling emergencies 	Jenin JSC Higher Hebron & Bethlehem JSC	English/Arabic	Distribute to officials of the sanitary landfills.
5. Instruction on the formulation of operating rules and regulations, including procedures for the maintenance and management of heavy equipment for landfill, work rules, and health and safety implementation items			
<ul style="list-style-type: none"> ● Manuals for implementation record chart ● Manuals for inventory management of spare parts and consumables ● Manuals for methods of improvement 	Jenin JSC Higher Hebron & Bethlehem JSC	English/Arabic	<p>Distribute to workshop staff.</p> <p>Manuals for implementation record chart: daily inspection/cleaning item lists</p> <p>Manuals for inventory management of spare parts and consumables: maintenance item lists, implementation records, inventory of spare parts and consumables</p> <p>Manuals for methods of improvement: maintenance and repair record sheets</p>

9 Soft Component Implementation Process

The implementation schedule for soft component activities is shown on the next page.

10 Responsibilities of Implementing Agencies in Partner Countries

This soft component will be implemented with the aim of enhancing the sequence of infectious waste from the medical facility where it is generated to its final disposal at a disposal site, and to ensure that maintenance equipment is used more effectively and sustainably.

The MoLG and each JSC will ensure that engineers in charge of operation and maintenance of equipment are assigned prior to the implementation of the soft component, and that the director of the MoLG and each JSC will be responsible for having the target engineers participate in each instruction during implementation. The MoLG will also coordinate with EQA, MOH, and other related organizations to select participants for the seminar and request their participation.

In order for the skills acquired in this soft component to take root and become a habit, the MoLG and the director of each JSC should supervise the work of the engineers in charge of equipment maintenance and management and provide leadership to ensure that equipment maintenance and management work is positioned as an important part of their work. The director of each JSC should provide guidance and supervision daily to ensure that daily and periodic inspections are carried out on the equipment at their facilities, and the MoLG should visit each JSC on a regular basis to provide guidance and advice.

MoLG and each JSC are also responsible for properly monitoring the availability of equipment, consumables, and replacement parts, and securing budgets for the following fiscal year.

[End of Document]

Appendix 6 List of Equipment

(1) Equipment for general waste

Waste collection vehicles

Table: Waste collection vehicles owned by JSC

No.	Items	Manufacturer	Capacity (m ³)	Q'ty	Procurement year	Parking place (Collection area)	Status
N & NW Jerusalem JSC							
1	Compactor truck	Iveco	8	1	2020	Beit Anan LF	Very good
2	Compactor truck	Iveco	13	1	2020	Beit Anan LF	Very good
3	Compactor truck	Iveco	13	1	2020	Beit Anan LF	Very good
4	Compactor truck	Iveco	13	1	2020	Beit Anan LF	Very good
5	Compactor truck	Iveco	8	1	2020	Beit Anan LF	Very good
6	Compactor truck	Iveco	8	1	2020	Beit Anan LF	Very good
7	Compactor truck	Volvo	12	1	2011	Beit Anan LF	Not working
8	Compactor truck	Volvo	13	1	2016	Biddu municipality	Good
9	Compactor truck	Volvo	8	1	1999	Aljeib municipality	Not working
10	Compactor truck	Volvo	12	1	2005	Beir Nabala municipality	Not working
11	Compactor truck	Isuzu	8	1	2000	Beit Suriek municipality	Not working
12	Compactor truck	Volvo	8	1	2011	Beit Anan LF	Not working
13	Compactor truck	Iveco	12	1	2010	Beit Anan LF	Not working
14	Compactor truck	Volvo	8	1	1999	Beit Anan LF	Not working
NE & SE Jerusalem							
1	Compactor truck	Iveco	13	1	2020	Al-Ram Municipality	Good
2	Compactor truck	Iveco	13	1	2020	Al-Ram Municipality	Good
3	Compactor truck	Iveco	21	1	2020	Al-Aizaria Municipality	Good
4	Compactor truck	Iveco	13	1	2020	Al-Aizaria Municipality	Good
5	Compactor truck	Iveco	8	1	2020	Abu-Deas Municipality	Good
6	Compactor truck	Iveco	8	1	2020	Kufer Aqab Municipality	Good
7	Compactor truck	Iveco	8	1	2020	Sawahra municipality	Good
8	Compactor truck	Iveco	8	1	2020	Alzayim Municipality	Good
9	Compactor truck	Iveco	13	1	2020	Jaba Council	Good
10	Compactor truck	Volvo	13	1	1999	AL-Ram	Bad
11	Compactor truck	Volvo	8	1	1999	AL-Ram	Bad
12	Compactor truck	Volvo	8	1	2019	Hizma	Lots of maintenance
13	Compactor truck	Volvo	13	2	2014	Anata	Bad
14	Compactor truck	Volvo	8	1	1999	Anata	Bad
15	Compactor truck	Volvo	10	1	2012	Aizaria	Bad

No.	Items	Manufacturer	Capacity (m ³)	Q'ty	Procurement year	Parking place (Collection area)	Status
16	Compactor truck	Isuzu	5	1	2003	Aizaria	Bad
17	Compactor truck	Volvo	6	2	2009	Aizaria	Bad
Qalqeliya JSC							
1	Compactor truck	MAN	18	1	2011	Qalqilya TS	Bad
2	Compactor truck	Volvo	12	2	2011	Qalqilya TS	Not working
3	Compactor truck	Volvo	8	1	2011	Qalqilya TS	Not working
4	Compactor truck	Iveco	8	3	2020	Qalqilya Mun.	Very good
5	Compactor truck	Iveco	13	3	2020	Qalqilya Mun.	Very good
6	Compactor truck	Iveco	21	1	2020	Qalqilya Mun.	Very good
Nablus JSC							
1	Compactor truck	Iveco	12	2	2009	New JSC parking place	Bad
2	Compactor truck	Volvo	8	3	2012	New JSC parking place	Bad
3	Compactor truck	Iveco	12	1	1999	New JSC parking place	Not working
4	Compactor truck	Iveco	8	3	2021	New JSC parking place	Very good
5	Compactor truck	Iveco	13	6	2021	New JSC parking place	Very good
6	Compactor truck	Iveco	21	2	2021	New JSC parking place	Very good
7	Compactor truck	Volvo	8	3	2021	New JSC parking place	Very good
8	Compactor truck	Volvo	12	2	2021	New JSC parking place	Very good
9	Compactor truck	Volvo	21	2	2021	New JSC parking place	Very good
10	Compactor truck	Iveco	12	1	2019	New JSC parking place	Very good
11	Grapple crane	Volvo	12	1	2021	New JSC parking place	Very good
Tubas JSC							
1	Compactor truck	Iveco	12	2	2021	home	Very good
2	Compactor truck	Iveco	8	3	2021	home	Very good
3	Compactor truck	Volvo	8	1	2012	garage	Not working
4	Compactor truck	Volvo	8	1	1999	garage	Not working
5	Compactor truck	Volvo	12	1	1999	garage	Not working
6	Compactor truck	Isuzu	4	1	2000	garage	Not working
7	Compactor truck	Isuzu	8	1	2016	home	Very good
Tulkarm JSC							
1	Compactor truck	Iveco	12	10	2009	Transfer Station	Exhausted
2	Compactor truck	Volvo	5	1	2009	Transfer Station	Exhausted
3	Compactor truck	Volvo	5	1	2010	Transfer Station	Exhausted
4	Compactor truck	Volvo	8	2	2010	Transfer Station	Exhausted
5	Compactor truck	Volvo	12	2	2015	Transfer Station	Bad

No.	Items	Manufacturer	Capacity (m ³)	Q'ty	Procurement year	Parking place (Collection area)	Status
6	Compactor truck	Iveco	8	1	2020	Transfer Station	Very good
7	Compactor truck	Iveco	12	2	2020	Transfer Station	Very good
8	Compactor truck	Iveco	21	1	2021	Transfer Station	Very good
9	Compactor truck	Iveco	13	4	2021	Transfer Station	Very good
10	Hook lift truck	-	10	1	2019	Transfer Station	Good but over load
Salfit JSC							
1	Compactor truck	Iveco	8	1	2009	Municipality Yard	Good
2	Compactor truck	Iveco	8	2	2009	JSC Yard	Not working
3	Compactor truck	Volvo	13	1	2016	JSC Yard	Very good
4	Compactor truck	Volvo	5	2	2016	JSC Yard	Not working
5	Compactor truck	Iveco	13	2	2020	JSC Yard	Very good
6	Hook lift truck	Volvo	10	1	2016	JSC	Very good
7	Grapple crane	Volvo	19	1	2019	JSC Yard	Very good
Jericho JSC							
1	Compactor truck	Isuzu	5	1	1999	Jericho new Parck	Not working
2	Compactor truck	Iveco	12	1	2009	Jericho new Parck	Not working
3	Compactor truck	Iveco	8	1	2009	Jericho new Parck	Not working
4	Compactor truck	Volvo	6	1	2015	Jericho new Parck	Good
5	Compactor truck	Volvo	6	1	2016	Jericho new Parck	Good
6	Compactor truck	Volvo	13	2	2015	Jericho new Parck	Good
7	Compactor truck	Iveco	8	2	2016	Jericho new Parck	Good
8	Compactor truck	Iveco	8	2	2020	Jericho new Parck	Very good
9	Compactor truck	Iveco	12	3	2020	Jericho new Parck	Very good
10	Hook lift truck	Iveco	10	1	2016	Jericho city only	Good
11	Hook lift truck	Iveco	10	1	2009	Jericho city only	Bad
12	Grapple crane	Volvo	15	1	2009	Jericho city only	Bad
Bethlehem JSC							
1	Compactor truck	Volvo	21	1	2015	(Beit Jala)	Very good
2	Compactor truck	Volvo	21	1	2015	(Bethlehem, Unrwa)	Very good
3	Compactor truck	Volvo	21	1	2015	-	Very good
4	Compactor truck	Iveco	16	1	2015	(Al khader)	Very good
5	Compactor truck	Volvo	16	1	2015	(Azaatra, Ubaiydyda)	Very good
6	Compactor truck	Volvo	13	1	2020	(Bethlehem, Tuqu, South rural)	Very good
7	Compactor truck	Iveco	13	1	2020	-	Very good
8	Compactor truck	Iveco	13	1	2021	(Beit Jala)	Very good

No.	Items	Manufacturer	Capacity (m ³)	Q'ty	Procurement year	Parking place (Collection area)	Status
9	Compactor truck	Iveco	13	1	2021	(Beit sahor, Doha, Spare)	Very good
10	Compactor truck	Iveco	13	1	2021	(Beit sahour)	Very good
11	Compactor truck	Iveco	13	1	2021	(Spare, Bethlehem)	Very good
12	Compactor truck	Iveco	13	1	2021	(Spare, Bethlehem)	Very good
13	Compactor truck	Iveco	13	1	2021	(Bethlehem, spare)	Very good
14	Compactor truck	Iveco	12	1	2009	-	Not working
15	Compactor truck	Iveco	12	1	2009	-	Not working
16	Compactor truck	Iveco	12	1	2009	-	Not working
17	Compactor truck	Iveco	12	1	2009	(Al khader)	Bad
18	Compactor truck	Iveco	12	1	2009	-	Not working
19	Compactor truck	Iveco	12	1	2009	-	Not working
20	Compactor truck	Iveco	12	1	2009	-	Not working
21	Compactor truck	Volvo	8	1	2020	-	Very good
22	Compactor truck	Iveco	8	1	2020	(Nahhalin, Walaja, Sounth rural)	Very good
23	Compactor truck	Iveco	8	1	2020	(Battir, Shawara, Sounth, Bethlehem)	Very good
24	Compactor truck	Iveco	8	1	2009	(spare)	Bad
25	Compactor truck	Iveco	8	1	2009	-	Not working
26	Compactor truck	Iveco	8	1	2009	(Ubaidya)	Bad
27	Compactor truck	Volvo	5	1	2009	(Zaatara, Beit tamar, South rural)	Bad
28	Compactor truck	Volvo	5	1	2009	-	Not working
29	Compactor truck	Volvo	5	1	2009	(Bethlehem, Artas, Al minya)	Good
30	Compactor truck	Volvo	5	1	2009	(Beit Jala, Service area)	Bad
31	Compactor truck	Iveco	5	1	2020	-	Not working
32	Compactor truck	Isuzu	3	1	2000	-	Not working
33	Compactor truck	Isuzu	3	1	2000	(Bethlehem)	Bad
34	Compactor truck	Iveco	19	1	2021	(JSC service area)	Very good
35	Hook lift truck	Volvo	10	1	2015	(JSC service area)	Good
36	Mini tipper	Eco Daily	3	1	2020	(JSC service area)	Very good
Hebron JSC							
1	Compactor truck	Volvo	21	4	2011	HJSC PARKING	Bad
2	Compactor truck	Volvo	8	3	2011	HJSC PARKING	Bad
3	Compactor truck	Volvo	13	6	2011	HJSC PARKING	Bad
4	Grapple crane	Volvo	21	1	2011	HJSC PARKING	Not working

No.	Items	Manufacturer	Capacity (m ³)	Q'ty	Procurement year	Parking place (Collection area)	Status
5	Compactor truck	Iveco	21	2	2013	HJSC PARKING	Bad
6	Compactor truck	Iveco	13	1	2012	HJSC PARKING	Not working
7	Compactor truck	Volvo	21	3	2015	HJSC PARKING	Good
8	Compactor truck	Volvo	13	2	2015	HJSC PARKING	Good
9	Compactor truck	Volvo	8	1	2015	HJSC PARKING	Good
10	Compactor truck	Volvo	6	1	2015	HJSC PARKING	Good
11	Grapple crane	Volvo	19	1	2015	HJSC PARKING	Good
12	Compactor truck	Iveco	21	2	2020	HJSC PARKING	Very good
13	Compactor truck	Iveco	13	4	2020	HJSC PARKING	Very good
14	Compactor truck	Volvo	8	1	2009	HJSC PARKING	Not working
15	Compactor truck	Iveco	13	1	2009	HJSC PARKING	Not working
Jenin JSC							
1	Compactor truck	Iveco	8	4	2020	JSC Parking area	Very good
2	Compactor truck	Iveco	13	9	2020	JSC Parking area	Very good
3	Compactor truck	Iveco	21	3	2020	JSC Parking area	Very good
4	Compactor truck	Volvo	19	1	2011	JSC Parking area	Bad
5	Compactor truck	Volvo	21	2	2008	JSC Parking area	Bad
6	Compactor truck	Scania	21	1	2008	JSC Parking area	Bad
7	Compactor truck	DAF	21	1	2003	JSC Parking area	Bad
8	Compactor truck	DAF	21	1	2008	JSC Parking area	Bad
9	Compactor truck	DAF	8	2	2010	JSC Parking area	Bad
10	Compactor truck	Volvo	8	4	2011	JSC Parking area	Bad
11	Compactor truck	Renault	12	1	2008	JSC Parking area	Bad
12	Compactor truck	Volvo	8	2	2015	JSC Parking area	Good
13	Compactor truck	Isuzu	4	2	2000	JSC Parking area	Bad
14	Compactor truck	DAF	8	1	2008	JSC Parking area	Bad
15	Compactor truck	Volvo	12	1	2011	JSC Parking area	Bad
16	Compactor truck	Isuzu	8	1	2011	JSC Parking area	Bad
17	Compactor truck	Volvo	12	1	2012	JSC Parking area	Good
18	Compactor truck	MAN	12	1	2014	JSC Parking area	Good
19	Compactor truck	DAF	21	1	2011	JSC Parking area	Good
Ramallah JSC							
1	Compactor truck	Iveco	8	4	2018	JSC Garage	Good
2	Compactor truck	Iveco	13	2	2018	JSC Garage	Good
3	Compactor truck	Iveco	13	13	2020	JSC Garage	Good

No.	Items	Manufacturer	Capacity (m ³)	Q'ty	Procurement year	Parking place (Collection area)	Status
4	Compactor truck	Volvo	13	1	2021	JSC Garage	Good

Containers

Table: Containers owned by JSC

No.	Item	Q'ty	Location	Status*
N & NW Jerusalem JSC				
1	1.1 m ³ Container	1,750	Distributed to LGUs	Bad
2	240L Container	470	Distributed to LGUs	Bad
3	4 m ³ Container	18	Beir Nabala, Aljdeera, & Al-Jeib	V. Bad
NE & SE Jerusalem JSC				
1	1.1 m ³ Container	968	ALL local council and municipality	500 are Bad
2	4 m ³ Container	50	Al-Ram and Alaizaria	30 are Bad
3	40 m ³ Container	8	Sawahra transfer station	Good
4	40 m ³ Container	2	Transfer station	Good
Qalqeliya JSC				
1	1.1 m ³ Container	1,050	All LGUs	Bad
2	240L Container	1,260	All LGUs	Good
3	10 m ³ Container	10	Belong to Qalqiliya Municipality	Bad
4	40 m ³ Container	3	Not used	Not working
Nablus JSC				
1	1.1 m ³ Container	3,000	In different LGUs	Different condition / most of them bad
2	240L Container	6,500	In different LGUs	Very good
Tubas JSC				
1	1.1 m ³ Container	600	JSC District	Good
2	240L Container	1,000	JSC District	Good
3	40 m ³ Container	3	Transfer station	Bad
Tulkarm JSC				
1	1.1 m ³ Container	5,000	-	Middle
2	240L Container	1,000	-	Middle
3	10 m ³ Container	7	Tulkarem city	Good
4	40 m ³ Container	17	Transfer station	12 are Bad
Salfit JSC				
1	1.1 m ³ Container	2,800	Municipalities-Local Councils	Bad
2	240L Container	700	Municipalities-Local Councils	Middle
3	10 m ³ Container	6	Municipalities-Local Councils	Bad
4	40 m ³ Container	2	Municipalities-Local Councils	Bad

No.	Item	Q'ty	Location	Status*
Jericho JSC				
1	1.1 m ³ Container	1,350	In the JSC area of Service, Mainly in Jericho	80% are Bad
2	4 m ³ Container	26	Jericho	Good to bad
3	10 m ³ Container	28	Jericho	Good to bad
Hebron JSC				
1	1.1 m ³ Container	2,800	Municipalities and local government authorities	2,500 are bad
2	240L Container	800	Municipalities and local government authorities	500 are bad
3	4 m ³ Container	1,100	Municipalities and local government authorities	700 are bad
4	40 m ³ Container	3	Yatta transfer station	Good
Jenin JSC				
1	1.1 m ³ Container	3,000	-	Bad
2	240L Container	5,000	-	Bad
3	4 m ³ Container	80	-	Bad
4	40 m ³ Container	8	West Jenin	Bad
Ramallah JSC				
1	1.1 m ³ Container	3,000	71 LGUs	V. Bad
2	240L Container	4,000	71 LGUs	V. Bad
3	4 m ³ Container	20	5 LGUs	Good
Bethlehem JSC				
1	1.1 m ³ Container	2,343	-	Middle
2	240L Container	2,472	-	Middle
3	4 m ³ Container	78	-	Middle
4	10 m ³ Container	3	-	Middle

Transporters

Table: Transporters owned by JSC

No.	Items	Manufacturer	Capacity (m ³)	GVW (ton)	Procurement year	Working place	Status*
NE & SE Jerusalem JSC							
1	Hook lift with trailer	Volvo	40	32	2018	Transfer station	Good
Qalqeliya JSC							
1	Hook lift	Volvo	40	18	2003	-	Not working
2	Trailer	CLYN	40	-	2006	-	Not working
Nablus JSC (Owned by Private sector)							
1	Hook lift with trailer		40	32	-	Transfer station	Working
Tubas JSC (Owned by Private sector)							
1	Hook lift with trailer	Volvo	40	32	-	Transfer station	Good
Tulkarm JSC							
1	Hook lift with trailer	Volvo	40	32	2009	Transfer Station	Exhausted
2	Hook lift with trailer	Volvo	40	32	2010	Transfer Station	Exhausted
3	Hook lift	Volvo	40	32	2015	Transfer Station	Exhausted
Salfit JSC							
1	Hook lift with trailer	Iveco	25	-	2009	-	Not working
2	Hook lift with trailer	Volvo	40	32	2016	JSC	Very good
Higher Hebron & Bethlehem JSC							
1	Hook lift with trailer	Volvo	40	32	2011	Yatta transfer station	V. Bad
2	Hook lift with trailer	Volvo	40	32	2011	Yatta transfer station	V. Bad
3	Hook lift with trailer	Volvo	40	32	2011	Yatta transfer station	V. Bad
4	Hook lift with trailer	Volvo	40	32	2015	Tarqumia transfer station	Bad
Jenin JSC							
1	Hook lift with trailer	Volvo	40	32	2015	West Jenin	Bad
Ramallah JSC							
1	Trailer	Iveco	-	2	2018	Transfer station	Bad
2	Self-compaction trailer	Iveco	-	6	2018	Transfer station	Bad

Heavy equipment

Table: Heavy equipment owned by JSC

No	Items	Manufacturer	Type	Q'ty	Procurement year	Working place	Status*
N & NW Jerusalem JSC							
1	Landfill compactor	Caterpillar	816 K	1	2020	Beit Anan LF	Good
2	Backhoe loader	Caterpillar	428	1	2020	Beit Anan LF	Good
3	Dump truck	Iveco	AD260X42Z	1	2020	Beit Anan LF	Good
Tulkarm JSC							
1	Backhoe loader	Caterpillar	432E	1	2007	Transfer Station	Exhausted
2	Backhoe loader	Cukurova	885	1	2020	Transfer Station	Very good
3	Dump truck	Volvo	12.5 ton	1	2009	Transfer Station	Good
4	Agricultural Tractor	Super landeeni	-	1	2007	Transfer Station	Good
5	Skid Steer Loader	Caterpillar	226D	1	2015	Transfer Station	Good
Salfit JSC							
1	Dump Truck	VOLVO	15 m ³	1	2016	Municipalities	Very good
2	Skid Street Loader (BobCAT)	Caterpillar	BobCAT	1	2015	JSC-Municipalities	Good
3	Excavator	Caterpillar	-	1	2016	JSC-Municipalities	Very good
4	Excavator	JCB	-	1	2009	JSC-Municipalities	Good
5	Excavator	JCB	-	1	2007	JSC-Municipalities	Bad
Jericho JSC							
1	Truck	Iveco	15 ton	1	2016	Jericho	Good
2	Bulldozer	Caterpillar	D6	1	2009	Jericho LF	V. bad
3	Landfill Compactor	Bomag	-	1	2009	Jericho LF	V. bad
4	Loader	CASE	1.5m ³	1	2016	Jericho LF	Good
Higher Hebron & Bethlehem JSC							
1	Truck loader	Caterpillar	963K	1	2019	Al-Minya landfill	Good
2	Truck loader	Caterpillar	963D	1	2011	Al-Minya landfill	V. bad
3	Truck loader	Caterpillar	963D	1	2011	Al-Minya landfill	Not working
4	Excavator	Caterpillar	336EL	1	2012	Al-Minya landfill	Good
5	Landfill compactor	BOMAG	Bc772	1	2012	Al-Minya landfill	V. bad
6	Landfill compactor	BOMAG	Bc472RB	1	2012	Al-Minya landfill	Not working
7	Wheel loader	Caterpillar	950H	1	2011	Al-Minya landfill	V. bad
8	Hook lift truck for leachate transportation	Volvo	Fm13	1	2009	Al-Minya landfill	V. bad
9	Dump truck	Volvo	Fm1164	1	2011	Al-Minya landfill	V. bad
10	Dump truck	Volvo	Fm1164	1	2011	Al-Minya landfill	V. bad
11	Wheel loader	Caterpillar	950H	1	2011	Yatta transfer station	V. bad

No	Items	Manufacturer	Type	Q'ty	Procurement year	Working place	Status*
12	Wheel excavator	Caterpillar	M320F	1	2018	Yatta transfer station	Good
13	Wheel loader	Caterpillar	926M	1	2018	Tarqumiya transfer station	Good
Jenin JSC							
1	Landfill compactor	Caterpillar	866K	1	2018	Zahret Al-Finjan SLF	Good
2	Track loader	Caterpillar	963D	1	2015	Zahret Al-Finjan SLF	Repairing
3	Track excavator w/ hydraulic hummer	Caterpillar	330F	1	2015	Zahret Al-Finjan SLF	Good
4	Track excavator w/ hydraulic hummer	Volvo	EC3	1	2006	Zahret Al-Finjan SLF	Repairing
5	Wheel loader	Caterpillar	950M	1	2015	Zahret Al-Finjan SLF	Repairing
6	Backhoe loader	Caterpillar	428H	1	2011	Zahret Al-Finjan SLF	Repairing
7	Dump truck	Iveco	-	1	2004	Zahret Al-Finjan SLF	Repairing
8	Dump truck	Volvo	-	1	2016	Zahret Al-Finjan SLF	Good
Ramallah JSC							
1	Skid steer Loader	Caterpillar	-	1	2018	Governorate	Very good
2	Wheel Loader	Caterpillar	-	1	2018	Dumpsites	Very good
3	Trailer	Iveco	-	2	2018	Transfer station	Bad
4	Self-compaction trailer	Iveco	-	6	2018	Transfer station	Bad

Appendix 7 Equipment Plan

1. Equipment plan for general waste

1.1 Grant Aid Project for 2019

In the basic plan for the grant aid project "Improvement of Collection and Transportation of Palestinian Waste Management" implemented in 2019, the year of 2022 is set as the target year, and regarding collection vehicles, both amount of waste to be collected at the target year and the collection capacity for general waste are estimated, and the shortfall was to be made up by deployment of new collection vehicles

As for containers to storage discharged waste, the company planned to procure 10 containers for each unit of collection vehicle.

For equipment to manage final disposal sites, the procurement plan is prepared based on amount of waste to be landfilled and amount of cover material to be covered, and computed necessary heavy equipment.

The equipment procurement plan was divided into two lots: Lot-1 was completed in 2021, and Lot-2 had not been procured as of February 2023. A breakdown of each Lot is provided in the tables below.

Table 1 Breakdown of Lot-1 Equipment

Equipment	Capacity	Unit	Q'ty
Small Compactor	8 m ³	Unit	24
Medium Compactor	13 m ³	Unit	63
Large Compactor	21 m ³	Unit	10
Container	1.1 m ³	Unit	970
Dump Truck	15 m ³	Unit	1
Landfill Compactor	25 ton	Unit	1
Backhoe Loader	8 ton	Unit	1

Source: preparatory study report for cooperation on the improvement plan for collection and transport of Palestinian waste management, April 2019 (2019).

Table 2 Breakdown of Lot-2 Equipment

Equipment	Capacity	Unit	Q'ty
Medium Compactor	13 m ³	Unit	13
Landfill Compactor	25 ton	Unit	2
Backhoe Loader	8 ton	Unit	2
Tractor Head, Container Trailer	40 m ³ × 2	Unit	4

Source: Bidding Documents (Re-Bidding) for Procurement of Solid Waste Management Equipment (Lot-2)

1.2 Equipment plan for general waste collection

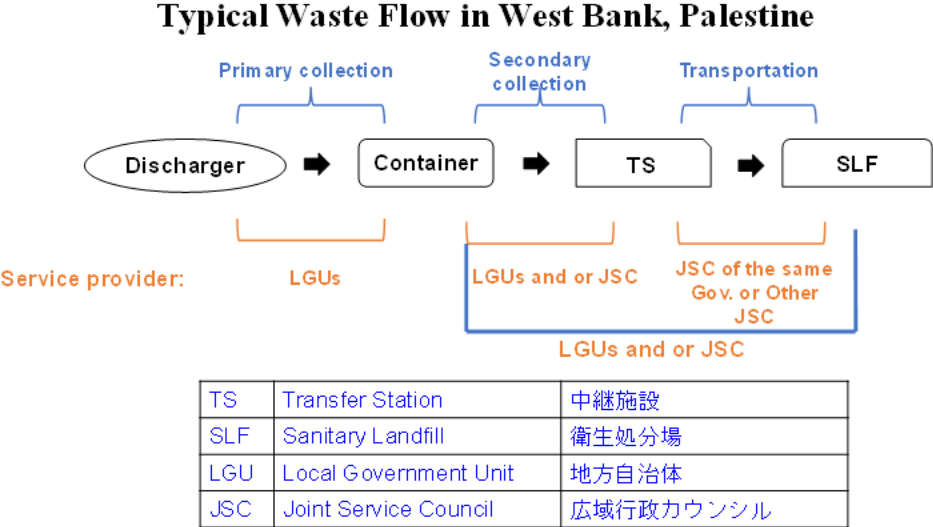
The equipment plan for general waste in this project is designed to prioritize the replacement of aging equipment. Although the objective of this project is to improve JSC's capacity for infectious waste management, JSCs have limited operational capacity in terms of equipment and human resources, that is also in charge of general waste management, and the quality of this operation will affect infectious waste management.

The general waste management project in the West Bank consists of discharging, storage, collection, transfer, and final disposal. To support each of these activities, the following discharging and storage equipment, waste collection vehicles, transportation vehicles, and heavy equipment were targeted in this project plan.

- Equipment for storage of discharged waste: containers for storage of discharged waste
- Equipment for waste collection and transport: compactor trucks, hook lift trucks, grapple cranes.
- Heavy equipment for final waste disposal and transport: track loaders, backhoe loaders, landfill compactors and dump trucks.

The general waste collection system in the West Bank in Palestine consists of primary collection, in which waste collected from discharging sources is transported to a storage container, and secondary

collection, in which waste is transported from the storage container to a transfer station. Primary collection is handled by the local government unit (LGU), secondary collection by the LGU or JSC, and transportation from the transfer station to the final disposal site is handled by the local JSC or a neighboring JSC. Most JSCs or LGUs own and operate their own collection and transportation equipment, while some LGUs lease equipment from JSCs. Typical waste flow in West Bank and service providers are shown in below Figure.



Source: MoLG

Figure 1: Waste Flow in the West Bank

This project will study equipment procurement plans for compactor trucks for collection work, grapple cranes to collect bulky waste and pruned branches, and hook lift trucks for transportation work.

1.2.1 Equipment plan for compactor trucks

(1) Development of equipment plan for compactor trucks

The equipment plan for the compactor trucks will be based on an evaluation of each JSC's "required replacement rate of aging equipment" and "collection coverage rate," and compactors will be allocated to JSC with higher priority based on these two evaluations. The respective evaluation methods are as follows.

- Required replacement rate for aging equipment
 = (number of vehicles in operation for more than 10 years as of 2025 when procurement is completed) / (number of vehicles in operation)
 - JSC collection coverage rate = (amount of waste collected by JSC) / (amount of waste generated)
- The results of the evaluation of the current status of each JSC are described below.

(2) Equipment plans for compactor trucks at each JSC

1) Hebron JSC

- The plan is to allocate two compactor trucks with a capacity of 13 m³.
- This JSC ranks at second highest percentage of vehicles operating for more than 10 years among all JSCs.
- Although the JSC' collection coverage rate is moderate, the distance from the collection area to

final disposal site and transfer station is long (20-25 km) and the average distance traveled is about 130 km per day, making it difficult to increase the number of trips (collection working time) any further, so additional vehicles are needed.

- Thirteen compactor trucks (13 m³ capacity), which are planned to be procured under the ongoing grant aid project (Lot-2) are considered, but further additions are needed.
- The waste amount to be collected is big approximately 525 tons/day and multiple large compactor trucks are needed.
- The priority for equipment procurement is the highest among all 12 JSCs.

2) Jericho JSC

- No new equipment procurement is required.
- The level of required replacement rate for aging equipment is moderate among all JSCs.
- This JSC's collection coverage rate is high among all JSCs, collecting about 90% of the waste generated in the JSC.
- This JSC ranks 10th out of all 12 JSCs in terms of priority for equipment procurement.

3) N & NW Jerusalem JSC

- No new equipment procurement is required.
- Vehicles are not aging.
- JSC's collection coverage rate is the highest of all JSCs at approximately 98%, and is a low priority.
- The priority for equipment procurement is 12th out of all 12 JSCs.

4) Nablus JSC

- No new equipment procurement is required.
- Vehicles are not aging.
- JSC's collection coverage rate is moderate for all JSCs.
- A new vehicle was recently procured from MoLG and step by step expansion of collection services is planned.
- This JSC ranks 9th out of all 12 JSCs in terms of priority for equipment procurement.

5) NE & SE Jerusalem JSC

- One compactor truck with 13 m³ capacity will be allocated.
- The vehicles are aging.
- Collection coverage rate is high at about 86% and is a low priority.
- Currently has 17 vehicles, one of which is in need of extensive repairs, 8 vehicles in poor condition, and a lack of equipment.
- Collection by 1.1 m³ containers is taking place over almost the entire region, so compactor

trucks of medium or large capacity are needed.

- The priority for equipment procurement is ranked 7th out of all 12 JSCs.

6) Jenin JSC

- Two compactor trucks with 8 m³ capacity will be allocated.
- More than half of the vehicles will be over 10 years old in 2025.
- Most vehicles are in poor condition (20 of the 39 currently operating compactor trucks are in poor condition), except compactor trucks procured in 2021 by Lot-1.
- Although collection coverage rates are high, the target collection area has many narrow roads, and access is difficult with the majority of the compactor trucks in operation being large and medium sized vehicles, necessitating the introduction of several smaller vehicles.
- The priority for equipment procurement is 3rd rank out of all 12 JSCs.

7) Qalqilya JSC

- No new equipment procurement is required.
- Vehicles are relatively new and will not need to be replaced as of 2025.
- This JSC collection coverage rate is low at about 12%, but this is due to the fact that this JSC lends vehicles to LGUs and the LGUs perform the collection work.
- This JSC ranks 5th out of all 12 JSCs in terms of priority for equipment procurement.

8) Ramallah JSC

- One compactor truck with 8 m³ capacity will be allocated.
- Approximately 30% of the vehicles are obsolete.
- JSC's collection coverage rate is low at about 35%, so additional equipment is needed.
- All 13 compactor trucks procured in FY2021 (Lot-1) were medium sized vehicles, but since most of the uncollected areas are on narrow roads, smaller vehicles are need to be deployed.
- The priority for equipment procurement is the first out of all 12 JSCs.

9) Salfit JSC

- One compactor truck with a capacity of 13 m³ will be allocated.
- Approximately 25% of the vehicles are obsolete.
- JSC's collection coverage rate is approximately 48% and additional collection vehicles are needed.
- Salfit JSC needs a medium size or large compactor truck, because 90% of the collection in the region adopt FTFP (Fixed Time and Fixed Place) collection system using 1.1 m³ containers.
- The priority for equipment procurement is ranked 4th out of all 12 JSCs.

10) Tubas JSC

- One compactor truck with a capacity of 13 m³ will be placed.
- Existing collection vehicles are new and in good condition.
- The JSC's collection coverage rate is approximately 90%.
- Collection in the Tubas JSC is adequate.
- Three LGUs adjacent to Tubas JSC have made an agreement with Tubas JSC to switch the outsourcing of collection operations from Jericho JSC to Tubas JSC. New equipment is needed due to the increased scope of collection operations in Tubas JSC.
- This LGU ranks 11th out of 12 JSCs in terms of priority for equipment procurement.

11) Tulkarem JSC

- Two compactor trucks with a capacity of 13 m³ will be allocated.
- Existing collection vehicles are new and in good condition.
- JSC's collection coverage rate is 50% and the vehicles need to be introduced to improve the collection coverage rate.
- Tulkarem JSC uses the FTFP collection system with 4 m³ containers, 1.1 m³ containers, and 240 L containers in all regions, which requires additional compactor trucks of medium size or large vehicles.
- The priority for equipment procurement is ranked 4th out of all 12 JSCs.

12) Bethlehem JSC

- One compactor truck with a capacity of 8 m³ will be deployed.
- The collection vehicles are aging and new vehicles need to be introduced; 12 of the 24 operating vehicles are over 10 years old.
- The JSC's collection coverage rate is progressing at about 86%, but there is a lack of collection service in villages with small populations. The road widths in those areas are narrow and require the deployment of smaller vehicles.
- The priority for equipment procurement is ranked 5th out of all 12 JSCs.

Table 3 Priority of equipment procurement for each JSC

JSC	Collection vehicle over 10 years operation		Waste collection		Total priority Value $C=(a+b)/2$	Total priority
	Ratio (%)	Priority (a)	Collection coverage rate	Priority (b)		
Hebron	53.7	2	50.4%	5	3.5	1
Jericho	27.3	6	90.1%	10	8.0	10
N & NW Jerusalem	0.0	11	97.5%	12	11.5	12
Nablus	20.8	8	73.8%	6	7.0	9
NE & SE Jerusalem	43.8	4	85.8%	9	6.5	7
Jenin	59.0	1	77.7%	7	4.0	3
Qalqilya	12.5	10	11.5%	1	5.5	5
Ramallah	30.0	5	34.6%	2	3.5	1
Salfit	25.0	7	47.8%	3	5.0	4
Tubas	0.0	11	90.5%	11	11.0	11
Tulkarem	20.0	9	50%	4	6.5	7
Bethlehem	50.0	3	85.7%	8	5.5	5

1.2.2 Equipment plan for hook lift trucks and grapple cranes

(1) Current status of existing hook lift trucks and grapple cranes

The hook lift truck has the function of connecting the movable arm equipped on the hook lift truck to the hook of a waste storage container (10 m³) placed on the ground for loading onto the truck. To load or unload waste, the container is tilted to dump the waste backward. The containers are installed at large commercial facilities or markets where large quantities of waste are generated, and the waste is loaded onto hook lift trucks before the containers are full of waste and transported to transfer stations or final disposal sites. Usually, several containers are prepared for each hook lift truck, and they are placed at locations where large amounts of waste are generated for collection. Therefore, the collection efficiency (volume collected per hour) and collection cost are extremely excellent compared to FTFA and door-to-door collection system, which use 1 m³ class containers.

Grapple cranes are collection trucks having body which capacity is 20 m³ or more and equipped a crane with a bucket to grab waste. They are capable of grabbing and loading waste that do not accommodated into containers, such as bulky waste and pruned branches, into the body of the truck.

Hook lift trucks are used at four JSCs and grapple cranes at three JSCs. The current status of each is listed in the table below.

Table 4: Current status of hook lift trucks and grapple cranes

JSC	Items	Capacity	Q'ty	Procurement year	Condition
Hebron	Grapple Crane	21 m ³	1	2011	Out of service
	Grapple Crane	19 m ³	1	2015	Good
Jericho	Hook Lift	10 m ³	1	2016	Good
	Hook Lift	10 m ³	1	2009	Bad
	Grapple Crane	15 m ³	1	2009	Bad
Nablus	Grapple Crane	12 m ³	1	2021	Working well
Salfit	Hook Lift	10 m ³	1	2016	Very Good
Tulkarem	Hook Lift	10 m ³	1	2019	Good but overloading
Bethlehem	Hook Lift	10 m ³	1	2016	Good

Source: Prepared based on MoLG information and interviews during the field survey.

(2) Equipment plans for hook lift trucks and grapple cranes at each JSC

Since hook lift trucks have characteristics that can significantly improve the efficiency of collection and transportation in areas where large amounts of waste are generated, Tulkarem and Bethlehem JSC, where markets, commercial areas, and industrial areas with large amounts of waste are discharged and are already familiar with collection systems using hook lift trucks, were selected to allocate new hook lift trucks.

As for Jericho, it is excluded from this procurement plan because this JSC collection coverage rate is over 90% and two hook lift trucks are in operation.

1) Tulkarem JSC

- One hook lift truck and two 10 m³ containers will be allocated to Tulkarem JSC.
- This JSC's collection coverage rate is just over 50%, and although we plan to procure a 13 m³ compactor truck, more collection equipment is needed.
- This region is already using a hook lift truck manufactured in 2019 for collection and transportation, but one truck is not sufficient to collect the waste generated, even two shifts operation is conducted for collection and transportation operations, therefore procurement of new equipment is required.
- The effect of introducing the hook lift trucks is that there is a transfer station in Tulkarem, which is within a 5 km radius, and therefore 8 trips can be made per day. Therefore, the following collection volumes can be expected.

$$8 \text{ trips/day} \times 3 \text{ tons/trip} = 24 \text{ tons/day}$$

2) Bethlehem JSC

- One hook lift truck and two 10 m³ containers will be deployed to Bethlehem JSC.
- The industrial area in this region has an efficient collection system using hook lift trucks with 10 m³ containers, but the vehicles are aging, with the year of vehicle manufacture being 2016.
- The company is already familiar with the collection system using hook lift trucks and can smoothly operate the new equipment.

- The effect of introducing hook lift trucks is that there is no transfer station in Bethlehem, and after collection, the waste must be transported directly to the sanitary landfill. The distance traveled is about 15 km, so the number of trips per day is assumed to be 3, and the following collection volume is expected.

Collection and transport volume = 3 trips/day x 3 tons/trip = 9 tons/day

3) Hebron JSC

- Deploy one grapple crane to Hebron JSC.
- The grapple crane installed in 2011 is out of service due to aging.
- Expected collection volumes are as follows, assuming a body capacity of 20 m³ and a waste specific gravity of 0.4 (tons/m³) (typically, the operator uses the crane to compact the loaded waste).

$0.4 \text{ tons/m}^3 \times 20 \text{ m}^3 \times 2 \text{ trips/day} = 16 \text{ tons/day}$

1.2.3 Equipment plan for containers

(1) Current status of existing containers

In the West Bank, general waste is collected mainly by FTFP (Fixed Time Fixed Place) and HtH (House to House) collection systems, the former of which uses several types of standardized containers to maintain a pleasant neighborhood environment and improve collection efficiency.

In residential areas, steel 1.1 m³ containers are the most common, while 240 L plastic containers are also used. Both containers have wheels on the bottom, which are convenient for transportation, but they are often damaged, and the containers themselves are subject to corrosion and damage, so they must be replaced according to their condition. On the other hand, in commercial areas where a lot of waste is generating, steel 4 m³ containers are also used. The waste accommodated in these three types of containers can be loaded using a lifter (container detaching device) installed at the rear of the compactor truck, enabling speedy collection operations. Furthermore, in markets, commercial areas, and industrial areas where large volumes of waste are generated, 10 m³ containers are installed and hook lift trucks approach the containers for collection operations.

In this project, equipment plans were studied for these four types of containers, based on the replacement of damaged ones.

Table 5 shows the results of the survey of the condition of the containers at each JSC.

Table 5 Status of Containers of each JSC

JSC	Container Capacity	Total Q'ty	Condition
Hebron	1.1 m ³	2,800	2,500 are bad
	240 L	800	500 are bad
	4 m ³	1,100	700 are bad
	10 m ³	-	
Jericho	1.1 m ³	1,350	80% are bad
	240 L	-	
	4 m ³	26	Good to bad
	10 m ³	28	Good to bad
N & NW Jerusalem	1.1 m ³	1,750	Bad
	240 L	470	Bad
	4 m ³	18	Very bad
	10 m ³	-	

JSC	Container Capacity	Total Q'ty	Condition
Nablus	1.1 m ³	3,000	Mostly bad
	240 L	6,500	Very good
	4 m ³	-	
	10 m ³	-	
NE & SE Jerusalem	1.1 m ³	968	500 are bad
	240 L	-	
	4 m ³	50	30 are bad
	10 m ³	-	
Jenin	1.1 m ³	3,000	Bad
	240 L	5,000	Bad
	4 m ³	80	Bad
	10 m ³	-	
Qalqilya	1.1 m ³	1,050	Weak
	240 L	1,260	Good
	4 m ³	-	
	10 m ³	10 (LGUs)	Weak
Ramallah	1.1 m ³	3,000	Very bad
	240 L	4,000	Very bad
	4 m ³	20	Middle
	10 m ³	-	
Salfit	1.1 m ³	2,800	Bad
	240 L	700	Medium
	4 m ³	-	
	10 m ³	6	Bad
Tubas	1.1 m ³	600	Good
	240 L	1,000	Good
	4 m ³	-	
	10 m ³	-	
Tulkarem	1.1 m ³	5,000	Medium
	240 L	1,000	Medium
	4 m ³	-	
	10 m ³	7	Medium
Bethlehem	1.1 m ³	2,343	Medium
	240 L	2,472	Medium
	4 m ³	78	Medium
	10 m ³	3	Medium

Source: Compiled from MoLG information.

(2) Equipment plans for containers

Since the container situation is poor throughout the JSCs, and even in good cases tends to deteriorate

in a short period of time, the procurement plan is to uniformly distribute 200 1.1 m³ containers, 100 240 L containers, and 8 4 m³ containers in all JSCs.

In the Hebron, Qalqilya, and Salfit JSCs, no 240 L containers are planned to be distributed since they do not plan to use them. In the Tubas JSC, 400 240 L containers are planned to be distributed since this collection area is to be expanded and there is a plan to change 1.1 m³ containers to 240 L containers.

Since each JSC has individual action plan by themselves, the following plan was adopted.

- Jericho JSC did not use 240 L containers, but will start HtH collection service by using 240 L containers, therefore 100 of 240 L containers will be deployed.
- Nablus JSC did not use 4 m³ containers for collection, but 8 containers will be deployed as they will start collection service using 4 m³ containers in the new market and factory zones.
- NE & SE Jerusalem JSC did not use 240 L containers, but will place 100 240 L containers as they will start HtH collection service using the new 240 L containers.
- In Tulkarem JSC, 1.1 m³ and 240 L containers are in good condition, but since these belong to the LGU, 200 and 100 of each will be deployed.
- The container procurement plan for each JSC is listed in Table 6.

Table 6 Container Procurement Plan

JSC	Container Capacity	Delivery Plan
Hebron	1.1 m ³	200
	4 m ³	8
Jericho	1.1 m ³	200
	240 L	100
	4 m ³	8
N & NW Jerusalem	1.1 m ³	200
	240 L	100
Nablus	1.1 m ³	200
	240 L	100
	4 m ³	8
NE & SE Jerusalem	1.1 m ³	200
	240 L	100
	4 m ³	8
Jenin	1.1 m ³	200
	240 L	100
Qalqeliya	1.1 m ³	200
Ramallah	1.1 m ³	200
	240 L	100
	4 m ³	8
Salfit	1.1 m ³	200
	10 m ³	2
Tubas	1.1 m ³	200
	240 L	400
Tulkarem	1.1 m ³	200
	240 L	100
	10 m ³	2
Bethlehem	1.1 m ³	200
	240 L	100
	10 m ³	2

1.2.4 Equipment plan for final waste disposal and transportation

(1) Current status of equipment for final waste disposal and transportation

With the goal of maintaining the current final disposal capacity, the equipment plan was considered with the replacement of old equipment as the top priority. This equipment included heavy equipment for landfill operations and transportation vehicles for transporting soil cover material, as well as heavy equipment and transportation vehicles operating at transfer stations.

The equipment plan covers heavy machinery used at the Zahrat Al-Finjan Sanitary Landfill (daily disposal volume: 1,100 tons) and the Al-Minya Sanitary Landfill (daily disposal volume: 1,200 tons), which dispose large quantities of waste exceeding 1,000 tons per day, and the transportation vehicles used to transport soil cover materials.

As for the transfer station, Wadi Alnar transfer station is selected for procurement plan, because they

do not have heavy equipment and illegal dumping of construction debris is common.

The equipment plan was studied based on the replacement of equipment in poor condition due to aging.

Table 7 and 8 show the condition of the equipment used at the subject facilities.

Table 7: Status of equipment for Zahrat Al-Finjan sanitary landfill

Items	Weight (ton)	Manufactured Year	Condition
Landfill Compactor	38	2018	Operating
Track Loader	21	2015	Repairing
Track excavator w/ Hydraulic Hammer	30	2015	Operating
Track excavator w/ Hydraulic Hammer	38	2006	Repairing
Wheel loader	20	2015	Repairing
Backhoe loader	8	2011	Repairing
Dump Truck	26	2004	Repairing
Dump Truck	26	2016	Operating

Source: MoLG

Table 8: Status of equipment for Al-Minya sanitary landfills

Items	Weight (ton)	Manufactured year	Condition
Track loader	26	2019	Operating
Track loader	20.7	2011	Very poor in operation
Track loader	20	2011	Out of service
Landfill excavator	36	2012	Operating
Landfill compactor	37.1	2012	Very poor in operation
Landfill compactor	24	2012	Out of service
Wheel loader	18	2011	Very poor in operation
Dump Truck	26	2011	Very poor in operation
Dump Truck	26	2011	Very poor in operation
Hook lift Truck (Leachate transportation)	32	2009	Very poor in operation

Source: MoLG

(2) Current Status of final waste disposal sites

Sanitary landfill disposal of waste is based on the process of spreading and compacting the transported waste, covering it with soil, and then compacting it further. At the Zahrat Al-Finjan sanitary landfill, the waste layer is spread 2.5 m thick and covered with a 15 cm to 20 cm layer of soil every few days. 250 m³ to 300 m³ (500 tons to 600 tons) of soil is brought in daily from inside and outside of the landfill site. At the Al-Minya sanitary landfill, the waste layer is spread 3 m thick and covered with 20 cm thick layer of soil every day, and approximately 500 m³ (1,000 tons) of soil covering material is procured daily.

The landfill process at both sanitary landfill sites is shown followings.

- i. Dump the waste loaded in 40m³ containers transported from the transfer station using the hook lift truck by hydraulic system.
- ii. The dumped waste is spread by a track loader.
- iii. Compacting the waste with a landfill compactor.
- iv. Truck loader is used to transport soil covering material, and spread it on the waste surface and compact them.

The soil cover material is brought in by dump trucks from inside and outside of the disposal site and piled in a designated part of the disposal site. In addition, when the landfill compactor is out of service or undergoing maintenance, the waste is compacted by truck loader.

(3) Equipment plans for final disposal sites and transfer station

1) Truck loaders

One 30-ton class truck loader will be deployed at the Zahrat Al-Finjan Sanitary Landfill and one at the Al-Minya Sanitary Landfill. The truck loader at Zahrat Al-Finjan Sanitary Landfill is aging (manufactured in 2015) and undergoing repairs, so a new truck loader needs to be procured. There are three track loaders at Al-Minya Sanitary Landfill, one is not in operation, another one is aging (manufactured in 2011) and in poor condition, and the last one is manufactured in 2019 and is in operation, but performance of the track loader in this landfill site are overloaded by daily soil covering, so new equipment needs to be procured.

Both final disposal sites are using track loaders with operating weights of 21 to 26 tons, but need 30 tons class equipment to effectively compact the waste.

2) Landfill compactor

One 25 tons class landfill compactor will be deployed at Al-Minya Sanitary Landfill.

Both of the two landfill compactors operating at Al-Minya Sanitary Landfill were manufactured in 2012, and one is inoperable, while the other is operational but in poor condition due to its age. The machines need to be replaced as soon as possible, as they are necessary equipment to compact waste and prolong and stabilize the life of the sanitary landfill site.

3) Backhoe loader

One 8 tons class backhoe loader will be deployed to the Wadi Alnar Transfer Station.

Wadi Alnar transfer station, established to efficiently transport waste to Al-Minya Sanitary Landfill site, is a platform-type transfer facility operated by the NE & SE Jerusalem JSC. Collected waste from designated area in NE & SE Jerusalem Governorates is dumped on the platform of this transfer station and loaded into 40 m³ containers placed underneath it by using a backhoe loader, which compacts the waste with its buckets.

However, this heavy equipment and operators are leased from a private sector, and the work is performed only during prescribed working hours, which means that they are not available when a large amount of waste is brought in or during busy times, and the leasing cost is expensive, which poses a challenge, so procurement of heavy equipment for loading is necessary.

At the other two transfer stations operated by the NE & SE Jerusalem JSC (Yatta transfer station and Tarqumia Transfer station), a ground transfer system is used to load the dumped waste on the ground into containers of transportation vehicles using wheel loaders. However, the Wadi Alnar transfer station is a platform-type transfer system, which makes it easy to drop the waste from the top of the platform into the container placed below, and also makes it appropriate to place a backhoe loader that can spread and compact the waste in the container.

4) Dump trucks

One dump truck will be deployed at Zahrat Al-Finjan Sanitary Landfill, one at Al-Minya Sanitary Landfill, and one at Wadi Alnar transfer station.

The Zahrat Al-Finjan and Al-Minya sanitary landfills are operating soil covering work, which requires vehicles to transport cover material to the landfill points, but the transportation vehicles (dump trucks) at both landfills have become obsolete and need to be replaced.

Since there are many construction waste dumping sites in NE & SE Jerusalem and illegal dumping is rampant, there is a plan to separate construction waste materials to transport to the Wadi Alnar transfer station or mixed with general waste and transport them to Al-Minya Sanitary Landfill to minimize illegal dumpings, and dump trucks are needed for this purpose.

2. Equipment plan for infectious waste

2.1 Current situation of infectious waste management in Palestine

With the support of international aid organizations, a system for the collection, transport, treatment and disposal of infectious waste has already been established in the Gaza Strip. In 2017-18, with the support of JICA, UNRWA and Qatar Charity, an infectious waste treatment system with two modified collection vehicles, one autoclave and one incinerator were introduced on a trial basis. In 2021, one microwave sterilization equipment, two collection vehicles, and a container for sorting infectious waste were installed in North Gaza with the support of United Nations Development Programme (hereinafter referred to as "UNDP"), and one microwave sterilization equipment, two collection vehicles, and a container for sorting infectious waste were installed in South Gaza with the support of UNDP and Japan.

In the West Bank, infectious waste treatment equipment and infectious waste collection vehicles are deployed in the Jenin, Bethlehem/Hebron, and Ramallah regions. In the central West Bank and northward, waste is transported to the Zahrat Al-Finjan final disposal site in the Jenin district for disposal after passing through transfer stations in each district. A microwave sterilization equipment is also installed at the Zahrat Al-Finjan final disposal site, but collection is limited. A local consultant specializing in infectious waste management is providing training to JSC staff on how to separate infectious waste in medical facilities, which is about to begin. In the Bethlehem/Hebron area in southern Palestine, infectious waste is collected by a collection vehicle owned by the Al-Minya final disposal site and is detoxified by microwave sterilization equipment (after detoxification, it is disposed of as municipal solid waste). In Ramallah, a small incinerator has been installed with Japanese assistance, but a small amount of infectious waste is incinerated daily on a trial basis, pending Israeli approval and an agreement on collection between the MoH and Ramallah JSC.

Table 9 Infectious waste management equipment

Existing Facility	Target Area	Types of infectious waste treatment equipment	Infectious waste collection equipment
GNG Treatment Facility	North Gaza	Microwave Sterilization Equipment (UNDP2021)	2 infectious waste collection vehicles, Containers for infectious waste, Containers for municipal solid waste
KRM Treatment Facility	South Gaza	Microwave Sterilization Equipment (UNDP/Japan 2021) Autoclave (Qatar2015)	2 infectious waste collection vehicles, Containers for infectious waste, Containers for municipal solid waste
ZAF Treatment Facility	Jenin, Tubas, Tulkarem	Microwave Sterilization Equipment (JICA2021 pipeline)	2 infectious waste collection vehicles, Containers for infectious waste, Containers for municipal solid waste
Ramallah Treatment Facility	Ramallah, Northwest Jerusalem	Small-scale Incineration Facility (JICA2021 pipeline)	3 infectious waste collection vehicles, Containers for infectious waste, Containers for municipal solid waste
Al Minya Treatment Facility	Bethlehem, Hebron	Microwave Sterilization Equipment (EU2013; JICA2021 pipeline)	2 infectious waste collection vehicles, Containers for infectious waste, Containers for municipal solid waste

2.2 Equipment plan for infectious waste

The project will cover the West Bank and procure infectious waste treatment equipment and infectious waste collection equipment in Nablus and Northeast & Southeast Jerusalem areas. Three treatment facilities in the Jenin, Bethlehem/Hebron, and Ramallah areas are expected to be able to treat just under 60% of the infectious waste generated in the West Bank, and the remaining areas need to strengthen their infectious waste treatment and collection capacity.

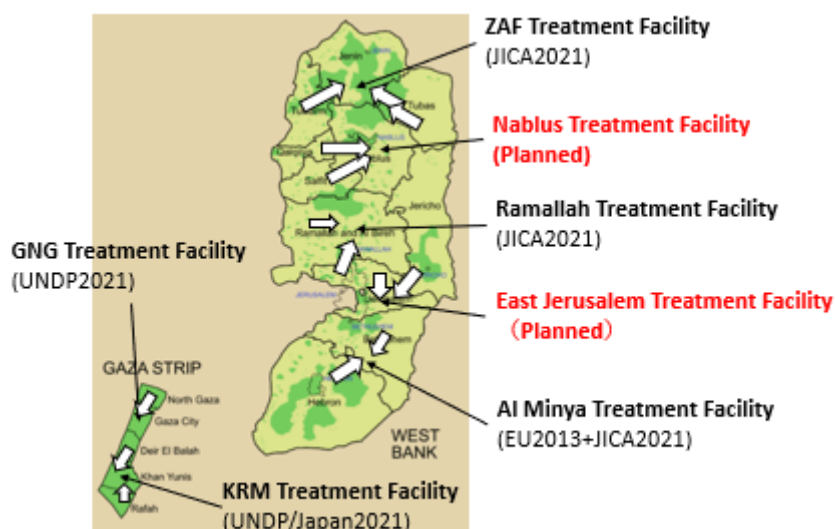
Infectious waste management in the West Bank of Palestine consists of sorting and discharging at hospitals, storage, collection and transportation, detoxification, and final disposal. To support each of these activities, the plan for this project covered infectious waste treatment equipment, infectious waste collection vehicles, and containers for sorting infectious waste. The equipment planned for procurement

is shown in Table 10.

Table 10 Planned Equipment

Target Area	Target JSC	Infectious waste treatment equipment	Infectious waste collection equipment
Nablus Area	Nablus, Salfit, Qalqilya	Microwave sterilization equipment (125kg/hour)	2 infectious waste collection vehicles, Containers for infectious waste, Containers for municipal solid waste
NE&SE Jerusalem Area	NE&SE Jerusalem, Jericho	Microwave sterilization equipment (75kg/hour)	2 infectious waste collection vehicles, Containers for infectious waste, Containers for municipal solid waste

The target areas are the Nablus area (Nablus JSC, Salfit JSC, and Qalqilya JSC) and the NE&SE Jerusalem area (NE&SE Jerusalem JSC and Jericho JSC), which are not covered by the existing facilities. A location map of the existing facilities and the planned facilities where planned procurement equipment will be installed is shown in Figure 2.



Source: MoLG

Figure 2 Location map of existing facility and planned facility

2.2.1 Infectious waste treatment equipment plan

A microwave sterilization equipment (125 kg/cycle) will be installed in the Nablus area and another one in the NE&SE Jerusalem area. The treatment capacity of the microwave sterilization equipment was studied based on the inventory survey of each JSC conducted under the technical cooperation project. The amount of infectious waste generated in the Nablus area was estimated to be 304.75 kg/day, and the amount of infectious waste generated in the NE&SE Jerusalem area was estimated to be 260.12 kg/day. Since one cycle of the microwave sterilization equipment takes 90 to 120 minutes, the maximum treatment capacity is 500 kg/day in the Nablus area and 300 kg/day in the NE&SE Jerusalem area, which is enough to treat the entire amount of infectious waste generated. The table below shows the amount of infectious waste generated in the target areas.

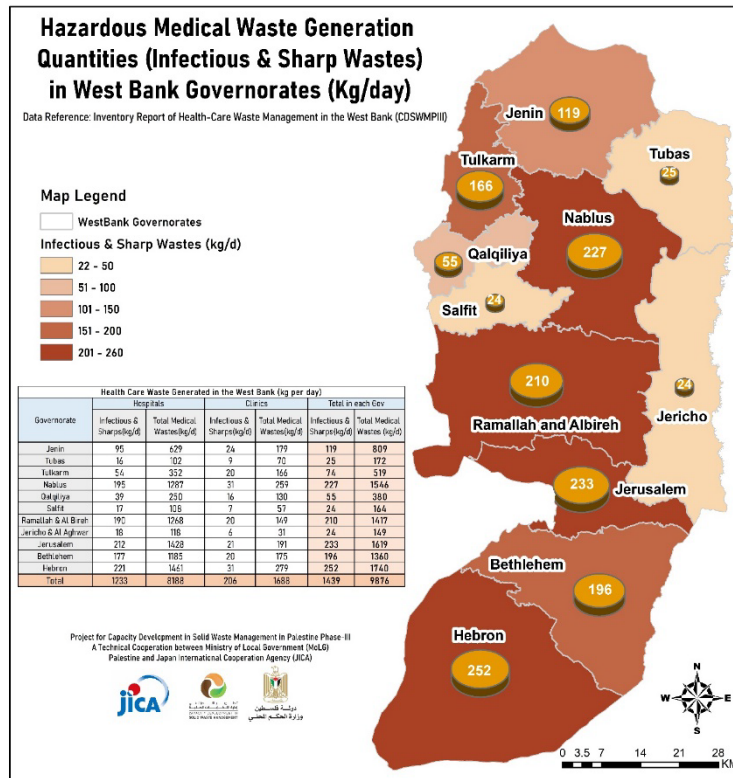
Table 11 Amount of Infectious waste generated in the target areas

Area	JSC	Infectious waste generation amount (kg/day)
Nablus area	Nablus JSC	226.57
	Qalqilya JSC	54.75
	Salfit JSC	23.43
Total		304.75
NE&SE Jerusalem area	NE&SE Jerusalem JSC	233.02
	Jericho JSC	27.10
Total		260.12

Source: MoLG, MoH

2.2.2 Equipment plan for infectious waste collection vehicle

One infectious waste collection vehicle is planned to be procured in the Nablus JSC, one in the Salfit JSC, one in the NE&SE Jerusalem, and one in the Jericho JSC. In the Nablus area, one infectious waste collection vehicle will be placed in Nablus JSC due to the relatively large amount of infectious waste generated in Nablus JSC. Although the amount of infectious waste generated in Qalqilya JSC and Salfit JSC is relatively small, one vehicle is planned to be placed in Salfit JSC due to the distance of transportation to the treatment facility to be installed in Nablus. In the NE&SE Jerusalem area, one infectious waste collection vehicle is planned to be procured due to the large amount of infectious waste generated by the NE&SE Jerusalem JSC. One infectious waste collection vehicle is planned to be procured in the Jericho JSC Although the relatively small amount of infectious waste is generated in the Jericho JSC, due to the large area and the distance of transportation to the treatment facility to be installed in NE&SE Jerusalem. A map of infectious waste generation by each JSC is shown in the figure below.



Source: MoH,JICA

Figure 3: Map of Infectious Waste Generation in the West Bank

2.2.3 Container for separating infectious waste

350 containers for sorting infectious waste are planned to be procured in Nablus and NE&SE Jerusalem areas, respectively. Infectious waste will be discharged into yellow sorting containers in Palestinian medical facilities, stored in storage containers outside the facilities, and then collected by infectious waste collection vehicles and transported to treatment facilities. The Nablus and NE&SE Jerusalem areas are newly introducing infectious waste treatment system such as sorting, storage, collection, transportation, and treatment, so they will need infectious waste sorting containers as soon as they procure infectious waste treatment equipment and collection vehicles.