Ministry of Local Government
Palestinian Authority

PREPARATORY SURVEY REPORT
ON
THE PROJECT FOR SUPPORT FOR THE PUBLIC ACTIVITIES OF THE COMMUNITIES IN JORDAN VALLEY IN THE PALESTINIAN AUTHORITY

APRIL 2010

JAPAN INTERNATIONAL COOPERATION AGENCY

MOHRI, ARCHITECT & ASSOCIATES,INC.
KRI INTERNATIONAL CORP.

PREFACE

Japan International Cooperation Agency (JICA) conducted the preparatory survey on the Project for Support for the Public Activities of the Communities in Jordan Valley in the Palestinian Authority.

JICA sent to Palestine a survey team from May 10 to June 4, 2009 and July 9 to August 12.

The team held discussions with the officials concerned of the Government of Palestine, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Palestine in order to discuss a draft outline design, and as this result, 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 Japan and Palestine.

I wish to express my sincere appreciation to the officials concerned of the Government of the Palestinian Authority for their close cooperation extended to the teams.

April, 2010

Kiyofumi Konishi
Director General,
Economic Infrastructure Department
Japan International Cooperation Agency

April, 2010

Letter of Transmittal

We are pleased to submit to you the preparatory survey report on the Project for Support for the Public Activities of the Communities in Jordan Valley in the Palestinian Authority.

This survey was conducted by the Consortium of Mohri, Architect & Associates, Inc. and KRI International Corp., under a contract to JICA, during the period from April 2009 to April 2010. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Palestine and formulated the most appropriate outline design for the project under Japan's Grant Aid scheme.

Finally, we hope that this report will contribute to further promotion of the project.

Very Truly Yours,

Hisafumi Michikawa
Project Manager,
Preparatory Survey team on the Project for Support for the Public Activities of the Communities in Jordan Valley

The Consortium of Mohri, Architect & Associates, Inc. and KRI International Corp.

SUMMARY

1. Brief Overview of Palestine

(1) Geography and Population

The Palestinian Authority (hereinafter referred to as "PA") consists of the Gaza Strip facing the Mediterranean Sea and the West Bank adjoining the Jordan River, and has a total area of 6,020 sq.km (Gaza Strip: 365 sq.km; West Bank: 5,655 sq.km). The West Bank features undulating landscapes. While the altitude reaches nearly 1,000m above the sea level in the central mountainous areas, some parts of the land are at 400 m below sea level by the Dead Sea. Jordan Valley, the target area of the Project, is an elongated area stretching for 80km north-south and 10km east-west along the Jordan River. Most of the area is below the sea level.

The Gaza Strip and the West Bank are geographically split by Israel, and owing to the political complexity, Palestinians in the West Bank are not allowed to visit the Gaza Strip, and visa versa. The population of the PA is about 3.7 million in 2007 (Gaza Strip: 1.4 million, West Bank: 2.3m million: Palestinian Central Bureau of Statistics 2007), however, Palestinian population living outside of PA territory are estimated about 6.6 million.

(2) Economic Conditions

GDP per capita of the PA was US$ 1,129 in 2006 (WB 2007). The breakdown of GDP is as follows: 1st Industry – 8.1%, 2nd Industry – 15.4% and 3rd Industry – 76.5%. The figure is about a third less than the level of US$ 1,612 in 1999. There are many factors behind this economic decline such as: the surged unemployment among Palestinians working in Israel due to the tighter transportation restrictions after the *2nd Intifada*; suspension of clearance revenue transfer from Israel due to the inauguration of the Hamas-led cabinet in 2006. The economic indicators are becoming worse and worse. The unemployment rate reached 28.4%, and on top of that, 55.6% of Palestinians lived on less than US$ 2 per day in 2006.

2. Background and Contents of the Project

The Palestinian economy is in decline, owing to severe policies including the restriction of land use and transportation. Consequently, neither the central government nor local governments can provide residents with the sufficient public services. Under these circumstances, public infrastructure such as clinics, schools, community meeting spaces, roads, and electrical infrastructure are left becoming dilapidated as no periodical maintenance has been conducted. Furthermore, the living standard of some areas is quite low, with a lack of sufficient amount of water and electricity. In fact, a large number of families abandoned their village because of the severe living conditions in the Jordan Valley area. Thus, the necessity of

providing decent public service is quite high in the Jordan Valley area.

On the other hand, the central government of PA promulgated "Palestinian Reform & Development Plan (PRDP)" in 2008. The plan identified 4 sectors for the public investment to concentrate on. The "social sector," one of the 4 PRDP sectors, set its specific programs in: 1) improvement of health service and its facilities, and 2) construction of education facilities. Also, "infrastructure sector," another PRDP sector, set its specific programs in: 3) construction and rehabilitation of roads, 4) rehabilitation of electrical networks, and 5) construction of public halls, etc.

Against the backdrops, the residents of Jordan Valley have themselves identified necessary public services under the Technical cooperation project for "Improvement of Local Governance System." Among those public services, in order to improve the living environment of the residents, the Government of Japan decided to support the construction of health service facilities, educational facilities, community centers and other basic infrastructures and procurement of the relevant equipment under the Grant Aid because they are highly and urgently needed across Jordan Valley area.

3. Outline of the Preparatory Survey and the Contents of the Project

(1) Requested Projects

Against the backdrop, JICA sent PA a preparatory survey team during the periods of May 9 – June 6 and July 9 – August 12. During the field surveys, the final list of the candidate projects was submitted by Palestinian side as shown below.. The projects include: 1) Rehabilitation of medical facilities, 2) Construction and extension of education facilities, 3) Construction of community service facilities, 4) Construction of other basic infrastructure, and 5) Procurement of annexed equipment and furniture. The following table shows the requested projects by JC[1] and facility.

Facility	North	Mid-West	Mid-East	South
Medical & Health *4 projects*	PN-01: Upgrading PHC in Ein Elbeida (from level 2 to 3 with an ambulance)	PW-01: Upgrading PHC in An-Nassariyah (from level 2 to 3)	PE-01: Upgrading PHC in Marj Na'ja (from level 2 to 3 with a mobile clinic car)	PS-01: Upgrading PHC in Al-Auja (from level2 to 3 with a mobile clinic car)
Education *7projects*	PN-02: Establishing a new girls' school in Ein Elbeida PN-10: Providing School Bus for	PW-03: Building a new girls school in Al-Nassariyah PW-04: Constructing additional	PE-02: Constructing additional classrooms for Marj Al Ghazal school PE-03: Constructing	PS-02: Building additional classrooms for Al-Auja girls school

[1] JC stands for Joint Council. JC consists of Local Government Units (LGU) with small population. Each JC aims to provide better and efficient public service to residents by aligning LGUs together. There are 17 LGUs in the Jordan Valley.

	Kardalah students	classrooms for Ein Shibli elementary Co-ed school	additional classrooms for Al-Zubeidat school and Establishing a new girls' school in Marj Al Ghazal	
Community *5projects*	PN-09: Constructing a CBO center in Bardalah village council building	PW-12: Constructing a multi-purpose building in Ein Shibli PW-13: Constructing and furnishing Al-Aqrabaniyah women society		PS-10: Constructing a women center in Fasayel PS-15:Constructing joint office building and a multi-purpose hall in Al-Nwei'meh
Other Basic Infrastructure *10projects*	PN-05: Renovation of Electricity Distribution in Bardalah PN-06: Renovation of Electricity Distribution in Ein Elbeidah	PW-15: Improvement of Veterinary Services through setting up a veterinary centre with a mobile clinic car PW-09: Rehabilitating village internal roads in Al-Aqrabaniyeh PW-10: Improving internal road network with pavement in Al-Nassariyah PW-07: Upgrading the Capacity of Electrical Power Supply for 5 villages PW-08: Improvement of Access to Electrical Power Supply through introducing Solar System in Froush Beit Dajan	PE-05: Rehabilitation of Internal Road Network in Al Jiftlik	PS-04: Constructing and rehabilitating internal roads in Al-Nwei'meh & Al-Dhyouk PS-03: Procurement of 2 Tank Lorries for Water Supply for JC

JICA studied the construction industry, surveyed each site and interviewed with stakeholders and etc. to analyze the relevance of each project as well as the appropriateness of the project contents to put together the Outline Design Study Draft Report. Again, the team was dispatched to PA from October 28 to November 11, 2009 to discuss the Draft report with the concerned parties and finalize the Outline Design.

(2) Overview of the Outline Design

From the viewpoint of using the local standard, local specifications, local contractors and local materials, the architectural designs and specifications of medical & health facilities and education facilities are based upon the standard design of Ministry of Health (MoH) and Ministry of Education and Higher Education (MEHE), respectively.

(2) - 1 Facility

	Project Name	Facility Contents	Building Structure	Floor Area (sqm)
Medical & health	PN-01: Ein Elbeidah PHC	Clinic, x-ray room, examination room, pharmacy, etc.	1 story, RC	290.74
	PW-01: Al Nassariyah PHC	Clinic, x-ray room, etc.	2 story, RC	239.84
	PE-01: Marj Na'ja PHC	Clinic, x-ray room, examination room, pharmacy, etc.	1 story, RC	255.84
	PS-01: Al Auja PHC	Dental clinic, x-ray room	1 story, RC	60.79
Education	PN-02:Ein Elbeidah Girls School	Classrooms (12), Special classrooms (science rooms etc.) Administrative unit, toilet, etc.	2 story, RC	1,567.44
	PW-03:Al-Nassariyah Girls School	Classrooms (14), Special classrooms (science rooms etc.) Administrative unit, toilet, etc.	4 story, RC	2,203.28
	PW-04:Ein Shibli Co-ed School	Classrooms (1), Special classrooms, teachers' room, retaining wall.	3 story, RC	597.56
	PE-03:Al-Zubeidat Boys School	Classrooms (2)	1 story, RC	183.38
	PS-02: Al-Auja Girls School	Classrooms (4), Special classrooms, administrative unit	2 story, RC	850.80
Community	PN-09: CBO Centre in Bardalah	Piloti, office, meeting rooms, training rooms, etc.	2 story, RC	447.93
	PW-12:Multipurpose Center in Ein Shibli	Piloti, office, meeting rooms, kindergarten, etc.	2 story, RC	530.84
	PW-13:Al-Aqrabaniyah Women's Centre	Piloti, office, meeting rooms, training rooms, etc.	2 story, RC	497.20
	PS-10: Fassayel Women's Centre	Office, meeting rooms, training rooms, nursing rooms, etc	2 story, RC	221.43
	PS-15: Joint office building and a multipurpose hall in AlNwei'meh	Piloti, office, meeting rooms, training rooms, etc.	2 story, RC	526.74

Other Basic Infrastructure	PW-15: Veterinary Centre	Vaccine storage room, office, examination room, etc.	1 story, RC	167.50
	PW-09: Rehabilitating village internal roads in Al-Aqurabaniyah	Rehabilitation of base and surface course		7.46km
	PW-10: Improving internal road network with pavement in Al-Nassariyah	Rehabilitation of base and surface course		5.64km
	PE-05:Rehabilitation of Internal Road Network in Al Jiftlik	Rehabilitation with gravel		5.00km
	PS-04:Constructing and rehabilitating internal roads in Al-Nwei'meh and Al-Dhyouk	Rehabilitation of base and surface course Replacement of a box culvert bridge		13.60km
	PN-05:Renovation of electrical distribution in Bardalah	Replacement of cables and electric poles, repair of the distribution board, and installation of street lights.		
	PN-06: Renovation of electrical distribution in Ein Elbeidah	Replacement of cables and electric poles, repair of the distribution board, and installation of street lights.		
	PW-07: Upgrading Capacity of Electrical Power Supply for 5 LGUs	Review current methods on power lead-in, electrical transmissions and electrical distribution. Installation of iron towers, and installation of electrical wires and poles etc.		

(2)-2 Annexed Furniture and Equipment

	Type of Equipment	Major Item	Purposes	Q'ty
Medical & Health	Medical Equipment for PHC	Set of PHC equipment, generator, furniture, etc.	Medical consultation and administrative use	1 set
	Vehicles	Ambulance and mobile clinic car	Medical emergency and mobile clinic use	3 cars
	Medical Equipment for Ambulance	Stretcher, set of ambulance equipment, etc.	Medical emergency use	27 items
	Medical Equipment for Mobile Clinic	Sphygmomanometer, etc.	Mobile clinic use	18 items
Education	Educational Media	Copy printer, OHP, screen, etc.	Pedagogical and administrative use	8 items
	Science Equipment	Voltage meter, microscope, human system chart, etc.	Pedagogical use for Physics, chemistry and general science	92 items
	Home Economics Equipment	Refrigerator, furnace, etc.	Pedagogical use for Home economics	6 items
	Education Furniture	Student chair/desk, Teacher chair/desk, etc.	Learning, pedagogical, and administrative use	1 set
	Computer Equipment	Computer, printer, network, etc.	Pedagogical use for Information technology	3 sets
	School bus	Capacity of 26 passengers	Commuting use	2 cars

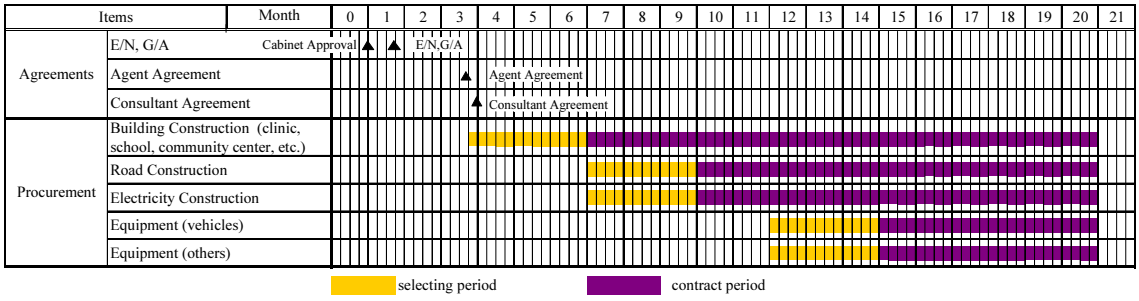
Community Service	Community Facility Use	Sewing machine, cooking table with double sinks, refrigerator, meeting desk, administrative desk, etc.	Training, administrative and meeting use	1 set
Other Basic Infrastructure	Veterinary Center	Dissecting set, refrigerator, furniture, etc.	Examination, vaccination storage, administrative use	1 set
	Mobile clinic car for Veterinary centre	Double cabin type of pick up with refrigerator	Mobile clinic use	2 sets
	Water Tanker	Truck with detachable water tanker (with capacity of 12 m^3)	Water Supply use	2 cars

4. Project Implementation Period

The entire project period including the tenders, construction and winding up is estimated to take about 18.25 months.

In the tender stage, it is estimated take about 3.25 months to carry out the tender, the tender evaluation and concluding contracts. The construction period of each project varies, because the scale of the construction varies, and also because some project sites require large-scale land development and/or pile driving due to uneven land shape and/or bad soil condition. Judging from previous experience in Palestine, a 4-storey building with land development and piles requires approximately 14 months for construction. As for road and electricity rehabilitation, 11 months are deemed to be an appropriate period. Further, it is estimated to take about 6 months to procure the furniture and equipment. After the completion of all the construction work, it is estimated to take about a month as a winding up period to do miscellaneous work such as closing the supervision office, make the final payment, etc.

Work Schedule



The Project cost to be borne by the PA side is estimated JPY 12.5 million.

5. The Relevance of the Project

Palestine, being occupied by Israel, has unique problems other than ones generally observed in the developing countries. For instance, 1) necessary infrastructure for the communities such as meeting spaces are hardly available due to the limitation of the land use, 2) the limitation of movement hinders people's daily life such as going and coming to and from schools, hospitals and etc. and 3) basic infrastructure such as road, electricity network and etc. used only by Palestinian are not up to the standard. Further, the necessity of providing decent public service is quite high in Jordan Valley area, as the living standard of some areas is quite low, with a lack of sufficient amount of water and electricity due to the restriction on constructing infrastructure imposed by Israel. In fact, a large number of families abandoned their village because of the severe living conditions in the Jordan Valley area.

Especially Jordan Valley where this Project focuses on compared to the West Bank as a whole, social and economical indexes represented by school enrollment ratio, medical/health services and so on are below the average and this area is deemed to be left behind. For example, the average access time to medical/health facilities is 28 minutes in the West Bank while it is 49 minutes in Nablus Governorate in Jordan Valley in 2006. And, the infant mortality rate is 14% in the West Bank while it is 18.5% in Jenin Governorate in Jordan Valley in 2004.

Specifically, the following problems are generally found across Jordan Valley: 1) people are not able to enjoy basic medical services due to old clinic facilities, 2) a significant number of girl students still drop out because of a lack of girls schools despite that separate education is standardized from the point of religious and social views, and 3) as there is hardly any space for community activities and people are forced to use a part of village offices or private houses for community activities. Further, although the situation varies from village to village, some areas are in a serious shortage of basic infrastructure such as roads, water, electricity network and etc. And it is urgently needed to develop the infrastructure comprehensively in Jordan Valley so as to improve living environment of the people in this area.

As this Project covers sectors with urgency and high priority and contributes directly to the improvement of people's BHN. Therefore this Project has high appropriateness to be executed under the Japan's Grant Aid.

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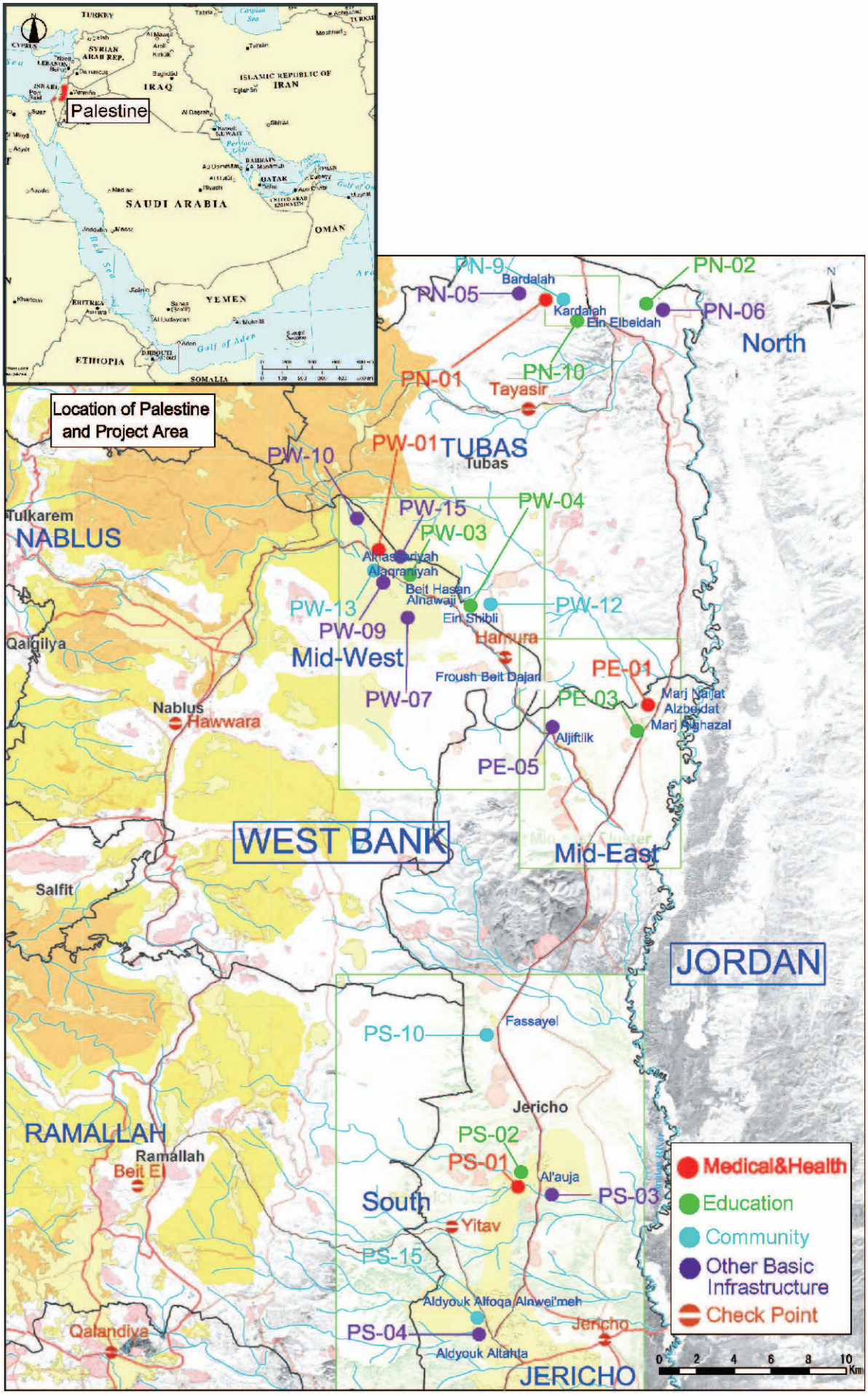
Attachment 1:

1. Member List of the Study Team
2. Study Schedule
3. List of Parties
4. Minutes of Discussions

Attachment 2: Drawings


Palestine
Location of Palestine and Project Area
PN-9
Bardalah
PN-05
PN-02
PN-06
Kardalah
Ein Elbeidah
North
PN-01
PN-10
Tayasir
PW-01
TUBAS
Tubas
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Tulkarem
NABLUS
Alnasseriyah
Alaqraniyah
Beit Hasan
Alnawaji
PW-13
PW-12
Ein Shibli
PW-09
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Mid-West
Qalqilya
Froush Beit Dajan
PE-01
PW-07
PE-03
Marj Naijat
Alzbeidat
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Nablus
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PE-05
WEST BANK
Mid-East
Salfit
JORDAN
PS-10
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Al'auja
PS-03
South
Yitav
PS-15
Aldyouk Alfoqa Alnwei'meh
Qalandiya
PS-04
Jericho
Aldyouk Altahta
JERICHO
Medical&Health
Education
Community
Other Basic Infrastructure
Check Point
0 2 4 6 8 10 Km

Perspective (Community Centre)

List of Figures and Tables

Abbreviations

A/A	Agent Agreement
A/M	Agreed Minutes
BOQ	Bill of Quantity
COGAT	Coordinator of Government Activities in the Territories
CTD	Central Tender Department
E/N	Exchange of Notes
G/A	Grant Agreement
GDP	Gross Domestic Products
HEPCO	Hebron Electric Power Company
IEC	Israel Electric Company
I-LDS	Interim Local Development System
JC	Joint Council
JEDCO	Jerusalem District Electricity Company
JICA	Japan International Cooperation Agency
JICS	Japan International Cooperation System
LGU	Local Government Unit
MEHE	Ministry of Education and Higher Education
MoA	Ministry of Agriculture
MoF	Ministry of Finance
MoH	Ministry of Health
MoLG	Ministry of Local Government
MoP	Ministry of Planning
MPW	Ministry of Public Works
NEDCO	Northern Electricity Distribution Company
MEKOROT	Israel National Water Company
PENRA	Palestinian Energy and Natural Resources Authority
PHC	Primary Healthcare Center
SELCO	South Electric Company
TOR	Terms of Reference
UNRWA	United Nations Relief and Works Agency
VAT	Value Added Tax

Chapter 1: Background of the Project

Chapter 1 Background of the Project

1-1 Background of the Project

The Palestinian economy is in decline, owing to severe policies including the restriction of land use and transportation. Consequently, neither the central government nor local governments can provide residents with the sufficient public services. Under these circumstances, public infrastructure such as clinics, schools, community meeting spaces, roads, electrical infrastructure are left becoming dilapidated as no periodical maintenance has been conducted. Furthermore, the living standard of some areas is quite low, with a lack of sufficient amount of water and electricity. In fact, a large number of families abandoned their village because of the severe living conditions in the Jordan Valley area. Thus, the necessity of providing decent public service is quite high in the Jordan Valley area.

On the other hand, the central government of PA promulgated "Palestinian Reform & Development Plan (PRDP)" in 2008. The plan identified 4 sectors for the public investment to concentrate on. The "social sector," one of the 4 PRDP sectors, set its specific programs in: 1) improvement of health service and its facilities, and 2) construction of education facilities. Also, "infrastructure sector," another PRDP sector, set its specific programs in: 3) construction and rehabilitation of roads, 4) rehabilitation of electrical networks, and 5) construction of public halls, etc.

Against the backdrops, the residents of Jordan Valley have themselves identified necessary public services under the Technical cooperation project for "Improvement of Local Governance System." Among those public services, in order to improve the living environment of the residents, Japanese Government decided to support the construction of health service facilities, educational facilities, community centers and other basic infrastructures and procurement of the relevant equipment under the Grant Aid because they are common and urgent needs in Jordan Valley.

1-2 Natural Condition

(1) Weather Condition

The Jericho Jordan Valley is an elongated area stretching for 80km north-south and 10km east-west along the Jordan River The Jericho Jordan Valley covers the entire Jericho governorate and western parts of Nablus and Tubas governorates. Most of the area is below the sea level and features high temperature and dry climate. The climate gets drier, as one moves from the north to the south.

Jericho city located in the southern part of the Valley records no more than 200mm precipitation per year, most of which fall in winter. While it is quite hot during the summertime,

it is comfortable in winter. Despite the little precipitation, the city has a good irrigation system because of abundant underground water. Variety of vegetables, citrus, and dates are grown.

Table 1-1 Weather Data in Major Cities

Ramallah (Altitude: 870m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
High Temp (℃)	12.0	13.0	16.0	21.0	25.0	28.0	29.0	29.0	28.0	25.0	19.0	14.0
Low Temp (℃)	4.0	4.0	6.0	9.0	12.0	15.0	17.0	17.0	16.0	14.0	9.0	6.0
Precipitation (mm)	142.2	114.3	99.1	30.5	2.5	0.0	0.0	0.0	0.0	22.9	68.6	109.2

Nablus (Altitude:550m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
High Temp (℃)	15.0	13.0	16.0	21.0	26.0	28.0	30.0	28.0	27.0	26.0	21.0	15.0
Low Temp (℃)	9.0	4.0	7.0	10.0	16.0	19.0	21.0	20.0	18.0	17.0	13.0	9.0
Precipitation (mm)	126.0	199.0	206.0	22.7	40.4	0.0	0.0	0.0	17.5	16.3	60.0	176.4

Jericho (Altitude:-350m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
High Temp (℃)	20.0	19.0	21.0	28.0	36.0	37.0	38.0	37.0	35.0	32.0	27.0	21.0
Low Temp (℃)	9.0	6.0	9.0	13.0	18.0	22.0	24.0	23.0	23.0	19.0	15.0	11.0
Precipitation (mm)	52.7	43.1	35.4	2.0	4.4	0.0	0.0	0.0	0.0	31.0	10.7	45.2

(2) Topographic Conditions

The topography varies among the sites. Some sites are relatively flat, and others are in sharp slopes and rocky. All in all, there is no completely flat site. Therefore, topographic surveys were carried out at all the construction sites by Palestinian engineers.

(3) Soil Conditions

Boring tests were carried out at all the surveyed sites and their results have been incorporated into the structural design. According to the result, only PW-03 (Al-Nassariya Girls School project) site requires pilling. The following is the specification of the soil investigation.

- 4 boreholes per site (9m in depth x 2 and 6m in depths x 2)
- Standard penetration test
- Water Content
- Atterberg limit
- Sieve analysis
- Field unitweight in case of cohesive soil
- Unconfirmed compression test,

- Consolidation and swelling tests
- Direct shear test

(4) Earthquake Conditions

Refer to P2-25 “4) Seismic Design” for details.

1-3 Environmental and Social Considerations

The Project involves land development, construction of retaining walls and pilling at several sites, however, such sites are either within the existing premises or in dry and rocky areas. Therefore, the construction works do not negatively affect the ecosystem or ground water system. Additionally, in conformity with the Ministry of Environment’s direction, all wastewater shall be vacuumed and will not penetrate into the ground. Therefore, there will be no negative impact on the environment. Moreover, as the Project includes no forced transfer of residents, there are no negative social impacts.

Chapter 2: Contents of the Project

Chapter 2 Contents of the Project

2-1 Basic Concept of the Project

2-1-1 Background of the Project

In the Middle-East Peace Process envisioning peaceful co-existence of the two states of Palestine and Israel, social development and the preparation for state building in Palestine are absolutely necessary. In this context, the Government of Japan regards the importance of focusing our aid to Palestine in the peace process, with the vision of "peace-building" as manifested in the ODA Charter. Even after the Hamas-led cabinet came into power in March 2006, President Abbas has been consolidating the public will for the peace process and endeavoring to move the peace process forward. In order to support this initiative by President Abbas, and in order to put the Concept for "Creating the Corridor for Peace and Prosperity" (note 1) into reality, this Project aims to improve the living environment of the people in Jordan Valley where the level of the basic infrastructure is still lower than that of the neighboring countries through procuring public infrastructure such as educational facilities, medical/health facilities, community centers and etc.

(note 1) the Concept for "Creating the Corridor for Peace and Prosperity": A unique medium-long term initiative by the Government of Japan which aims co-existence of Palestine and Israel in the future. It assists Palestine in strengthening its social and economical backbones as well as in building trust with its neighboring states to achieve self-help, as Palestine has become overly dependent upon Israel because of the long-year occupation. This Concept aims not only to activate the economic activities in Jericho Jordan River Rift Valley (JJRRV) by establishing a base like Agro-Industrial Park for production activities but also to enable people to share the peace through the social development. Thus, Japan concentrates its support to this area.

2-2 Outline Design of the Japanese Assistance

2-2-1 Design Policy

This Project contributes to "Palestinian Reform & Development Plan (PRDP: 2008-2010)" which aims at economic independence of Palestine through procuring infrastructure and equipment including vehicles necessary for LGUs to provide basic public services in Jordan Valley. Based on the request and the result of site survey and discussion, this Project set up the following besic policy.

2-2-1-1 Basic Policy

(1) Outline of the Project

a. This Project was planned JC-wise (Note:2) according to the "Interim Local Development Strategy (I-LDS)" put together by the representatives not only from the central ministries but also from the groups of women, youth and civil.

b. As to selection of the components, the following facilities and relevant equipment were selected because they have high needs and urgency across Jordan Valley.

- Medical/health facility
- Educational facility
- Community Center

c. Among other basic infrastructure projects such as road, water, electricity network and etc., the facilities with high needs and urgency were selected as candidates based on the individual situation of each LGU in each JC

d. The women's centres were selected as the candidate projects considering social and religious background peculiar to Palestine. Further, as to the educational facilities, taking girls' education into consideration, the majority of them are girls' schools..

（note 2）There are 16 LGUs in Jordan Valley. As the population of each LGU is between 700 and 4,000 only, it is not efficient for each LGU to provide public services individually. Therefore 16 LGUs are grouped into 4 Joint Councils (JC) so as to provide efficient public services.

(2) Design policy of the facilities

Design policy for each sector is as follows.

a. Medical/health facilities

- To upgrade an existing level II clinic in each JC respectively to level III. The level is set by MoH that administers all the medical/health facilities in the West Bank, and at the moment there are only clinics of level II or lower in Jordan Valley.
- To select the equipment which enables the clinics to provide level III treatment.

b. Educational facilities

- To solve the shortage of the classrooms in LGUs where multi-grade classes are conducted and/or non-classroom buildings such as a LGU office are used as classrooms.
- To plan educational facilities for all the 4 JCs. Of them, the majority is for girls so that girl students who wish to study at girls' school can continue their education.
- To design to open a part of the facilities for the community activities.

- To select minimum educational equipment according to the curriculum.
- To design small sized classroom that is 2/3 of the standard size for the schools, the expected number of students of which is as small as it is now after 5 years from now.

c. Community centers

- To plan community centres in 5 LGUs where no such space is available so that all the 15 LGUs with community activities will have a space for such activities. (Currently 1 out of 16 LGU does not have any community activity in Jordan Valley.)
- To minimize the building area by designing spaces to be shared such as meeting room, entrance, toilet, etc among the civil organizations in addition to rooms exclusively used by each organization, like office and storage.
- To plan a piloti, or a space with columns only and without walls as a multipurpose room so as to save the construction materials.

(3) Equipment

Medical/health and educational furniture and equipment shall be in conformity with the standard list and specification of MoH and MEHE respectively. On the other hand, for the community centres, minimum furniture and equipment shall be provided.

Further, considering the limitation of transportation and building construction in Palestine, ambulance, school bus and etc necessary for swift transportation are included in the Project.

(4) Excluded components

a. During the Field Survey I, 24 components based on the result of I-LDS were confirmed as the final request.

b. At the analysis stage, the following components were excluded from the Project.

1) A project of electricity network with solar generator system located in Area C which needs a long negotiation with COGAT.

2) A community centre in a LGU where a voluntary community activity was not confirmed.

3) Computers for computer education in the community centres.

2-2-1-2 Policy for Natural Conditions

(1) Weather

Jordan Valley stretches long north-south, starting from the northern part of the Dead Sea

northward along the Jordan River to the temporary border with Israel. The area is mostly below sea level and features a dry climate. The average temperature of the area is the hottest of all in the West Bank and it reaches at almost 50° C in summer. While the temperature is quite high, due to its dry weather, it is comfortable in the shade. The weather turns mild and it has a substantial amount of rainfall in winter. However, the annual precipitation is no more than between 200 mm and 300 mm. Considering these weather conditions, the followings are set as the design policy for construction.

① Main rooms of the medical facilities will be equipped with air-conditioners.

② Shade shall be installed in the educational facilities in order to protect students doing outside activities from the strong ultraviolet and rain in summer and winter, respectively. In addition, to avoid the strong glare in the morning time, classrooms will not face the east but the north or west. Moreover, ceiling fans will be installed in classrooms, while air-conditioners will be provided in administrative units and computer rooms.

③ Piloti will be designed for multi-purpose halls so that users feel comfortable under the shade and natural ventilation, taking the fullest advantage of warm and dry weather throughout the year.

(2) Topography

Many of the construction sites are on slope and thus require land development and leveling prior to construction. The site plans shall incorporate the following measures to minimize the amount of land development and leveling for the sake of cost reduction.

① Buildings shall be contoured.

② The number of stories shall be planned, taking an advantage of level differences. For example, when a partial basement floor is planned, its exterior wall will be used as a retaining wall.

③ Exterior plans shall take an advantage of level differences.

④ The length and height of retaining walls shall be minimized.

(3) Soil

Some of the construction sites might have weak soil condition. Therefore, appropriate foundation and pile-driving shall be done according to the result of a geotechnical investigation.

(4) Earthquake

The rift valley that stretches from the Jordan River via the Dead Sea to the Red Sea is an earthquake epicenter and earthquakes have been recorded long into the past. The earthquake zones are indicated in the “the seismic hazard map for building code in the Levant” published

by the Earth Sciences and Seismic Engineering Center of An-Najah National University in Nablus. The seismic coefficient in the map will be used for the structural design in the Project. According to the map, Jordan Valley is the most vulnerable area to earthquakes in the West Bank.

2-2-1-3 Policy for Socio-Economic Conditions

(1) Security

The relationship between the West Bank and Israel is relatively stable at this moment and construction is feasible at the requested sites. In addition, no landmines or unexploded bombs have been found nearby the sites. Moreover, most of the checkpoint road blocks are lifted after just a few hours or one day at the longest. Therefore, no negative impacts on construction, such as serious delay of transferring construction materials, are anticipated. Nevertheless, there is no telling whether or not this stability will last. Therefore, it is crucial to include a Force Majeure clause in the construction contracts.

(2) Religion and Gender

Most Palestinians are Muslims but small minorities are Christians. Nevertheless, there is no special gender code in designing buildings except that separating boy students from girl students from the 5th grade onward in educational facilities is recommended. However, as to a community center construction project, it is requested to design to separate men from women by allocating them to different floors. Hence, the design shall be made according to the request. Needless to say, toilets shall be built and located separately for women and men in all the facilities.

(3) Opening Educational Facilities to Community Activities

As a result of series of discussions between the team and Ministry of Education and Higher Education (MEHE), grounds, canteens, multi-purpose halls, and toilets in educational facilities might be open to community activities. Therefore, the educational facility designs will take it into consideration as much as possible that these facilities be located close to each other for easier management when the educational facilities are open to their communities. Nevertheless, as MEHE cannot shoulder any additional cost such as personnel and utilities associated with such community activities, further discussion on this matter among MEHE, MoLG and related JC on operation and maintenance is needed.

Open Section (a Part of Ground Floor)

- Shade and Canteen
- School Ground
- Multipurpose room & Entrance hall
- Toilet

Closed Section

- Classrooms
- Special classrooms
- Administrative section
- Library
- Store and Others

School Facilities *Shade and Canteen*

Figure 2-1 Concept of Opening School to Public Activities

2-2-1-4 Policy for Implementation Agency of the Palestinian Side

The Project covers multiple sectors and works with different levels of governments. However, at the stages of implementation and operation and management, MoLG is designated as a single implementation agency. That is to say, MoLG works as the main communication channel between Japan and the PA in order to minimize miscommunications and misunderstandings. Even when the Japan side has to contact the line ministries directly, i.e. Ministry of Health (MoH), MEHE and Ministry of Agriculture (MoA), the contents of communications shall always be shared with MoLG.

2-2-1-5 Policy for Local Consultant and Contractor Use

The Project constructs facilities for several sectors. And the facility construction in the Project covers three specialized areas, namely, i) architectural construction (medical facilities, educational facilities, community centers, and a veterinary centre), ii) road construction, and, iii) construction of an electrical network. Hence, 3 local engineering consultants (one each for architectural, civil and electrical) shall be selected to assist a Japanese consultant in conducting tenders and supervising construction.

In planning construction lots, it is necessary to consider specialty, geography, and the scale of the procurement. In the Project, taking the 3 specialized areas (architecture, civil and electricity) and 4 geographically separate areas into consideration, it is planned for each lot to have a certain level of construction scale. The following 6 lots are expected at this moment.

① Architectural construction: 3 lots (North, Mid-West, and Mid-East + South)
② Civil construction: 2 lots (Mid-West + Mid-East and South)
③ Electrical construction: 2 lots (North and Mid-West)

2-2-1-6 Policy for Furniture and Equipment Procurement

The Project follows the Palestinian business custom in which construction and equipment are procured separately. The Project shall procure a variety of types of equipment such as general furniture, medical equipment, educational equipment, veterinary equipment, ambulances, mobile clinic cars, school buses, water tankers, and a veterinary mobile clinic. These items are handled by specialized suppliers. Therefore, the number of the lots of procurement contracts is anticipated to equal to the number equipment types. (Refer to P2-38, 2-2-3-3 Lot Plan/Tender Plan (1) for details.)

2-2-1-7 Policy for Setting Grades of Facilities and Equipment

In principle, furniture and equipment for medical facilities, educational facilities, and a veterinary centre shall follow the standard equipment list and specification by MoH, MEHE, and MoA, respectively.

Furniture and equipment for community centers will be provided but kept to the minimum. However, for the sake of easy maintenance, they shall be of a type common and standard in the West Bank.

2-2-1-8 Policy for Construction Materials Procurement

Although few construction materials are produced in Jordan Valley, most of them are manufactured in urban areas such as Ramallah, Nablus, and Hebron, in the West Bank. Some mechanical and electrical equipment, medical equipment, educational materials, etc. are imports from Europe or Asia. Vehicles are also imported from Europe or Japan. Nevertheless, these imports are generally circulated in the market of the West Bank and all the materials and equipment necessary for the Project can be procured within the West Bank. Further, all the construction sites can be reached within 2 hours from major cities in the West Bank, though it depends on checkpoint situations. Therefore, it is set out as a principle to procure all the materials and equipment within the West Bank.

2-2-1-9 Policy for Quality Control

Local consultants are usually employed for construction supervision in Palestine. While the level of local consultants is generally much higher than that of their Asian and African counterparts, their consciousness over safety and quality controls does have some room for improvement. Hence, it is desirable for the Japanese consultant to supervise construction supervision work, while guiding and advising the local consultants to bring out their best. Also, the following are specific ideas to better the quality control.

- Include the frequency of site visits, the number of site visitors, and items to control

the quality of in TOR or in the contract, when selecting a local consultant.

- The Japanese consultant, in tandem with the local consultants, puts together a checklist for construction supervision.
- All the construction supervisors are summoned before the construction (during the construction if necessary) for a seminar to share and unify the quality control methods.

2-2-1-10 Policy for Construction Schedule

Access to construction sites by construction vehicles is not likely to be a problem even during the rainy season, though some of the project sites recess from a main road. However, it is desirable to avoid commencing construction in December, since rain interrupts the construction in that season and the efficiency of earthwork thus decreases.

The construction period of each site is different, as each site has its unique shape and soil conditions. In fact, some sites require pile-driving work, and the amount of construction work varies among the sites. In addition to that, the scale of building work varies among the sites. From the previous construction experience in the West Bank, it is expected to take about 14 months to construct buildings as high as 3 stories and ones involving pile-driving work, land development and/or leveling works. On the other hand, 11 months are sufficient to complete civil and electrical construction work. To add, in terms of the West Bank - Israel relationship, there is little that could negatively affect the construction period. Still in all, the entire construction period should include some extra time.

2-2-2 Outline Design

2-2-2-1 Planned Components by Sector

Planned components agreed between Japanese side and PA side, based on the above mentioned design policies, are described below by sector.

2-2-2-1-1 Medical and Health Facilities

(1) Facility Component

Planned rooms by medical facility are shown in Table 2-1.

Table 2-1 Planned Rooms by Medical Facility

Project	PN-01	PW-01	PE-01	PS-01
LGU	Ein Elbeidah	Al Nassariyah	Marj Na'ja	Al Auja
Construction or Extension	Extension	Extension	New Construction	Extension
Rooms	・Specialist Clinic ・Dental Clinic ・X-ray Room ・Lab. Room ・Pharmacy ・Emergency Room ・Garage (for Ambulance) ・Generator Room	・MCH Clinic ・Family Planning Room ・X-ray Room ・Kitchenette ・Toilet ・Waiting Area ・Generator Room	・General Practitioner Clinic ・MCH Clinic ・Dental Clinic ・X-ray Room ・Lab. Room ・Pharmacy ・Kitchenette ・Toilet ・Storage Room ・Generator Room	・Dental Clinic ・X-ray Room

(2)Medical Equipment and Furniture

Medical equipment and furniture are supplied to each upgraded PHC according to the following list. The gray part indicates that there is no applicable room to supply medical equipment and furniture.

Table 2-2 List of Medical Equipment and Furniture to be Supplied

Room	No. of Unit	Equipment and Furniture	PN-01	PW-01	PE-01	PS-01	QTY
Administration Room	1	Computer + Printer	1				1
		Computer Table	1				1
		Waiting Chair	1				1
		Centre Table	1				1
Pharmacy	1	Desk	1	0	0	1	2
		Chair	1	0	0	1	2
		Air Conditioner	1	1	1	0	3

Lab. Room	1	Centrifuge Tube/12	1	1	1	1	4
		Spectrophotometer	1	1	1	1	4
		Hematology Analyzer	1	1	1	1	4
		Water Bath	1	1	1	1	4
		Table Top Autoclave	1	1	1	1	4
		Automatic Pipettes(set)	1	1	1	1	4
		Microscope	1	1	1	1	4
		Tube Shaker	1	1	1	1	4
		Vortex Mixer	1	1	1	1	4
		Refrigerator 12 feet	1	1	1	1	4
		Timer	1	1	1	1	4
		Stop Watch	1	1	1	1	4
		UPS 6 KVA	1	1	1	1	4
		Lab. Desk	1	1	1	1	4
		Stool	2	2	2	2	8
		Air Conditioner	1	1	1	1	4
GP Clinic	1	Electrocardiograph	1	1	1	1	4
		Side Lamp	0	1	0	1	2
		Suction Machine	0	1	1	1	3
		Nebulizer	0	1	1	0	2
		O2 Cylinder Comp.	1	1	1	1	4
		Diagnostic Set	0	0	0	1	1
		Laryngoscope	1	0	0	0	1
		Glucometer	1	1	1	0	3
		Ambu Bag Set	1	1	1	1	4
		Air Conditioner	0	1	0	0	1
SP Clinic	1	Patient's Couch	0	1			1
		Side Lamp	0	1			1
		Suction Machine	1	1			2
		Sphygmomanometer	1	1			2
		Stethoscope	0	1			1
		O2 Cylinder Comp.	1	1			2
Dental Clinic	1	Dental Chair	1	1	1	1	4
		Amalgamator	1	1	1	1	4
		Scaler	1	1	1	1	4
		Light Cure	1	1	1	1	4
		Autoclave	1	1	1	1	4
		Desk	1	1	1	1	4
		Chair	1	1	1	1	4
		Air Conditioner	1	1	1	1	4
X-Ray Room	1	X-Ray Viewer	2	2	2	2	8
		Desk	1	1	1	1	4
		Chair	1	1	1	1	4
		X-Ray General Purpose	1	1	1	1	4
		Set of X-Ray Cassette	3	3	3	3	12
		ID Camera	1	1	1	1	4
		X-Ray Film Processor	1	1	1	1	4
		X-Ray Film Cabinet	1	1	1	1	4
		Air Conditioner	1	1	1	1	4
Waiting Room	1	Waiting Chair Double)	4				4

Child Care Room	1	Side lamp	1				1
		Suction Machine	1				1
		Nebulizer	1				1
		Sphygmomanometer with Infant Cuff	1				1
		Sphygmomanometer	1				1
		O2 Cylinder Comp.	1				1
		Diagnostic Set	1				1
		Laryngoscope	1				1
		Ambu Bag Set	1				1
		Desk	1				1
		Chair	1				1
Mother Care Room	1	Ultrasound	1				1
MCH Clinic	1	Infant Scale with Trolley		0	0	1	1
		Side Lamp		1	0	1	2
		Suction Machine		1	1	1	3
		Nebulizer		1	1	1	3
		Sphygmomanometer with Infant Cuff		1	1	1	3
		Stethoscope		0	0	1	1
		O2 Cylinder Comp.		1	1	1	3
		Diagnostic Set		1	1	1	3
		Laryngoscope		1	1	1	3
		Ambu Bag Set		1	1	1	3
		Ultrasound		1	1	1	3
Family Planning Room	1	Gynecological Couch	1	1			2
		Desk	1	1			2
		Chair	1	1			2
Emergency Room	1	Patient's Couch	1				1
		Bedside Monitor	1				1
		Suction Machine	1				1
		Emergency Trolley Complete	1				1
		Sphygmomanometer	1				1
		Stethoscope	1				1
		O2 Cylinder Comp.	1				1
		Defibrillators Monitor	1				1
Nurse Station (Male)	1	Desk		1			1
		Chair		1			1
		Computer + Printer		1			1
		Computer Table		1			1
Kitchenette	1	Gas Range Three Cookers	1	2	1	1	5
		Small Kitchen Instruments	0	1	0	0	1
Clean Unity	1	Table Top Autoclave	1	1	1	1	4

(3)Vehicles

Table 2-3 shows deployment of one ambulance (standard type) and two mobile clinic cars to medical facilities. As to the ambulance and mobile clinic cars, American diesel vans shall be modified for the purposes. In addition, the standard equipment shown in Table 2-4 shall be installed in the Ambulance.

Table 2-3 Vehicle to be Supplied

Project	PN-01	PW-01	PE-01	PS-01
LGU	Ein Elbeidah	Al Nassariyah	Marj Na’ ja	Al Auja
Vehicle	Ambulance	－	Mobile Clinic Car	Mobile Clinic Car
Quantity	1	－	1	1

The following medical equipment is installed in the above ambulance.

Table 2-4 List of medical equipment installed in the Ambulance

	Item	QTY
1	Stretcher cot model	1
2	Aluminum backboard	1
3	Scoop stretcher	1
4	Head immobilizer	1
5	Fastener	1
6	Restraints	1
7	Aluminum folding stretcher	1
8	Vacuum splint kit	1
9	Doctor case	1
10	Disaster pouch	1
11	Pocket mask	1
12	Burn sheet	1
13	Urine bottle	1
14	Blanket	2
15	Set of neck collar (all size)	1
16	Disposable delivery kit	5
17	Sharp container	1
18	Portable oxygen system	1
19	Resuscitation kit	1
20	Electrical suction unit	1
21	Blood pressure device with stethoscope	1
22	Oral air was set (all size)	1
23	Metal splints (all size)	1
24	Clothes scissors	2
25	Kidney receiver	5
26	Quick cold	20
27	Semi automated defibrillator	1

The medical equipment shown in Table 2-5 is loaded onto the above mobile clinic cars.

Table 2-5 Medical equipment for mobile clinic cars

	Item	QTY per car	Total QTY
1	Sphygmomanometer	5	10
2	Thermometer	5	10
3	Fetal heart detector	1	2
4	Glucometer	4	8
5	Examination Lamp	1	2
6	Adult scale (digital)	4	8

7	Pediatric scale (digital)	4	8
8	Diagnostic set	3	6
9	Nebulizer	2	4
10	Mobile suction unit	2	4
11	Oxygen cylinder	2	4
12	Doctor stethoscope (double head)	5	10
13	Nurse stethoscope (single head)	5	10
14	Surgical instruments	5	10
15	Laryngoscope	3	6
16	Ice box	1	2
17	Examination Couch	1	2
18	Ambu Bag Set	3	6

2-2-2-1-2 Education Facilities

The following tables summarize the components of facility, furniture, and equipment to be provided. Furniture and equipment are provided according to the facility to be constructed.

(1) Facility Components

Table 2-6 Facility Components by School

School Name / School size / Grade / Components	Ein Elbeidah Girls School	Al-Nassariya Girls School	Ein Shibli Co-ed School	Al-Zubeidat Boys School	Al-Auja Girls School
	Small	*Standard*	*Small*	*Standard*	*Standard*
	1-12	1-12 (w/science)	1-9	1-12 (w/science)	6-12 (w/science)
No. of Classrooms	12	14	1	2	4
Library	1	1	1	-	1
Administration Unit	1	1	-	-	1 (headmaster's & secretary rooms)
Teachers Room	1	2 small rooms	1	-	-
First Aid	1	1	-	-	-
Social Worker Room	1	1	-	-	-
Science Lab (General)	1	-	1	-	-
Biology & Chemistry Lab	-	1	-	-	-
Physics & Technology Lab	-	1	-	-	-
Arts & Crafts Room (Multipurpose room)	1	1	-	-	1
Computer Lab	1	1	-	-	-
General Stores	1	1	1	-	1
Toilet Stalls	1	1	1	-	1
Canteen & Shade	1	1	1	-	-
Homeeconomics Room	1	1	-	-	1
Others	-	-	Retaining Wall	-	-

(2) Components of Furniture and Equipment

General educational furniture, science equipment, computer equipment, educational media and home economics equipment will be provided according to the facilities to be constructed.

Educational media equipment is provided only to the brand new schools.

Table 2-7 List of Educational Furniture

NO	Q'ty and Justification			Ein Elbeidah Girls School (small)	Al-Nassariya Girls School (stand.)	Ein Shibli Co-ed school (small)	Al-Zubeidat Boys School (stand.)	Al-Auja Girls School (stand.)
				# of CRs	# of CRs	# of CRs	# of CRs	# of CRs
				12	*14*	*1*	*2*	*4*
1	Student Desk1 (S) for two For Gr. 1-4	Small school: 12/classroom	Standard size school: 20/classroom	48	80	0	0	0
2	Student Desk2 (M) for two For Gr. 5-10	Small school: 12/classroom	Standard size school: 20/classroom	72	120	12	0	0
3	Student Desk3 (L) for two For Gr. 11-12	Small school: 12/classroom	Standard size school: 20/classroom	24	80	0	40	80
4	Student Chair1 (S) For Gr.1-4	Small school: 24/classroom	Standard size school: 40/classroom	96	160	0	0	0
5	Student Chair2 (M) For Gr.5-10	Small school: 24/classroom	Standard size school: 40/classroom	144	240	24	0	0
6	Student Chair3 (L) For Gr.11-12	Small school: 24/classroom	Standard size school: 40/classroom	48	160	0	80	160
7	Teacher Desk (Classroom)	1/classroom		12	14	1	2	4
8	Teacher Desk (Teachers' room)	20/teachers room	12/teachers room (Al-Nassariya)	20	24	20	0	0
9	Teacher Chair	Classroom + Teachers' room		32	38	21	2	4
10	Headmaster Desk	1/headmasters 1/secretary room	1/first aid 1/social worker	4	4	0	0	2
11	Headmaster Chair	Ditto		4	4	0	0	2
12	Metal File Cabinet (4 Doors)	Ditto		4	4	0	0	2
13	Multipurpose Chair	6/headmasters 6/secretary room	6/first aid 6/social worker	24	24	0	0	12
14	Metal Cabinet (2 doors)	4/teachers room 1/arts& crafts 1/lab, 1/PC lab	3/teachers room at Al-Nassariya	7	10	5	0	1
15	Metal Cabinet (12 Doors)	2/teachers room	1/teachers room at Al-Nassariya	2	2	2	0	0
16	Sport Cabinet	1/teachers room		1	2	1	0	0
17	Student Chair (L)	Small school: 24/arts & crafts room	Standard size school: 40/arts & crafts room	24	40	0	0	40
18	Lab Locker	8/lab		8	16	8	0	0
19	Book Shelves	Small school: 8/library	Standard size school: 10/library	8	10	8	0	10
20	Reading Table	Small school: 6/library	Standard size school: 8/library	6	8	6	0	8
21	Reading Chair	Small school: 24/library	Standard size school: 40/library	24	40	24	0	40
22	Stool Chair	Small school: 24/lab, 24/home economics room	Standard size school: 40/lab, 40/home economics room	48	120	24	0	40
23	Working Table for Homeeconomis Room	Small school: 5/homeeconomics room	Standard size school: 8/homeeconomcs room	5	8	0	0	8
24	Computer Table	Small school: 13/computer lab	Standard size school: 21/computer lab	13	21	0	0	0
25	Computer Chair	Small school: 25/computer lab	Standard size school: 41/computer lab	25	41	0	0	0

Table 2-8 List of Science Equipment

No.	Item	Q'ty per lab (stand.)			Ein Elbeidah	Al-Nassariyah		Ein Shibli
		Standard		Small	(Small)	(Standard)		(small)
		Phy	Chem	Sci	Sci	phy	chem.	Sci
1	Ammeter	6	0	4	4	6	0	4
2	Ball and Ring	6	0	4	4	6	0	4
3	Bar Magnet	6	0	4	4	6	0	4
4	Bell Jar with pump-plastic	2	0	1	1	2	0	1
5	Calorimeter Set	2	1	1	1	2	1	1
6	Cathode Rays Tubes (Set of 2 tubes)	1	1	1	1	1	1	1
7	Compass(pocket)	6	0	4	4	6	0	4
8	Compass set :(pack of 12)	2	0	1	1	2	0	1
9	Compund Bar	3	0	2	2	3	0	2
10	Demo Aneroid Barometer	1	1	1	1	1	1	1
11	Demountable Transformer	1	0	1	1	1	0	1
12	Dynamo ; Hand Operated	3	0	2	2	3	0	2
13	Electronic Balance	3	3	2	2	3	3	2
14	Electroscope	6	0	4	4	6	0	4
15	Fire Extinguisher	1	1	1	1	1	1	1
16	Force Table	3	0	2	2	3	0	2
17	Laser Geoptic set	1	0	1	1	1	0	1
18	Heat Conduction Appar	3	3	2	2	3	3	2
19	High voltage power supply	1	1	1	1	1	1	1
20	Hoffman Apparatus	2	2	1	1	2	2	1
21	Hook's Law	3	0	2	2	3	0	2
22	Hope's Apparatus	1	3	2	2	1	3	2
23	U-shape Magnet	6	0	4	4	6	0	4
24	Hydraulic Press	2	2	1	1	2	2	1
25	Hydrometer	2	2	1	1	2	2	1
26	Hygrometer (wet and dry)	2	2	1	1	2	2	1
27	Lab Burner-Gas Cartridge	4	4	3	3	4	4	3
28	Lens Set(set of 6)	2	0	1	1	2	0	1
29	Linear Air Track Kit	1	0	1	1	1	0	1
30	Low Voltage Power Supply	3	3	2	2	3	3	2
31	Magnetic Field Chamber	3	0	2	2	3	0	2
32	Magnetic Needle	6	0	4	4	6	0	4
33	Microammeter	3	1	2	2	3	1	2
34	Micrometer	3	0	2	2	3	0	2
35	Mirrors	3	0	2	2	3	0	2
36	Multimeter Digital	6	1	4	4	6	1	4
37	Optical Bench Set	1	0	1	1	1	0	1
38	Prisms (set of 2)	2	0	1	1	2	0	1
39	Ripple Tank	1	0	1	1	1	0	1
40	Ruhmkorff Commutator	2	1	1	1	2	1	1
41	Slotted masses with hanger	2	1	1	1	2	1	1
42	Spectral Gas Tubes	2	2	1	1	2	2	1
43	Spring Balance Set	2	0	1	1	2	0	1
44	System To study Free Fall	1	0	1	1	1	0	1
45	Tellurium	1	0	1	1	1	0	1
46	Triple Beam Balance	1	1	1	1	1	1	1
47	Tuning Fork on Resonance Box	3	0	2	2	3	0	2
48	Tuning Forks	1	0	1	1	1	0	1
49	Van de Graff Generator	1	0	1	1	1	0	1
50	Vernier Caliper	3	1	2	2	3	1	2
51	Voltmeter	3	3	2	2	3	3	2
52	Atomic structure Model	0	3	2	2	0	3	2
53	Beakers	3	6	4	4	3	6	4
54	Burette	0	3	2	2	0	3	2
55	Burrete Clamp	0	3	2	2	0	3	2
56	Clamp , Universal	6	6	4	4	6	6	4
57	Distillation Apparatus	1	3	2	2	1	3	2
58	Double 45 Clamp	6	6	4	4	6	6	4

No.	Item	Q'ty per lab (stand.)			Ein Elbeidah	Al-Nassariyah		Ein Shibli
		Standard		Small	(Small)	(Standard)		(small)
		Phy	Chem	Sci	Sci	phy	chem.	Sci
59	Erlenmeyer Flask	6	6	4	4	6	6	4
60	Graduated Cylinder	6	6	4	4	6	6	4
61	Periodic Table of element	1	1	1	1	1	1	1
62	Pipette	3	6	4	4	3	6	4
63	Pipette Filler	3	6	4	4	3	6	4
64	Portable pH Meter	3	3	2	2	3	3	2
65	Retort stand:Base and Rod	6	6	4	4	6	6	4
66	Rocks and Minerals Set	1	1	1	1	1	1	1
67	Stand ring	6	6	4	4	6	6	4
68	Test Tube	1	2	1	1	1	2	1
69	Test Tube Rack	6	6	4	4	6	6	4
70	Thermometers: (set of two)	3	3	2	2	3	3	2
71	Tripod stand , Triangular	6	6	4	4	6	6	4
72	Wire Gauze,Ceramic cente:	6	6	4	4	6	6	4
73	Dissecting Set	0	1	1	1	0	1	1
74	Human Brain Model	0	1	1	1	0	1	1
75	Human CirculatorySystem Charts	0	1	1	1	0	1	1
76	Human Digestive System Chart	0	1	1	1	0	1	1
77	Human Ear Model	0	1	1	1	0	1	1
78	Human Eye Model	0	1	1	1	0	1	1
79	Human Heart Model	0	1	1	1	0	1	1
80	Human kidney Model	0	1	1	1	0	1	1
81	Human Muscular System Chart	0	1	1	1	0	1	1
82	Human Nervous System Chart	0	1	1	1	0	1	1
83	Human Respiratory System Chart	0	1	1	1	0	1	1
84	Human Skeleton Model	0	1	1	1	0	1	1
85	Human Torso (sex less)	0	1	1	1	0	1	1
86	Human Urinary System Chart	0	1	1	1	0	1	1
87	Microscope	0	6	4	4	0	6	4
88	Stereomicrosope	0	3	2	2	0	3	2
89	Educational Solar Energy Kit	3	0	2	2	3	0	2
90	Digital wrist blood pressure monitor	0	3	2	2	0	3	2
91	Basic Electronics Kit	10	0	6	6	10	0	6
92	Tool Set in a Plastic Box	1	0	1	1	1	0	1

Each item of science equipment is provided according to the number of students in an experiment group.

	Standard Size School	**Small Size Schools**
・ Experiment table-by-table	6 Sets	4 Sets
・ Experiment by a group of 12-14 plus a teacher's demonstration (Gas burner)	4 Sets (3 set+1 for teacher)	3 Sets (2 sets +1 for teacher)
・ Experiment by a group of 12-14	3 Sets	2 Sets
・ Experiment by a group of 20-24	2 Sets	1Set
・ Only a demonstration by a teacher	1Set	1Set
・ Experiment conducted in a classroom	10 Sets	6 Sets

Table 2-9 List of Computer Equipment

No	Item	Specification	Q'ty/ computer lab	Ein Elbeidah Girls School (Small)	Al-Nassariya Girls School (Standard)
1	Computer Hardware	Desktop type, CPU, Monitor, Keyboard, Accessories	Small: 13 sets Standard: 21 sets	13	21
2	Printer	Laser Printer	1 set	1	1
3	Networks	Distribution board, Switchboard, Cables	1 set	1	1

Table 2-10 List of Educational Media Equipment

No	Item	Specification	Q'ty/administrative unit	Ein Elbeidah Girls School	Al-Nassariya Girls School
1	Copy printer	B4 size, Capacity of 1000 sheets, minimum 300 dpi	1	1	1
2	Photocopier	A3 size, 50%-200%, 200 page per minute (approx)	1	1	1
3	Overhead projector	A4 Film, Portable	1	1	1
4	Screen	156 cm x 156 cm Wall screen	1	1	1
5	LCD projector	LCD type	1	1	1
6	DVD Player	With Remote control	1	1	1
7	Radio cassette recorder with Vcd player	With AM/FM radio tuner	1	1	1
8	Digital Camera	1GB flash memory	1	1	1

Table 2-11 List of Home Economics Equipment

No	Equipment	Specifications	Q'ty/homee conomis room	Ein Elbeidah Girls School	Al-Nassariy a Girls School	Al-Auja Girls School
1	Refrigerator	300 litre capacity (approx.)	1	1	1	1
2	Furnace	Five burners , electric / gas power furnace	1	1	1	1
3	Washing Machine	Full automatic, Capacity of (5) kg	1	1	1	1
4	Microwave furnace	20 liters capacity (approx.)	1	1	1	1
5	Dishwasher	7 gallon capacity (max)	1	1	1	1
6	Blender Mixer	1 litre (approx.)	1	1	1	1

(3) School Buses

Table 2-12 School Buses

Code	PN-10
Project Title	School Bus Operation
JC	North
VC	Kardalah and Al-Malleh Bedouin Community
Type of Vehicle	School Bus with 26 seats
Number	2

2-2-2-1-3 Community Service Facilities

(1) Facility Component

Table 2-13 List of Rooms Related to Community Centre by Type of Construction

Code	PN-09	PW-12	PW-13	PS-10	PS-15
Type of Centre	CBO Centre	Multi-purpose Centre	Women's Centre	Women's Centre	Multi-purpose Centre
JC	North	Mid-West	Mid-West	South	South
Village	Bardalah	Ein Shibli	Al-Aqrabaniyah	Fasayel	Al-New'imeh & Al-Dyouk
Type of Construction	New Construction	New Construction	New Construction	New Construction	New Construction
Rooms to be designed	・Piloti ・Office ・Meeting room ・Lavatory ・Store ・Sewing Room ・Food Processing Room ・Kitchen	・Piloti ・Office ・Meeting room ・Lavatory ・Store ・Kindergarten ・Kitchen ・Food Processing Room	・Piloti ・Office ・Sewing room ・Food Processing Room ・Lavatory ・Store ・Education room ・Kitchen ・Training room	・Office ・Kitchen ・Meeting room ・Lavatory ・Nursing room ・Sewing room ・Food processing room	・Piloti ・Office ・Lavatory ・Education room ・Library ・Store ・Gymnastic room ・Kitchen ・Food Processing Room ・Meeting room

Note:

(a) For PN-09 and PW-12: An office is arranged for each CBO, while a meeting room, lavatory and a kitchen room are designed for collective use. A Piloti is planned for use by more than 100 people.

(b) For PW-13: A sewing room, an education room, a training room and a Food Processing Room are designed separately for each activity. A Piloti is planned for use by more than 100 people.

(c) For PS-10: In a case when more than 20 people shall assemble, a movable partition between the meeting room and the sewing room shall be removed, so that the entire floor space of the two rooms can be used to accommodate those large numbers of people.

(d) For PS-15: An office is arranged for each CBO, while a meeting room, lavatory and kitchen are designed for collective use. A Piloti is planned for use by more than 100 people.

(2) Furniture and equipment

Table 2-14 Furniture and Equipment by each Community Centre

Furniture and equipment	Room name	PN-09	PW-12	PW-13	PS-10	PS-15
		CBO center	Multi-purpose hall	Women's center	Women's center	Multi-purpose hall
		Bardalah	Ein Shibili	Al-Aqrabaniyah	Fasayel	Nwei'meh
plastic chair	piloti	96	96	120	0	120
knockdown plastic table (for 8 persons)		12	12	15	0	15
office desk	office	7	5	2	1	5
office chair		7	5	2	1	5
meeting table (for 6 persons)		5	3	0	1	3
chair for meeting table		30	18	0	6	18
computer		5	3	1	1	3
printer		5	3	1	1	3
folding type meeting table (for 6 persons)	meeting room training room	5	8	4	3	4
folding type meeting table (for 4 persons)		0	0	2	2	0
chair for meeting table		30	48	32	26	24
bookshelf	library	0	0	0	0	7
desk	educational room	0	0	10	0	6
chair		0	0	10	0	6
sewing machine with table	sewing room	2	0	7	2	0
chair for sewing machine		2	0	7	2	0
table for sewing (w=1800)		0	0	2	0	0
refrigerator : large size (450l)	food processing	1	1	2	1	1
oven (for food processing)		1	1	1	1	1
stove (for food processing)		1	1	1	1	1
cooking table with double sink (for food processing) W:		2	2	2	2	2
cooking table (for food processing) w:1800		2	2	4	2	2
hanging cupboard, stainless type : w=1800		2	2	2	2	2
storage rack, stainless type :w=:1800		2	2	2	2	2
refrigerator small soze (l)	kitchen	1	1	1	1	1
stove (for small kitchen)		1	1	1	1	1
cooking table with double sink (for small kitchen) W:1		1	1	1	1	1
wall cabinet w:1800		1	1	1	1	1

2-2-2-1-4 Other Basic Infrastructure

(1) Veterinary Center

1) Facility Component

Table 2-15 Basic Information of the Veterinary centre

Code	PW-15
Proposed JC	Mid-West
Location in JC	Mid-West
Location in VC	Al-Nassariyah

Target of Service	Entire area of the four JCs in Jordan Valley, except Jericho Municipality
Type of Construction	New Construction
Rooms	・ Vaccines Storage Room ・ Laboratory ・ Office ・ Garage for Mobile Car

2) Vehicle Component

Table 2-16 Vehicle to be Provided

Type of Vehicle	Double cabin type of pick up with refrigerator		
Required No.	2		
Operation Area	1	・ Nablus District ・ Tubas District	Mid-West JC North JC
	1	・ Jericho District	Mid-East JC South JC

3) Furniture and Equipment

Table 2-17 Furniture and Equipment for Veterinary Centre

Type of Room	Item	Required Number
Office	Desk and Chair	4
	Meeting Table	2
	Chair for Meeting	12
	Bookshelf	10
	Air Conditioner	3
	Facsimile	1
	Photocopy Machine	1
	Telephone	5
	Computer	4
	Printer	4
	Scanner	1
	Stove	1
Vaccine Storage Room	Refrigerator	3
Laboratory	Dissecting Set	1
	Dissecting Table	1
	Ordinary Microscope	1
	Centrifugre	1
	Autocrave	1
	Automatic distillatory for autocrave	1
	Animal Shelter	1

(2) Road Facilities

1) Components

Table 2-18 Road Components

No.	Village	Components	Road extension
PW-09	Al Aqrabaniyah & others	Rehabilitation of base and surface course	7.46 (km)
PW-10	Al Nassariaya	Rehabilitation of base and surface course	5.64 (km)
PE-05	Al Jiftlik	Rehabilitation with gravel	5.00 (km)
PS-04	Al-Nwei'meh & Al-Dyouk	Rehabilitation of base and surface course Replacement of a box culvert bridge	13.60 (km)

2) Priority

We set up a priority order in the case that scale down of the road plan is needed due to the budget limitation at the stage of implementation.

Table 2-19 Higher and Lower Priority Roads

Higher Priority Roads	Main existing village roads which are indispensable for commuting to and from school, village meetings, and agricultural activities, and which are in a bad condition. These roads inconvenience villagers' life with dust and mud in the dry and rainy season respectively.
Lower Priority Roads	Village roads relatively better paved and do not inconvenience transportation.

(3) Electrical Facilities

The following table shows the components to be provided in the road sector.

Table 2-20 Electrical Facilities Components

No.	Village	Components
PN-05	Bardalah	Replacement of cables and electric poles, repair of the distribution board, and installation of street lights.
PN-06	Ein Elbeidah	Replacement of cables and electric poles, repair of the distribution board, and installation of street lights.
PW-07	Al Nassariyah Al Aqrabaniyah Beit Hassan Al Nawaji Ein Shibli	Review current methods on power lead-in to the JC, electrical transmissions and electrical distribution. Installation of iron towers, repair of the distribution board, and installation of electrical wires and poles to supply power to the well-pumps, installation of electrical meters, etc.

(4) Water Tankers

Table 2-21 Water Tankers

Code	PS-03
Project Title	Water Supply by Water Tanker
JC	South
VC	Three VCs under South JC
Type of Vehicle	Truck with detachable water tanker (with capacity of 12 m^3)
Number	2

2-2-2-2 Basic Plan

2-2-2-2-1 Architectural Plan

This section discusses common architectural policies for the medical facilities, educational facilities, the community centers, and the veterinary centre.

(1) Design Standard

The West Bank follows the AIC[1] standard for the structural design; however, there is no standard either for fireproofing or for architecture. The Project follows the seismic coefficient presented in a hazard map issued by the Earth Sciences and Seismic Engineering Center (ESSEC) of An-Najah National University in Nablus for the seismic design. In addition, the following standards shall be applied for the respective sectors.

Medical facilities: The standard room area set out by MoH

Educational facilities: The standard design set out by MEHE

As for community centres and the veterinary centre, since there is no standard design or policy, the design of similar facilities by local consultants will be referred to.

(2) Building Permit

The Japanese consultant will prepare drawings, specifications, structural calculations, etc. After approval by the Palestinian Engineering Association, MoLG will apply for a building permit at the respective LGU. MoLG shall consult in advance with the respective LGU about any sites requiring relaxation of the setback standard from roads and neighboring plots.

(3) Application of the Standard Design

As stated, PHCs and schools follow in principle the standard design set out by the respective Ministries. However, the design shall be modified, in the event that any modification is needed.

[1] American Concrete Institute, Michigan State, USA 2002

(4) Barrier-Free Design

A ramp and a universal toilet shall be located on the ground floor in every PHC, school and community center.

(5) Land Development and Layout Plan

Policy common among the facilities

1) To minimize the amount of land development and retaining walls to save the construction cost.
2) To layout buildings East-West axis in principle to avoid the strong sunshine from the East and West.

Policy for Each Facility

1) Medical facility
   - As to the building extension projects, their layout plan shall consider the circulation of people and vehicles and relocate the entrances, if necessary.

2) Educational facility
   - To divide a school site into several zones and set the level differences, taking an advantage of the hilly topography.
   - The level gap between a site and its neighboring plot shall be designed to look natural by building floor beds, stairs, etc.
   - To design the area from the school gate to the ground floor as barrier-free so that a student in a wheelchair can move around by him/herself.
   - To provide a basketball court, a car parking area and a shade within each school site.
   - To provide a gathering space for a morning assembly in front of the building entrance.
   - To provide fences along the school boundaries. The retaining walls can also used as fences.
   - To forego setting classrooms to face the East, according to MEHE's direction.

3) Community Center
   - To layout a piloti to face the street so that the circulation of people is smooth when people gather in a center.
   - While the Japan side provides only columns along the site boundaries, the respective LGU shall provide fences.

(6) Floor Plan

Policy common among the facilities

- To avoid installing windows on the walls of the east and west sides in main rooms in order to avoid the strong glare in the morning and evening times. Should it be necessary to set up windows on the walls of East and West sides, owing to the shape of the site, eaves might be installed according to the needs.

Policy for each facility

1) Medical facility

- Room areas follow the standard of MoH.
- A ramp and a universal toilet shall be installed on the ground floor.

2)Educational facility

- As to the brand new schools, an entrance hall and a multi-purpose hall shall be laid out next to each other so that they can be used as one large hall for school activities. This is in conformity with the MEHE's latest design policy.
- An entrance hall, a multi-purpose hall, shade, canteen, and toilet are laid out together on the ground floor for the sake of easier management when school is opened for civil activities in the future.
- The size of rooms shall follow the MEHE's standard design. However, as to the small size schools where the number of students per classroom is small, 2/3 size classrooms and 2/3-4/5 size special classrooms shall be planned.
- On the ground floor, at a minimum, a classroom, toilet, headmaster's room and a computer room shall be laid out.
- A staircase shall be constructed if the number of classrooms per floor is 3 or less, while 2 or more staircases shall be constructed if the number of classrooms per floor is 4 or more.

3) Community Center

- Every organization shall be provided with an administrative office for its exclusive use; however, meeting and activity rooms shall be shared among the organizations.
- Sites requiring a large gathering space shall be provided with a piloti.

4) Veterinary centre

- An office, a vaccine storage room and a laboratory shall be constructed.

(7) Section Plan

The standard design of each facility is applied, if any. Otherwise the Project follows the section plan of the buildings most commonly observed for the same use. And, the roof of every building shall be flat to enable future extension.

(8) Structural Plan

1) Soil Condition

As soil condition varies among the sites, the result of boring tests shall be referred to.

2) Structure

The foundation of each site shall be determined according to the result of boring tests. The structure of the upper part of the buildings shall be of reinforced concrete frame. Walls are made of hollow concrete blocks. The floor is of joist slab with cast-in hollow blocks.

Structure of the school buildings shall be designed to allow the weight of a 4-story building, considering possible future extension. As to buildings other than schools, the structure shall be designed to bear as much weight as possible since they may be extended in the future.

Expansion joints shall be installed every 33m-38m for all the buildings regardless of types.

3) Materials and Strength

The specification of concrete is Grade B 300 or equivalent or higher. Reinforcing bar is SD 295 A for D10-12 and SD345 for D16-25. The fracture strength of concrete block is 35kg/sqm.

4) Seismic Design

Jordan Valley is located in the "Dead Sea Active Fault Zone" and has had frequent earthquakes since ancient times. The further the distance from the Fault, the less frequent the occurrence and the lower the magnitude of an earthquake. According to the hazard map made by ESSEC of An-Najah University in Nablus, there are 4 seismic zones in Palestine, and Jordan Valley lies in the zone 3 (seismic coefficient =0.30). The structural design shall follow ACI, as stated, but the seismic coefficient shall be used to calculate the structure.

(9) Electrical and Mechanical Design Plan for the Buildings

1) Electrical Plan

- Supply Method

  3 phase - 4 wire low voltage lines shall be connected from 380/220V city supply lines at electric poles installed nearby the sites. Then the lines pass underground to the main distribution board in the buildings.

- Power Supply

  To pump water to an elevated water tank and for air conditioners, 380-volt 3-phase power shall be supplied to the pump control board.

- Lighting and Receptacles

  Lighting, mainly fluorescent tubes, and receptacles shall be supplied.

- Telephone

  For the sites where telephone lines are available, telephone lines shall be connected from city telephone lines to the telephone poles installed nearby. Then the lines pass underground to the terminal board installed inside the building.

- Others

  Intercom devices and emergency devices shall be installed according to the standard design.

2) Mechanical Plan

- Water

  Water shall be received in receiving tanks, pumped up to elevated tanks and then distributed to each necessary point by gravity flow.

  Drainage System

  Every building shall be supplied with a sewage tank and waste water shall be pumped up by a vacuum car to remove it, as it is prohibited by the government to leave waste water penetrating into ground.

  Rainwater

  Rainwater shall be left penetrating into the ground.

  Air Conditioners

  Air conditioners and ceiling fans shall be installed in main rooms of medical facilities and the community centers. They are used interchangeably according to the room temperature. In addition, since all the educational facilities are located in a hot area, the administrative unit and the computer room shall have air-conditioners installed, in conformity with the standard design. On the other hand, ceiling fans are installed in classrooms, etc.

3) Others

- Gas burners shall be connected to a propane gas cylinder.

(10) Interior and Exterior Plans

1) Finishing Materials

The table below presents finishing materials according to building type.

Table 2-22 List of Finishing Materials

Element	School	PHC, Community Center, Veterinary centre
Exterior		
Roof	Asphalt waterproofing	Same as left

Walls	Local stone (partially plaster and painting)	Plaster and painting (Partially, stone finish)
Exterior door	Steel frame door painted	Same as left
Window	Aluminum	Same as left
Window sill	Local marble stone	Same as left
Window grill	Steel	Same as left
Expansion joint cover	Aluminum ready made	Same as left
Interior		
Ceiling	Thin plaster and painting	Thin plaster and painting (Partially, board finish)
Interior wall	Plaster and painting	Same as left
Floor	Terrazzo tiles	Same as left
Base	Terrazzo tiles	Same as left
Rise and tread of stairs	Local marble stone	Same as left
Handrail of stairs	Wooden handrail with steel baluster	Same as left
Toilet floor and wall	Ceramic Tiles	Same as left
Interior door	Wooden flash door painted	Same as left

2) Exterior Finish

It is obliged to finish exteriors with stones in urban areas of the West Bank. However, stone finishing is recommended but not obligatory in rural areas. Nevertheless, as to schools, MEHE sets stone exterior finishing as the standard design from the viewpoints of landscape and freedom of maintenance, and thus the Project follows the MEHE's standard design even for the rural area educational facilities. However, the following exterior parts shall be painted instead of stone finished for cost saving.

① Exposed surface of columns

② Walls facing outside corridors

As to medical facilities, community centers, and a veterinary centre, as there is no standard regarding exterior finish, they are all finished with plaster and painting finish in principle. But, some parts of the buildings, for example, the frame of an entrance, may be finished with stones for a design accent.

In addition, the exterior finish for the existing medical facility (PS-01) shall be of stone to match with the current design.

2-2-2-2-2 Road Plan

(1) Design Standard

As no road design standard has been established yet in Palestine, following local practice in this field, "AASHTO: A Policy on Geometric Design of HIGHWAYS AND STREETS, 2001, Fourth Edition, American Association of State Highway and Transportation Officials" shall be applied for design standard in this Project.

However, the technical specification of the construction materials shall be in conformity with "The Hashemite Kingdom of Jordan, Ministry of Public Works & Housing, Directorate of Planning & Development Specification for Highway and Bridge Construction Volume (I),(II) & (III), 1991".

(2) Construction Permit

All the project roads are village roads, and do not negatively impact on other infrastructure such as highways, electric poles, irrigation canals and etc. Therefore, no construction permit is needed as long as MoLG and JC approve the construction. Further, no environmental assessment is necessary because all the project roads are rehabilitation of existing roads.

(3) Technical specifications

The Consultant team and the PA side agreed the technical specifications for the Project roads as follows.

Table 2-23 Technical Specifications

Projects / Specs		PW-09 Al-Aqrabaniyah	PW-10 Al- Nassariyah	PE-05 Al-Jiftlik	PS-04 Al-Nwei'meh & Al-Dyouk
Length (km)		7.33	5.64	5.00	13.60
Type of pavement		Rehabilitation of base and surface course	Rehabilitation of base and surface course	Rehabilitation with gravels	Rehabilitation of base and surface course
Base Course (gravel)	Width (m)	5.0	5.0	5.0	5.0
	Thickness (mm)	100~200	100~200	200	100~200
Tack coat	Width (m)	3.0	3.0	—	3.0
Surface Course (Asphalt)	Width (m)	3.0	3.0	—	3.0
	Thickness (mm)	40	40	—	40

Note: Thickness of base course varies according to bearing capacity of the existing road

(4) Replacement of a box culvert bridge of PS-04

There is a box culvert bridge over a wadi at a halfway of the proposed road in PS-04. This box culvert bridge has been dilapidated, and water is not able to flow through smoothly because of accumulated dust under the bridge. While at the time of a flood, water flows over the bridge, at the time of the usual water level, water flows through a space under the connecting slab to the road where the original soil has been flushed away.

Thus, it is anticipated that the slab will be collapsed by the next flood and block transportation. Therefore, a box culvert larger than the existing one shall be planned so as to secure sufficient water flow capacity at the time of a flood, and to reduce the frequency of maintenance work to remove the soil under the culvert.

(5) Draining of the water from the roads

As no measure has been taken to drain the water from the village roads, even a small amount of water damages the roads. Especially, in the rainy season, the water from the upper side of mountains erodes the road edges. Therefore, water stopping concrete walls shall be installed for protecting the roads' edge in addition to the rehabilitation of the damaged portion of the roads. Further, in order to secure the quick water drainage from the upper wadi to the lower side, water pipes across the understructure of the roads or concrete paving parts where the water can cross over the roads shall be planned.

(6) Materials and specifications

Gravel	: Gravels for case course shall be size adjusted, quality standard of CBR＝80％ or more, with a plastic coefficient of 4 or less.
Asphalt mixture	: Fine graded asphalt mixture《maximum aggregate size is 13mm》
Concrete	: Reinforced concrete is Grade B250 Concrete without reinforcement is Grade B200
Drain pipe	: Reinforced concrete pipes with diameter of 800mm and 1000mm

2-2-2-2-3 Electrical Plan

(1) Law for electrical design

Electrical design shall be in conformity with the "Palestinian Electrical Law" issued April 23, 2009.

(2) Design standard

Electrical design shall be in conformity with the standard of "International Electric Commission (IEC)".

(3) Scope and contents of the projects

【PN-05　Rehabilitating the village electricity network system in Bardarah】

The number of residences in Bardarah village is about 240, and the project covers the entire village. In addition, the project targets the electrical network owned by the village after the meter installed by IEC in the substation located at the entrance of the village. That is, the project covers only low voltage, 3 phase-380V, and mid-high voltage parts are not included. The scope of the project is to replace dilapidated electric poles and cables and to repair the distribution board in the substation. Main concepts of the plan are as follows.

a. The distribution board shall be equipped with a circuit breaker with sufficient load capacity, and with door type cover plates.
b. All the existing uncovered wires shall be replaced by ABC cables.
c. Cables shall be evenly connected to houses so as to balance the load among the phases.
d. Street lights shall be installed only on the poles along the main village roads.
e. Electric poles along the main village road shall be galvanized steel poles, while others shall be wooden poles with a preservative treatment.

【PN-06　Rehabilitating the village electricity network system in Ein Elbeida】

The number of residences in Ein Elbeida village is about 150, and the project covers the entire village. In addition, the project targets the electrical network owned by the village after the meter installed by IEC in the substation located at the entrance of the village. That is, the project covers only low voltage, 3 phase-380V, and mid-high voltage parts are not included. The scope of the project is to replace dilapidated electric poles and cables and to repair the distribution board in the substation. Main concepts of the plan are as follows.

a. The distribution board shall be equipped with a circuit breaker with sufficient load capacity, and with door-type cover plates.
b. All the existing uncovered wires shall be replaced by ABC cables.
c. Cables shall be evenly connected to houses so as to balance the load among the phases.
d. Street lights shall be installed only on the poles along the main village roads.
e. Electric poles along the main village road shall be galvanized steel poles, while others shall be wooden poles with preservative treatment.
f. A hand hole shall be installed to protect the cables laid underground at the entrance of the substation.
g. A cable duct shall be installed at the foot of the steel tower where underground cables rise.
h. No rehabilitation is necessary to the part where electrical network expansion work was

conducted recently.

【PW-07　Upgrading capacity of electrical power supply in the Mid-West JC】

The main purpose of upgrading the power capacity is to connect well-pumps, which currently use energy from diesel generators placed across the JC, to the electrical grid. Of the pumps, large capacity ones are rated for 250kw.

At present, each village is equipped with a substation to buy electricity individually from the IEC. As for household use, judging from the current values, the present transformer capacity is sufficient. Hence, the existing substations shall be continuously used. (Refer to Table 2-24). On the other hand, as for well- pump use, it would be better for the JC to buy electricity collectively from the IEC at one point and then distribute the electricity with 33KV to the transformer and substation installed in each village.

Table 2-24　Current Value by Village

Village	R phase (A)	S phase (A)	T phase (A)	Max (A)	Power Demand (kW)	Transformer Capacity (kVA)
Beit Hassan	240	230	250	250	164.5	250
Ein Shibli	18	19	9	19	12.5	100
Al-Nassariyah (East)	260	280	270	280	184.3	250
Al-Nassariyah (West)	180	170	170	180	118.5	250

From the above discussion, the following works will be necessary.

<Works by IEC>

While the power supply increases, no capacity increase work is necessary for the IEC. However, an iron tower equipped with a switch and a meter must be constructed at the branching point.

<Works by the Project>

1) Network high voltage (33KV) distribution cables among the 5 villages (An iron tower must be installed at each substation and steel poles must be installed between the substations.)
2) Construct 8 substations with transformer and distribution board for the well-pump use and connect the wires between the substations and the well-pumps.
3) As for the household network, all the existing uncovered wires shall be replaced by ABC cables. And old electric poles shall be replaced by new ones.

(4) Materials and specifications

Latice tower　　:　Galvanized steel 800x900, length=12m

Electric poles	:	a. Galvanized steel pole: diameter=250mm, length=9m b. Wooden pole with preservative treatment: diameter=200mm, length=9m
Electric pole foundations:		Cast-in-place concrete Size 600×800×1500
Cables	:	ABC Cable ($3\times95+1\times54.6+2\times25mm^2$) ABC Cable ($3\times50+1\times54.6+2\times25mm^2$) ABC Cable ($6\times25mm^2$)
Transformer	:	33KV-0.4KV pole mounted type, 250KVA x 6sets, 400KVA x 1set, 630KVAx1set, 50KVAx1set, 8sets in all
Feeder Distribution	:	Main circuit breakerx1, Branch circuit breakersx3-6, Voltage meter, Ammeter, Watt-hour meter, Timer for electric poles and Cover plate for circuit breaker per each substation

2-2-3 Implementation Plan

2-2-3-1 Implementation by the Procurement Management Agent

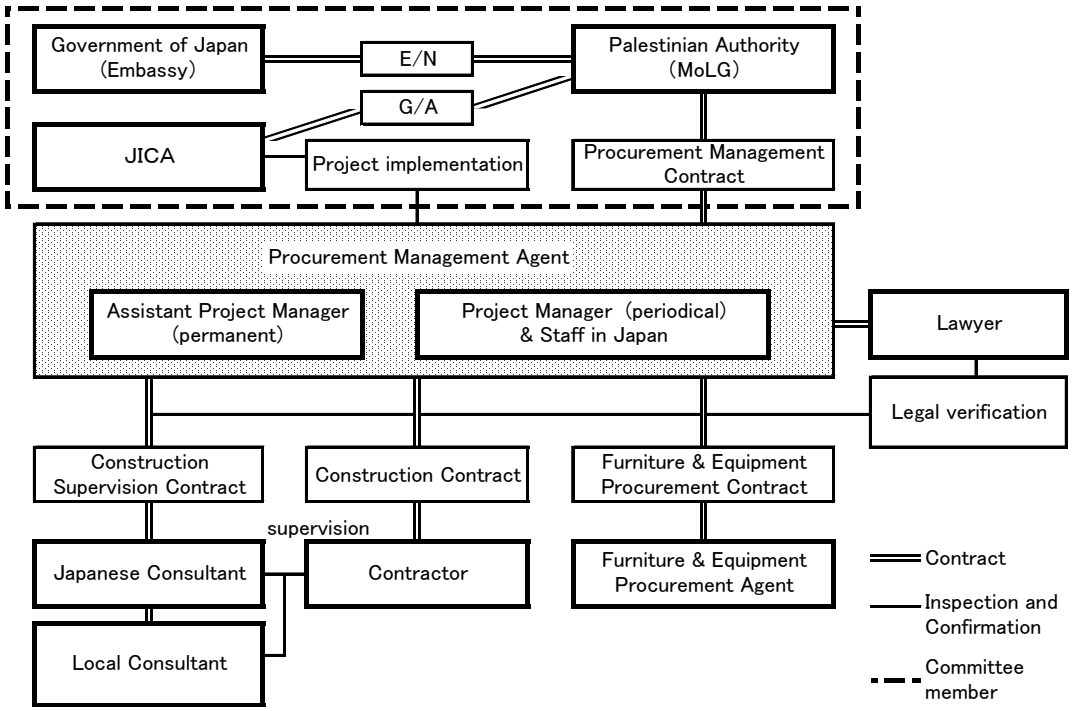


Figure 2-2 Implementation Organization (Draft)

(1) Project Implementation by the Procurement Management Method

The Project will be carried out in accordance with the Outline Design. After the review of the Outline Design by Japanese agencies related to the Project, an approval by the Cabinet of the Government of Japan shall be required for the Project implementation. After the approval, both Governments will sign the Exchange of Notes (E/N), and PA and JICA will sign the Grant Agreement (G/A) for the Project. Then MoLG signs the Procurement Management Contract with a Japanese Procurement Management Agent (JICS) to contract out the Project implementation based on G/A.

(2) Committee

After the signing of the E/N, a Committee shall be organized. The Committee consists of the government representatives of the Japanese and the PA sides and JICA, and the chairman shall be the representative from MoLG. In the Project, the members of the Committee will be from, Embassy of Japan, JICA Palestine office, and MoLG, if necessary, the Ministry of Finance (MoF), the Ministry of Planning (MoP), MoH, MEHE, MoA, directorate offices of the respective Ministries in Nablus, Tubas and Jericho, and relevant 4 JCs will join the Committee.

In addition, the representatives from the Procurement Management Agent will take part in the Committee as advisors. Various problems that may occur during the implementation of the Project will be discussed in the Committee.

(3) The Procurement Management Agent

The Procurement Management Agent, as an agent of MoLG, will procure a lawyer, a consultant supervision consultant, contractors, furniture suppliers, and equipment suppliers. It is appropriate to set up the office of the Procurement Management Agent in Ramallah due to the following reasons:

① MoLG, the counterpart of the Project, and the relevant Ministries for the Project have their headquarters in Ramallah;

② Ramallah is located in the center of the West Bank, and each site can be reached within 2.5 hours by vehicle. It is possible to get to Tel Aviv in about an hour; and,

③ In Palestine, most of the tenders of the public works are held in Ramallah.

The organization of the Procurement Management Agent to implement the Project shall be as follows:

1) Japanese Staff

①Project Manger (To be dispatched to Palestine periodically)

The Project Manager will carry out the overall supervision of the Project and the management of the Grant Aid fund. He/she will be dispatched periodically at the time of the tenders and the completion/handover of the Project.

② Assistant Manager

The Assistant Manager will stay in Palestine and assist in carrying out tenders, signing contracts, making payments, and submitting reports to the Committee and so on. Additionally, at the end of the Project, he/she will make a report as to the remaining balance of E/N, put together reports on financial settlements with the contractors to the concerned parties (e.g. Embassy of Japan, JICA Palestine Office, MoLG), evaluate for the final payment, execute the final payment, attend the final inspection and report to the related organizations.

③Staff in Japan

The Procurement Management Agent will arrange supporting staff for preparing the tender documents and for managing the Grant Aid fund.

2) Local staff

① Clerk

② Driver

(4) Construction Supervision Consultant

A Japanese consultant recommended by JICA to MoLG will carry out tender assistance and construction supervision. The location of the main supervision office shall be in Ramallah for the same reason as the Procurement Managing Agent office.

The organization of the construction supervision consultant is as follows:

1) Japanese Staff

① Engineering Staff 1 (Tender assistance: Based in Japan and visit PA periodically)

He/she will stay in Palestine during the stage of tenders for the construction of architecture, road and electricity and will carry out technical works such as finalizing the tender documents lot by lot and evaluating the tender results.

② Engineering Staff 2 (Construction supervision for architecture: permanent basis)

He/she will carry out the construction supervision by utilizing the local architectural consultant. In order to improve the construction quality, he/she will instruct and advise the local engineers. Further, he/she will support Engineering Staff for road and electricity, and at the end of the Project, he/she will evaluate the final payment, conduct various inspections such as material inspection, interim inspection, final inspection, warranty inspection, etc., and, make the progress reports to the Client.

③ Engineering Staff 3 (Construction supervision for road: based in Japan and visit PA periodically)

He/she will carry out the construction supervision by utilizing the local road consultant. In order to improve the construction quality, he/she will instruct and advise the local engineers.

④ Engineering Staff 4 (Construction supervision for electricity: visit PA periodically)

He/she will carry out the construction supervision by utilizing the local electrical consultant. In order to improve the construction quality, he/she will instruct and advise the local engineers.

⑤ Engineering Staff 5 (Procurement of Furniture and Equipment: based in Japan and visit PA periodically)

He/she will evaluate the tender of furniture and equipment in PA. Further, in Japan, he/she

will put together the technical part of Tender Documents and assist JICS in preparing answers to the questions from bidders.

2) Local Staff

The Japanese consultant will employ local consultants as sub-consultants. Most of the local staff shall be dispatched by the sub-consultants firms.

<Architectural Consultant>

① Chief Architectural Engineer
② Architectural Site Engineers-3 (North, Mid-West and Mid-East+South)
③ Quantity Surveyor
④ Electrical and Mechanical Engineer
⑤ Clark
⑥ Driver for Chief Architectural Engineer
⑦ Office Boy

<Road Consultant>

⑧ Chief Road Engineer
⑨ Road Site Engineers-2 (Mid-West＋Mid-East and South)

<Electrical Consultant>

⑩ Chief Electrical Engineer
⑪ Electrical Site Engineer-2 (North, Mid-West)

<Other>

⑫ Driver for Japanese Engineering Staff

(5) Lawyer

The Lawyer will give advice to the Procurement Management Agent on various contracts, and he/she will handle the disputes or arbitration when needed. A lawyer will be assigned from the law firm working for the ongoing 'the Projects for Establishment of New Schools in West Bank'.

(6) Contractors

The Contractors will construct the buildings, the roads and the electrical networks according to the contract documents with the Procurement Management Agent.

(7) Furniture and Equipment Suppliers

The Furniture and Equipment Suppliers will procure and deliver the furniture and equipment to the Project sites in accordance with the contract documents.

2-2-3-2 Implementation Conditions

(1) Problems anticipated during the implementation of the Project.

The projects under the Grant Aid for Community Empowerment scheme are implemented mainly using local resources. The problems expected at this moment and how to deal with them are listed in the following table of 2-25.

Table 2-25 Problems Anticipated during Implementation and Their Solutions

Matter	Details	Solution, etc.
Money matter	Embezzlement, running away with or illegal use of the advance payment	Secure the advance payment bond
	Bankruptcy	Thorough check of the financial statements and work capacity of the contractor Secure the performance bond
Contract matter	Dispute on the contract	Utilizing the lawyer's advice
	Forgery of the documents, leakage of the information, false application for the tender	Utilizing the procurement advisor Thorough check of the financial statements and work capacity of the contractor
Construction matter	Delay of the construction/ low quality	Thorough assessment of the progress Frequent site inspections and reports Establish a checking system by JCs
	Collusion between the supervisor and the contractor	Establish a checking system by JCs

Moreover, building construction in Palestine involves a great risk due to the relationship with Israel. At the moment, the situation is quite stable. And as the frequency of roadblocks and stoppages of material transportation has become low, construction will not be affected by them very much. However, once the security situation turns bad, the construction must be stopped or suspended in order to secure the safety of the construction staff. Therefore, it is necessary to include an article of "Force Majeure" in the construction contracts to deal with these cases with mutual consent.

(2) VAT exemption

In Palestine, VAT is imposed on locally funded projects, while it is not imposed on projects funded by donors. As most of the public constructions are funded by donors, the VAT exemption system[2] has already been well-established as shown by the following:

① MoLG issues a letter to the Ministry of Finance stating that the construction contract is exempted from VAT,

[2] VAT exemption system is called "Zero-VAT" in Palestine.

② The Ministry of Finance issues a letter of "zero-VAT" to the contractor,
③ The contractor purchases materials with VAT,
④ The contractor applies for VAT refund to the Ministry of Finance with the above-mentioned, zero-VAT letter and the receipts of the materials, and then gets the refund.

However, according to several parties including contractors, although the zero-VAT system has been well established, the Ministry of Finance is afflicted with tight cash flows. Therefore, in reality, it is impossible for contractors to receive a VAT refund promptly. It takes at least a year, sometimes more than three year to get refund. Nevertheless, serious problems due to the delay of VAT refund such as construction stoppage or contractor's bankruptcy rarely occur. Because the contractors know from their experiences that VAT is invariably refunded, even if it takes long time, they manage their company's cash flow accordingly, taking the late VAT refund into consideration.

2-2-3-3 Lot Plan / Tender Plan

(1) Lot Plan

1) Lot Plan for Building Construction

This Project has various sizes of constructions. Considering the efficiency of the tender and supervision, a multiple number of projects will be combined as one lot, so as to make each lot size appropriate. Specifically, a new school construction and other small size facilities are combined into one lot. In doing so, only 1st or 2nd grade contractors are able to participate in the tenders and the relatively high construction quality will be secured. Therefore, 3 lots, namely, North, Mid-West and Mid-East+South are appropriate.

2) Lot Plan for Road Construction

As for the road construction, to make appropriate lots size, we set one lot for the combination of Mid-West and Mid -East and another lot for South.

3) Lot Plan for Electrical Construction

As for the electrical construction, because the 2 projects in North have the same characteristics and are of small sizes, they can be grouped together as one lot. On the other hand, the project in the Mid-West is an independent lot, because its characteristics are different from those of the other projects. The proposed lot plan is indicated in the following table.

Table 2-26 Proposed Lot Plan

Lot code	Lot name	Project code	Type of Facility	Type of Work	Sector	Size
A1	North Architecture	PN-01	PHC	Extension	Health	290.74 ㎡
		PN-02	School	New construction	Education	1,567.44 ㎡
		PN-09	CBO Center	New construction	Community	447.93 ㎡
						Total 2,306.11 ㎡
A2	Mid-West Architecture	PW-01	PHC	Extension	Health	239.84 ㎡
		PW-03	School	New construction	Education	2,203.28 ㎡
		PW-04	School	Extension	Education	597.56 ㎡
		PW-12	Multipurpose Hall	New construction	Community	530.84 ㎡
		PW-13	Women's Center	New construction	Community	497.20 ㎡
		PW-15	Veterinary centre	New construction	Veterinary	167.50 ㎡
						Total 4,236.22 ㎡
A3	Mid-East & South Architecture	PE-01	PHC	New construction	Health	255.84 ㎡
		PE-03	School	Extension	Education	183.38 ㎡
		PS-01	PHC	Extension	Health	60.79 ㎡
		PS-02	School	Extension	Education	850.80 ㎡
		PS-10	Women's Center	New construction	Community	221.43 ㎡
		PS-15	Multipurpose Hall	New construction	Community	526.74 ㎡
						Total2,098.98 ㎡
R1	Mid-West & Mid-East Road	PW-09	Road	Rehabilitation	Road	7.46km
		PW-10	Road	Rehabilitation	Road	5.64km
		PE-05	Road	Rehabilitation	Road	5.00km
						Total 18.10km
R2	South Road	PS-04	Road and box culvert	Rehabilitation	Road	13.60km
						Total 13.60km
E1	North Electricity	PN-05	Electrical network	Rehabilitation	Electricity	
		PN-06			Electricity	
E2	Mid West Electricity	PW-07	Upgrading Capacity of Electrical Supply	Upgrading	Electricity	

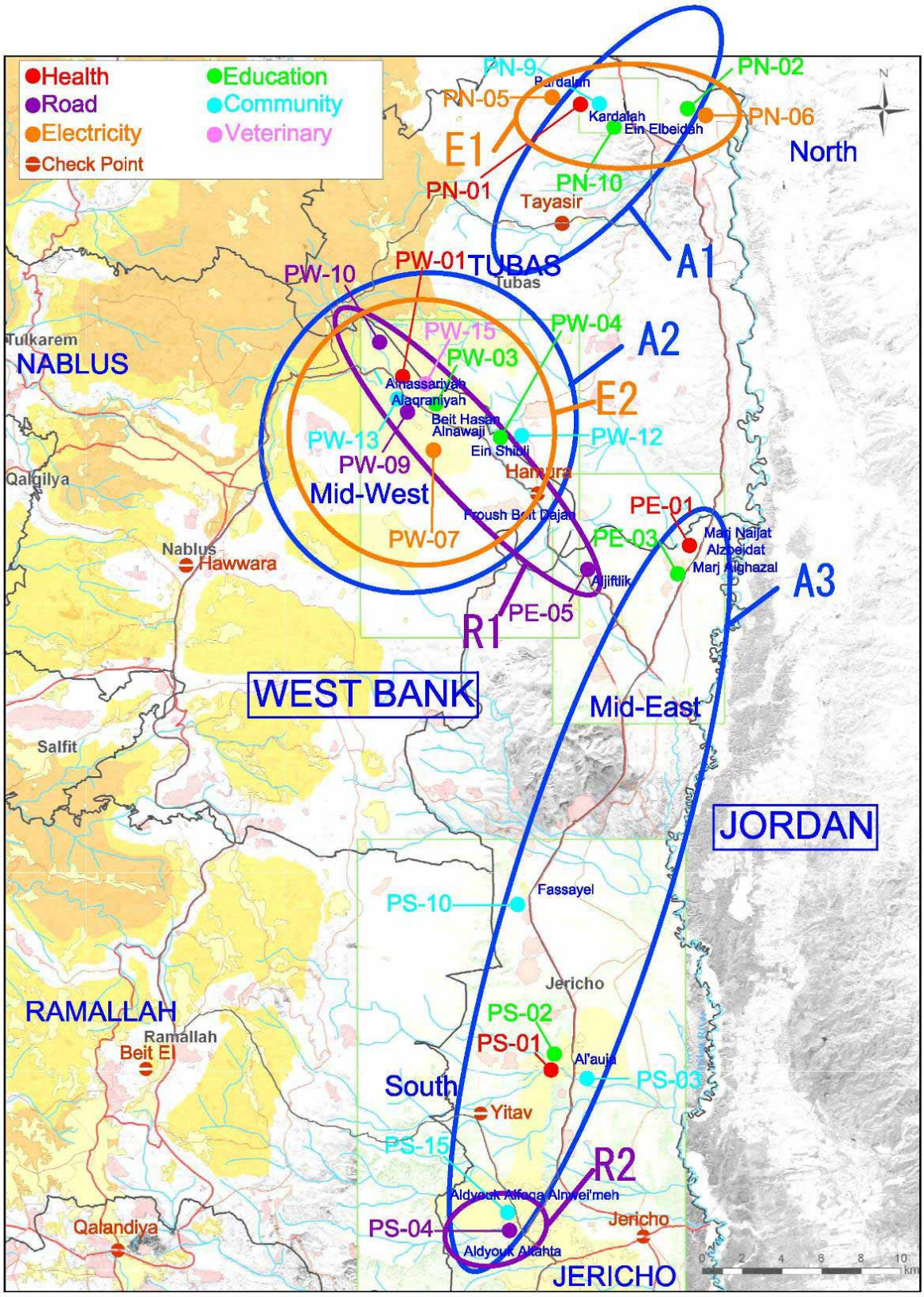


Figure 2-3 Construction Group and Lot Plan (draft)

2) Lot Plan for Furniture and Equipment

As this Project covers various sectors, types of the furniture and equipment to be procured vary as well. Since furniture and equipment suppliers and agents are quite specialized in Palestine and that one supplier or agent seldom handles items other than its specialization. Equipment and furniture are categorized into 10 types of equipment in the Project.

The following table shows a tentative lot plan for furniture and equipment.

Table 2-27 Lot Plan for Furniture and Equipment

Category	Lot		Target Facilities or Remarks
Non-vehicle	1	Furniture	Classrooms, offices, meeting rooms and other rooms in school, PHC, community center and veterinary centre
	2	Medical and Health Equipment	Rooms in PHC, ambulance and medical mobile clinic
	3	Science Experimental Equipment	Science laboratory in school
	4	Office Equipment	Offices in school, PHC, community center and veterinary centre
	5	Computer Equipment	Computer lab in school and offices in school, PHC, community center and veterinary centre
	6	Home Appliance	Home economics room in school, and community center
Vehicle	1	Ambulance and Medical Mobile Clinic	The local supplier remodel a ready-made van according to standard specs of MoH
	2	School Bus	Microbus
	3	Water Tank Truck	A custom-made water tank is put on a ready-made dump truck
	4	Mobile Veterinary Car	A custom-made refrigerator is put on a ready-made pickup truck

(2) Tender Plan

1) Registration

According to the Palestinian tender law, contractors are obliged to satisfy the following conditions. Any foreign contractor is allowed to register with them. Therefore, the Project includes these conditions as prerequisites for participation in the tenders.

① Prior registration with the MOF

② Prior registration with the Contractor's Association

③ Prior registration with and classification in the National Classification Committee

2) Tender Procedure

For public construction projects with a certain scale, the entire tender procedure is

conducted under the supervision of the Central Tender Department (CTD). CTD consists of 2 staff from Ministry in charge, 2 staff from the Ministry of Public Works, 1 staff from the MoF and 1 staff from PECDAR[3]. In addition, a technical and financial evaluation of the tender result is undertaken by the tender evaluation committee, a lower level of CTD. The evaluation committee consists of an accountant from the Ministry of Finance, 2 engineers from Ministry in charge and 2 engineers from the Ministry of Public Works. The tender comes into effect after CTD approves the tender evaluation.

Table 2-28 Procedure of Tender for Other Donors' Projects

Item		Remarks	Time needed
1	Newspaper announcement	To be announced for 2 days in 2 local newspapers. (In Arabic or English Language.)	Tender documents are available for purchasing for 2weeks
2	Site Explanation	To be held at the construction site	1 day
3	Questions and Answers	To be held at Ministry in charge	1 day
4	Preparation of documents for tender opening	Contractors make cost estimation. (Consultants prepare a proposal.)	2 weeks
5	Evaluation by evaluation committee	Technical and financial evaluation takes place	2 weeks（a few days shall be added in case of a cost negotiation）
6	Approval by CTD	All the tenders of public works are approved by CTD	1day
7	Approval by the donor	Evaluation report shall be sent to the donor headquarters	2 to 3 weeks (depends on donors)
8	Contract		Approx. 1week

In this Project, the selection of a construction supervisor is not necessary, because the Japanese Consultant will carry it out. Thus, the Procurement Management Agent will call only for tenders to select contractors, furniture and equipment suppliers.

With regard to the tender procedure, the Project follows examples of other donors'. However, a significant difference is that the tenders of the Project are held by the Procurement Management Agent while tenders for other donors' projects are conducted by CTD. Therefore, item 5 to 7 of Table 2-30 should be replaced with a new system so that the Procurement Management Agent can lead the tenders instead of CTD. However, of course it is preferable that the Procurement Management Agent follows the existing tender procedure as much as possible. Regarding the tender results, the technical evaluation report of the tenders will be put together

[3] Palestine Economic Council for Development And Rehabilitation

by the Procurement Management Agent and the Japanese Consultant, and the tender results will be approved by MoLG and CTD.

3) International Tender

A national tender is usually applied for public construction projects in Palestine. As the Project must follow "Procurement Guideline of the Grant Aid for Community Empowerment" by the Ministry of Foreign Affairs in Japan, an international tender should be called for in principle. Nevertheless, considering the unusual situation in Palestine, the generally used tender method shall be applied in the Project.

4) Contract and Negotiation

If all the tender proposals exceed the engineer's estimation, a cost negotiation shall take place with the bidder who proposed the lowest price. And, if the negotiation is unsuccessful, a re-tender shall be held. If a contract price is less than the estimation, the balance shall be the reserve fund of the Project.

5) Contract System

There are two types of the contract: lump-sum system and BOQ system. As BOQ system is commonly applied to public construction projects with a certain size in Palestine, and it is obliged to include "price variation clause" in the construction contract. Therefore, following "Project for Establishment of New Schools in the West Bank", BOQ system as well as "price variation clause" with the upper limit of 5% of the contract price are applied to the construction contracts in this Project.

6) Tender documents for Facility Construction

At the Outline Design Study stage, the following documents will be put together as a technical reference for tender documents for Facility Construction: 1. Drawings, 2. Technical Specifications, 3. Bill of Quantities, 4. Engineer's Estimate, 5. Structural Calculation, and, 6.Electrical & Mechanical Capacity Calculation. At the implementation stage, the Procurement Management Agent and the Japanese Engineering staff in tandem will make the final tender documents based upon the technical reference.

7) Tender Documents for Furniture and Equipment

At the Outline Design Study stage, the following documents will be put together as a technical reference for tender documents for Furniture and Equipment Supplies: 1. List of Furniture and Equipment, 2. Furniture Drawings, 3.Specifications, and 4. Engineer's Estimate. At the implementation stage, the Procurement Management Agent will make the final tender

documents based upon the technical reference.

2-2-3-4 Construction Supervision Plan

In principle, the Japanese Consultant who is in charge of the Outline Design Survey will carry out construction supervision after receiving a recommendation letter from JICA. An Engineering Staff of the Japanese Consultant will carry out the works listed below utilizing a local consulting firm.

(1) Major Works

Checking the construction achievement according to the tender documents, quality control, quantity inspection, coping with any design alteration, general technical instruction, report to Procurement Managing Agent and MoLG, interim inspection, final inspection, warranty inspection, making monthly reports, etc.

(2) Supervising Organization

The Japanese Engineering Staff 2 covers the architectural sector as well as overall supervision while, the Japanese Engineering Staff 3, 4, 5 supervise road, electricity and furniture and equipment respectively. The Japanese Consultant will employ 3 local Sub-Consultants specialized in the fields of Architecture, Road and Electricity, and set up the supervision system. The local sub consultants will dispatch a site engineer to each lot. In addition, a chief local architectural consultant, a quantity surveyor, a structural engineer, and a mechanical and electrical engineer will be designated in the local consultant's headquarters, and they will provide technical support to the site engineers, report to the Japanese Engineering Staff, and inspect for payment and so on.

Table 2-29 Construction Supervision Organization

Specialty		Number of staff	Work Type
Japanese Consultant	Engineering Staff 2 (Architectural)	1	Based in PA
	Engineering Staff 3 (Road)	1	Based in Japan
	Engineering Staff 4 (Electricity)	1	Based in Japan
	Engineering Staff 5 (Equipment)	1	Based in Japan

Local Consultant	Architecture	Chief Architectural Engineer	1	full-time
		Architectural Site Engineer	3	full-time
		Quantity Surveyor	1	full-time
		Structural Engineer	1	part-time
		M & E Engineer	1	part-time
	Road	Chief Road Engineer	1	part-time
		Road Site Engineer	2	full-time
	Electricity	Chief Electrical Engineer	1	part-time
		Electrical Site Engineer	2	full-time

2-2-3-5 Quality Control

In order to secure the construction quality level required of the Project under the Grant Aid for Community Empowerment scheme, a Japanese Engineering Staff visit all the sites periodically and a full-time local engineer is dispatched to each construction lot to execute quality control. Therefore, achieved construction quality depends on how efficiently and effectively the Japanese Engineering Staff instructs and advises the Site Engineers. It seems effective to introduce the 'check sheets' for major works in order to minimize the difference of quality control skill among the Site Engineers.

Further, to increase the quality, it is necessary to instill a sense of quality control in local Site Engineers. Therefore it is recommended that the Japanese Engineering Staff hold 'Quality Control Courses' for the local Site Engineers before and/or during construction. All the Site Engineers should have the same check sheets for Re-bar arrangement, form work and concrete pouring to make the quality level of all the sites uniform. The proposed contents of the Quality Control Course are as shown in the table below.

Table 2-30 A Sample of the Quality Control Course

Time	Items
Before Construction	・ Items to be inspected (Explanation of table 2-31) ・ Appropriate frequency of the site inspection ・ Quality control for re-bar arrangement, forms and concrete pouring with the check sheets ・ Safety measures ・ Confirmation of the quality of the re-bar product ・ Trial mix of the concrete ・ Compression test of the concrete test piece ・ Test for slump, air contents, temperature and etc ・ Various tests for road construction ・ Various tests for electrical construction

During Construction （On the job site course is also available）	・ To improve the accuracy of the plastering work ・ Curing of the plastering to prevent cracks ・ Curing of the painting to prevent peeling off ・ Inspection of the furniture factory ・ Inspection of the electricity and plumbing works

The table below shows the major quality control items during structural works stage.

Table 2-31 Major Quality Control Items during Structural Works Stage

	Works	Items	Method	Frequency
Structural Work of Architecture	Excavation	Check the excavated bottom	Observation	On completion of the excavation
	Re-bar and Forms	Re-bar material	Check the mil sheets or Tensile test result	Every diameter (3 pieces per size)
		Re-bar arrangement	Inspection of the re-bar arrangement	Before concrete pouring
		Forms	Inspection of the forms	Before concrete pouring
	Concrete	Strength, Slump, Air contents, Temperature	Compression test, In situ concrete tests	Upon trial mix Upon every pouring
	Concrete Hollow Blocks	Strength	Compression test	Upon making the sample
Road	Sub- Grade	Density	Sand replacement method or etc.	1test/100m
	Base Course	Thickness, width Density	Measurement Sand replacement method or etc.	1test/20m 1test/20m
	Surface (Asphalt)	Thickness, width Temperature Visual Appearance	Measurement Measurement Observation	1test/20m 1test/150 ㎡ Any time
	Concrete	Strength Slump Temperature	Compression test, In situ concrete tests Measurement	6 cylinders/30 ㎡ 1 test/3 trucks 2 times/day
Electricity	Poles & cables	Visual Appearance	Observation	1 time
	Earthing	Resistance to earth	Measurement	1 time
	Distribution board & cable	Insulation resistance	Measurement	1 time

2-2-3-6 Procurement Plan

Major construction materials are produced in the West Bank and their quality and quantity

are adequate. Though electrical fixtures, sanitary apparatus, etc. are imported from Europe and surrounding Arabic countries, they are procurable in the local market. It is also possible to purchase necessary materials in the Project areas, i.e. Nablus, Tubas and Jericho. Besides, there has been little difficulty stemming from the relations with Israel in importing foreign products and raw materials.

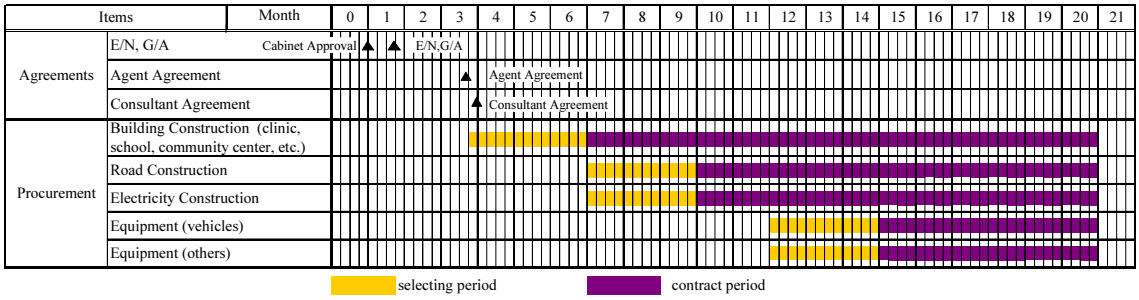
Table 2-32 Countries From Which Major Materials Are Procured

Items	Countries where materials are procured			Country of origin
	Local	Japan	Third country	
[Materials]				
Portland cement	○			Local product
Aggregates	○			Local product
Reinforcing bars	○			Local product
Forms for concrete	○			Local product
Concrete hollow blocks	○			Local product
Stone	○			Local product
Timber	○			Local product
Metal hardware	○			Imported from Asia and Europe
Aluminum window	○			Local product
Glass	○			Local product
Paint	○			Local product
Roofing metal sheet	○			Local product
Distribution board	○			Imported from Europe
Cable & wire	○			Imported from Europe
Conduit pipe	○			Local product
Lighting fixture	○			Imported from Europe
Pipes	○			Local product
Valve & pipe fittings	○			Imported from Asia and Europe
Electric poles (steel, wood)	○			Local product
Asphalt for road	○			Local product
[Construction machinery]				
Bulldozer	○			Imported from UK and Germany
Hydraulic excavator	○			Imported from UK and Germany
Dump track	○			Imported from Sweden
Percentage (%)	100%			

2-2-3-7 Implementation Schedule

In the tender stage, it is estimated take about 3.25 months to carry out the tender, the tender evaluation and concluding contracts. The construction period of each project varies, because the scale of the construction varies, and also because some project sites require large-scale land development and/or pile driving due to uneven land shape and/or bad soil condition. Judging from previous experience in Palestine, a 4-storey building with land development and piles requires approximately 14 months for construction. As for road and electricity rehabilitation, 11 months are deemed to be an appropriate period. Further, it is estimated to take about 6 months to procure the furniture and equipment.

Table 2-33 Work Schedule



2-3 Outline of Undertakings to be Borne by the PA Side

The purpose of the Japanese Grant Aid for Community Empowerment Scheme is to assist development projects in conjunction with the "self-help" spirit of the recipient countries. Based on such spirit, the Government of Japan demands that the recipient countries bear a certain level of the burden involved. This rule is applied equally to all recipient countries. Thus, if the Government of Japan decides to implement the Project, the PA side shall be responsible for completion of the following tasks. As to the individual undertakings by sector borne by PA side, see 3-1.

1. Undertakings Related to the Contracts

(1) To bear commissions for Blanket Disbursement Authorization, handling charges and other necessary fees related to the banking arrangement with a bank in Japan for receiving the Grant Aid for the Project;
(2) To exempt all companies, organizations and individuals from any customs duties, internal taxes and levies with respect to the supplies, products and services under the contracts of the Project, i.e. the procurement management contract and contracts with the Procurement Management Agent;
(3) To accord all individuals entry into the country and the staying therein, along with such facilities as may be necessary for the performance of their work and whose services may be required in connection with the Project, including the supply of products and services under the procurement management contract and contracts with Procurement Management Agent;

2. Undertakings Related to the Construction

(1) To obtain the necessary land to implement the Project, secure the rights for the Government of PA to construct project facilities and submit the "survey maps" with the stamps of the related parties to Japan side;
(2) To remove obstacles and demolish existing buildings prior to the Project construction. For example, demolishing and removing the existing fences at PW-04 Ein Shibli Co-ed School and PS-02 Al-Auja Girls School, etc. ;
(3) To obtain, in cooperation with and under the guidance of the Procurement Management Agent, all the various necessary permits including those needed prior to construction, and those needed for the use of Project facilities after construction completion; To plant flowers and trees in the green areas after the completion of the construction;
(4) To provide free of charge, for the duration of the construction period and in a vicinity close to the Project site, adequate land space for the storage of supplies and materials and for a site

construction office to be used by contractors;

(5) To lead and connect power supplies, water supplies, telephone lines and other incidental facilities to the completed Project facilities;

3. Undertakings Related to Operation and Maintenance of the Facilities

(1) To secure sufficient staff and budget necessary for the adequate operation, repair and maintenance of the Project facilities constructed within the Project;

(2) To procure additional furniture and equipment necessary for the completed Project facilities except for the basic furniture and equipment included in the Project;

(3) To plant flowers and trees in the green areas after the completion of the construction.

2-4 Operational and Maintenance Plan

2-4-1 Medical Facilities

2-4-1-1 Operational Plan

(1) Deployment of Staff

The number of staff is fixed at medical facility level I to IV respectively. Since medical facilities will be upgraded from level II to III with rooms, medical equipment and furniture in this Project, additional staff will be required as shown in Table 2-34. After medical facility is upgraded, MoH shall deploy the additional staff to each medical facility as soon as possible.

Table 2-34 List of Additional Staff and Their Service Hours per Day

	Occupation	Service hours per Week	No. of additional staff to be dispatched by medical facility			
			PN-01	PW-01	PE-01	PS-01
1	Dentist	40 (full-time)	1	1	1	1
2	Lab. Technician	ditto	1	1	1	1
3	X-ray Technician	ditto	1	1	1	1
4	Clerk	ditto	1	1	1	1
5	Worker	4	Current MoH staff will visit PHC			
6	Health Educator	2	ditto			
7	Pediatrician	2	ditto			
8	Gynecologist	2	ditto			
9	Ultrasonographer	2	ditto			
10	Social Worker	4	ditto			
11	Psychologist Advisor	4	ditto			
12	Health Inspector	4	ditto			
Total			**4**	**4**	**4**	**4**

Full-time: 8 hours/day x 5 days = 40 hours/week

Two medical terms are deployed to each ambulance to provide 24-hour emergency medical service five days per week (from Sunday to Thursday). Each team consists of one medical officer and one driver (in some cases, one paramedic joins the team) and these teams work in two shifts (each shift being 12 hours work.)

One mobile team is deployed to each mobile clinic car to provide primary health service five days per week (from Sunday to Thursday). One team consists of one general practitioner, one nurse and one driver and the team visits several Bedouin clusters or remote villages within the jurisdiction of the JC per day.

(2) Operation of medical facilities, ambulance and mobile clinic cars

Salaries and expenses are required to operate medical facilities, ambulance and mobile clinic cars. Those costs are allocated from MoH budget. In MoH, PHC/Public Health Department takes responsibility for operation of medical facilities and ambulance. As for mobile clinic cars, Jericho directorate operates it directly because the mobile clinic teams belong to MoH division office in Jericho.

2-4-1-2 Maintenance Plan

PHC/Public Health Department and the Biomedical Engineering Unit are responsible for maintenance of medical facilities, and medical equipment respectively. The Biomedical Engineering Unit repairs and/or checks medical equipment regularly according to its manual. And, MoH will repair and overhaul vehicles at the garage.

2-4-2 Educational Facilities

2-4-2-1 Educational Facilities

(1) Staff Plan

The Project constructs two brand new schools and adds rooms on to the 3 existing schools. With this, additional teachers and staff shall be employed.

1) Additional Teachers Appointment

Teachers are staffed each class based upon the following quota.

- Grade 1-4 : 1.1
- Grade 5-6 : 1.26
- Grade 7-10 : 1.36
- Grade 11 (L) : 1.5
- Grade 12 (L) : 1.4
- Grade 11-12 (S) : 1.64

Each educational facility needs to be staffed as follows, according to the quota.

Table 2-35 No. of Additional Teachers to be Dispatched to Each Project Educational Facility

No.	Educational Facility Name	No. of Additional Teachers
PN-02	Ein Elbeidah Girls School	16
PW-03	Al-Nassariyah Girls School	19
PW-04	Ein Shibli Co-ed School	0
PE-03	Al-Zubeidat Boys School	0

PS-02	Al-Auja Girls School	2
Total		**37**

2) Additional Staff Appointment

Staff in a Palestinian school consists of a headmaster, a secretary, janitors, and a social worker. They are staffed in each school according to school size.

Table 2-36 No. of school staff according to the school size

Staff	No.	Size of school
Headmaster[4]	1	-
Secretary	1	School with more than 10 classrooms or 300 students
Janitor	1	School with 10 classrooms or less
	1.5	School with 11~15 classrooms
Social Worker (SW)	1	-

According to the above table, MEHE is requested to staff each educational facility as follows.

Table 2-37 No. of Additional Staff to be Dispatched to Each Project Educational Facility

No.	Educational Facility Name	Head master	Secret-ary	Janitor	Social Worker
PN-02	Ein Elbeidah Girls School	1	1	1.5	1
PW-03	Al-Nassariyah Girls School	1	1	1.5	1
PW-04	Ein Shibli Co-ed School	0	0	0	0
PE-03	Al-Zubeidat Boys School	0	0	0	0
PS-02	Al-Auja Girls School	0	0	0	0
Total		**2**	**2**	**3**	**2**

(2) Educational Facility Operation System

At government schools in Palestine, personnel costs, i.e. teachers' and staff salaries, and utilities such as electricity are borne by MEHE. In most of the cases, such utilities are paid directly to the relevant companies by MEHE. Consumables and office stationary needed in each educational facility are bought from the educational facility budget. The sources of the

[4] In principle, one of the teachers can double as a headmaster at a school with less than 200 students. However, in most of the cases, a fully administrative headmaster is staffed in even a very small school. Hence, it is assumed that a fully administrative headmaster will be staffed in Ein Elbeidah which is a small size school.

educational facility budget are due from students, rent from the canteen vendors, and other occasional donations. The educational facility budget is managed by the headmaster of each educational facility.

(3) Educational Facility Maintenance Plan

Since every educational facility is staffed with more than one janitor, educational facilities including classrooms, teachers' rooms and toilets are always kept clean and hygienic. Janitors are considered regular staff and employed by MEHE.

Maintenance and repair costs for educational facilities and educational materials at each educational facility are, in principle, covered by the educational facility budget as well. From time to time, donations from PTAs and communities are applied to cover maintenance and repair costs. In the event that a major maintenance project is needed, the cost of which cannot be covered by the educational facility budget, schools turn to the Education Directorate Office for financial and/or technical assistance.

2-4-2-2 School Bus

(1) Plan of Operation

A school bus that North JC plans to operate is expected to serve a total of 280 students from two villages where no school is built. The breakdown of these students are; (i) 130 students who reside in Kardalah including 20 students in Al Hamme hamlet, and (ii) 150 students who reside in Al-Malleh Bedouin Community consisting of the three main sub-communities of Hammamat, Ein-Elhelwy and Al-Farsiyih. The plans of operation for Kardalah and Al-Malleh are presented in Table 2-38 and Table 2-39 respectively below.

Table 2-38 Plan of Operation of School Bus for Kardalah

Onward Trip Time Table				
Departure		Arrival		No. of Students
Time	Place	Time	Place	
06:15	Kardalah	06:30	Badralah	26
06:30	Badralah	06:35	Kardalah	
06:35	Kardalah	06:50	Badralah	26
06:50	Badralah	06:55	Kardalah	
06:55	Kardalah	07:10	Badralah	26
07:10	Badralah	07:15	Kardalah	
07:15	Kardalah	07:30	Badralah	26
07:30	Badralah	07:40	Al Hamme	
07:40	Al Hamme	07:50	Badralah	26
07:50	Badralah	07:55	Kardalah	
Total No. of Students to be commuted by School Bus				130

Inward Trip Time Table				
Departure		Arrival		No. of Students
Time	Place	Time	Place	
12:25	Kardalah	12:30	Badralah	
12:30	Badralah	12:45	Kardalah	26
12:45	Kardalah	12:50	Badralah	
12:50	Badralah	13:05	Kardalah	26
13:05	Kardalah	13:10	Badralah	
13:10	Badralah	13:25	Al Hamme	26
13:25	Al Hamme	13:30	Badralah	
13:30	Badralah	13:45	Kardalah	26
13:45	Kardalah	13:50	Badralah	
13:50	Badralah	14:05	Kardalah	26
Total No. of Students to be commuted by School Bus				130

Source： North JC: School Bus Operation Committee for Kardalah

Table 2-39 Plan of Operation of School Bus for Al-Malleh Bedouin Community

Onward Trip Time Table				
Departure		Arrival		No. of Students
Time	Place	Time	Place	
05:10	Hammamat	05:25	Ein Elbeida	26
05:25	Ein Elbeida	05:35	Ein-Elhelwy	
05:35	Ein-Elhelwy	05:50	Ein Elbeida	26
05:50	Ein Elbeida	06:00	Ein-Elhelwy	
06:00	Ein-Elhelwy	06:15	Ein Elbeida	26
06:15	Ein Elbeida	06:25	Ein-Elhelwy	
06:25	Ein-Elhelwy	06:40	Ein Elbeida	20
06:40	Ein Elbeida	06:50	Al-Farsiyih	
06:50	Al-Farsiyih	07:05	Ein Elbeida	26
07:05	Ein Elbeida	07:15	Al-Farsiyih	
07:15	Al-Farsiyih	07:30	Ein Elbeida	26
Total No. of Students to be commuted by School Bus				150
Inward Trip Time Table				
Departure		Arrival		No. of Students
Time	Place	Time	Place	
12:30	Ein Elbeida	12:45	Hammamat	26
12:45	Hammamat	12:55	Ein Elbeida	
12:55	Ein Elbeida	13:10	Ein-Elhelwy	26
13:10	Ein-Elhelwy	13:20	Ein Elbeida	
13:20	Ein Elbeida	13:35	Ein-Elhelwy	20
13:35	Ein-Elhelwy	13:45	Ein Elbeida	
13:45	Ein Elbeida	14:00	Al-Farsiyih	26
14:00	Al-Farsiyih	14:10	Ein Elbeida	
14:10	Ein Elbeida	14:25	Al-Farsiyih	26

14:25	Al-Farsiyih	14:30	Hammamat	
Total No. of Students to be commuted by School Bus				150

Source： North JC: School Bus Operation Committee for Al-Malleh Bedouin Community

(2) Organization Plan for Operation and Management

The operation and management of the school bus shall be handled by the North JC. Draft Organization Plan for operation and management of the school bus is presented in Table 2-40.

Table 2-40 Draft Organization Plan for Operation and Management of School Bus

No	Title	Person in Charge	Main Duties	Main Tasks
1	Head	Mithgal Fayez	Overall Responsibility	Kardalah Deputy VC
2	Secretary	Imad Sawafta	Daily Operation and Management of school bus and personal administration	Chairperson of North JC
3	Accountant	Anwar Fuqaha'	Daily Book Keeping and Financial Management	

Source： JICA Study Team based on the technical consultative meeting with North JC

Remark： It was reported that Mr. Imad, Secretary, was replaced by a newly elected person in September 2009.

2-4-3 Community Service Facilities

(1) Overview of Operation and Management Plan by each Community Centre

Effectiveness of facility building is closely concerned with a degree of preparedness of users in operation and management of a facility. Such social preparedness on each community centre was assessed mainly in accordance with three aspects; namely, (i) planning aspect to prepare operation and management plan; (ii) organization aspect to set up an administrative body; and (ii) resource aspect in preparing financial plan for operation and management. The main results from the assessment are presented in Table 2-41. In general, preparedness in operation and management of each facility was confirmed with an expectation that each facility shall be utilized accordingly.

Table 2-41 Overview of Operation and Management Plan by each Community Centre

Code	PN-09	PW-12	PW-13	PS-10	PS-15
Type of Centre	CBO Centre	Multi-purpose Centre	Women's Centre	Women's Centre	Multi-purpose Centre
JC	North	Mid-West	Mid-West	South	South
Village	Bardalah	Ein Shibli	Al-Aqrabaniyah	Fasayel	Al-New'imeh & Al-Dyouke
Weekly O&M Plan	Formulated	Formulated	Formulated	Formulated	Formulated
Organization Plan	Organized by 6 members	Organized by 8 members	Organized by 9 members	Organized by 5 members	Organized by 6 members

Financial Plan	Membership fees to be supported by self-income generation	Membership fees to be supported by self-income generation	Membership fees to be supported by self-income generation	Membership fees to be supported by self-income generation	Membership fees to be supported by self-income generation

(2) Weekly Operation and Management Plan

A detailed weekly operation and management plan by each community centre is attached in Annex. Based on the plan, rooms of each Community Centre are understood to be utilized daily, expecting that each Centre will serve to vitalize the local people, thus contributing towards local social development in the respective communities.

(3) Organization Plan for Operation and Management

The general principle was confirmed under official acknowledgment of each Village Council that users are responsible for covering all the expenses related to operation and management. Based on this principle, an administrative body was organized for each centre, and it is expected that each centre shall be effectively managed by its administrative body in the future.

2-4-4 Other Basic Infrastructure

2-4-4-1 Veterinary Center

(1) Organizational arrangement and staff deployment

In close reference with experience of Yatta Veterinary centre, the proposed centre for Jordan Valley shall be institutionally established with its accountability to Veterinary Services and Animal Health of MoA in technical cooperation with the district office.

Taking into consideration the relatively wider geographic area of Jordan Valley, an intended operation area is divided into two sub-operation units for effective and efficient daily operation of mobile disease prevention services. The planned organizational arrangement is presented in Table 2-42.

Table 2- 42 List of Staff to be Deployed

	Type of Staff		No	Operation Area	
				by JC	by District
1	Station Centre	Director	1	Four JCs	Three Districts
2		Administrative Head	1		
3		Office Worker	1		
4	Mobile Disease Prevention Team-1	Veterinarian	1	(1) Mid-West JC (2) North JC	(1) Nablus (2) Tubas
6		Para-Veterinarian	2		
7		Driver	1		

8	Mobile Disease Prevention Team-2	Veterinarian	1	(1) Mid-East JC (2) South JC	(1)(2) Jericho
9		Para-Veterinarian	2		
11		Driver	1		
Total			11	Four JCs	Three Districts

A mobile vehicle for disease prevention and control is planned to be deployed for each mobile team. Two mobile teams are intended to visit local communities in accordance with a daily immunization schedule, which shall be set by each team, and to provide target beneficiaries with their services, except Friday and Saturday.

MoA has committed to covering all the necessary costs for operation and management of the veterinary centre, which include fixed costs such as salaries and related expenditures, vaccinations and medicines, other running costs including fuel, utilities and others. In terms of a technical support system, one mobile team for Mid-West and North JCs shall be guided under technical support by the Nablus and Tubas MoA's district offices respectively, while the other mobile team to serve the Mid-East and South JCs shall be directed under technical guidance provided by the Jericho MoA's district office.

Physical buildings and equipment of the intended veterinary centre are to be properly maintained by and under the direct supervision of the Veterinary Services and Animal Health of MoA. Periodic maintenance and repair of vehicles shall be commissioned to the private sector at the expense of MoA.

2-4-4-2 Road Facilities

The relevant villages and JCs are recommended to look into the past maintenance records, create files for roads and public buildings, and to put together an annual public building maintenance plan. In doing so, the roads will be maintained properly and used for a long period.

Since it rains little in the target area, it is considered easy to do day-to-day maintenance work on the roads. As most road damage is caused by rain during the rainy season, it is possible to keep the damages to a minimum, if it is repaired as soon as the rainy season is over. On the other hand, the box culvert of PS-04 gets filled with dirt and eroded in upstream and downstream respectively. Hence, it is necessary for the village and JC to clear the dirt and mend the erosion after the rainy season.

In making an annual plan, the following must be considered:

① JCs form a maintenance organization and nominate staff including a manager[5].

② JCs prepare maintenance manuals.

③ JCs stock necessary equipment and materials for maintenance[6].

[5] To assist the limited number of staff, it is recommended that the maintenance organization call for volunteers from the village to repair the road/culvert surface and damages, to clear the road/culvert, and to do some other necessary works such as removing grass.

[6] Asphalt, macadam, repair equipment, concrete rollers, etc.

④ JCs budget maintenance fund in its annual budget.

2-4-4-3 Electrical Facilities

Maintenance is unnecessary for the electrical distribution network, unless the environment changes drastically. However, in order to grasp the change in advance, it is desirable that an ocular check and a voltage/current check are carried out monthly, and insulation resistance be tested annually. These tests can be carried out by two engineers in the villages.

2-4-4-4 Water Supply by Water Tankers

(1) Plan of Operation

The plan of operation on water supply by water tanker is comprised of two sub-plans; namely, (i) a water supply plan and (ii) a plan of operation of a water tanker. The South JC estimates a population of 3,610 residing in 12 localities as the total number of people in need of water supply by water tanker. Taking an average daily domestic water demand at 50 liter per capita per day, daily water supply demands is estimated at 180.5 $m^{3.}$

Table 2-43 Water Supply Plan by South JC

No.	Name of locality	Population	Remark	Average DWC	Daily Domestic Water Demand
1	Athenemieh	180		50	9,000
2	Al Dyouk	820		50	41,000
3	Treif	150	Bedouin	50	7,500
4	Al Amree	40	Bedouin	50	2,000
5	Abu Zheiman	120	Bedouin	50	6,000
6	Ashalal	800	Bedouin	50	40,000
7	Shlash	150	Bedouin	50	7,500
8	Om Athba	300	Bedouin	50	15,000
9	Al Mujadreen	400	Bedouin	50	20,000
10	Al Najada	400	Bedouin	50	20,000
11	Al Sahel	100	Bedouin	50	5,000
12	Al Nabe	150	Bedouin	50	7,500
DWC: Domestic Water Consumption (lpcd)				**Total in Litre:**	**180,500**

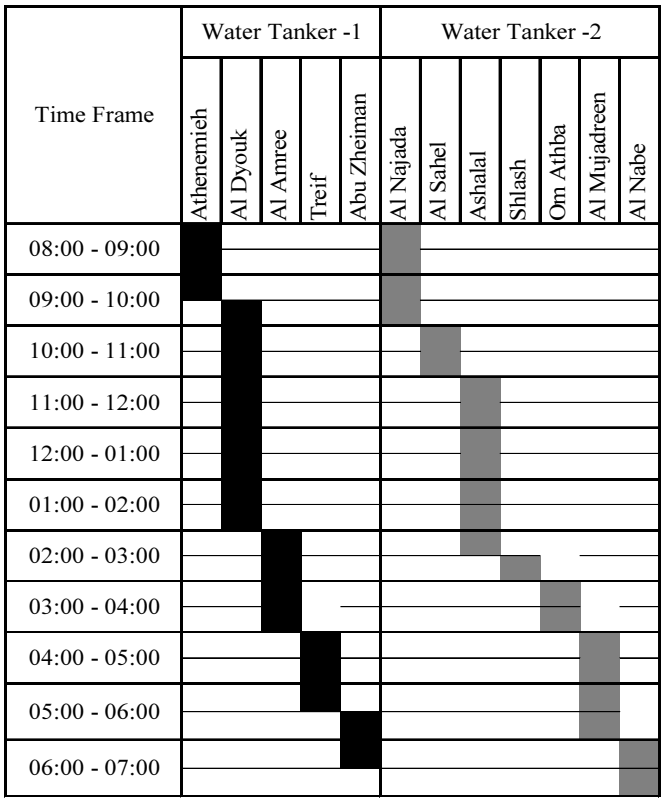
Source: South JC (2009), Daily Demands of Water Supply

Remark: Average Daily Domestic Water Consumption at 50 liter per capita per day (50 lpcd): World Bank (2009), Assessment of Restrictions on Palestinian Water Sector Development (Report No.47657-GZ)

In order to meet the above daily domestic demands, a plan of operation that South JC prepared is presented in Table 2-44. It is understood that water supply by two water tankers with 12 m^3 each of capacity could meet the total demand with daily service hours from 8 a.m. to 7

p.m. According to the South JC, they are planning to commission to the private sector whenever a water tanker is out of service due to technical maintenance or repairs or for other reasons.

Table 2-44 Plan of Daily Operation of Water Tanker by South JC



Source: South JC (2009), Daily Operation Plan

(2) Organization Plan for Operation and Management

A water supply project by water tanker is planned for implementation by the South JC in a modality of financial self-sufficiency. In order to effectively implement it, South JC has formulated an organizational arrangement presented in Table2-45. Except two drivers to be employed, all the administrative staff shall work voluntarily at the initial stage.

Table 2-45 Draft Organization Plan for Operation and Management

No	Title	Person in Charge	Main Duties	Main Tasks
1	Head	Ghaleb Awatla	Overall responsibility	JC Head
2	Secretary	Turkey Theib	Daily Operation and Management (personal admin. supervision of daily operation and financial management)	Water Supply Plan Operation Plan Financial Plan
3	Accountant	Ahmed Dre'an	Accounting and financial management	
4	Driver 1	To be employed	Actual water supply	Vehicle control
5	Driver 2	To be employed	Actual water supply	Vehicle control

Source: JICA Study Team based on results from technical consultative meeting with South JC

2-5 Project Cost Estimation

2-5-1 Initial Cost Estimation

The breakdown of the cost borne by the PA side based on the allocation of works between the two countries is estimated as follows in accordance with the condition of described in (2) below.

(1) Total Cost to Be Borne by the PA Side US$ 129,100 (Approx. JPY12.51 Million)

Table 2-46 Total Cost to Be Borne by PA Side

Item		Estimated Cost (US$: Thousand)	(Equivalent to JPY: Million)
Capital Cost	Banking Arrangement Fee	13.1	1.237
	Power Lead-in/Connection	80.0	7.775
	Water Connection	33.0	3.207
	Demolition Cost	3.0	292
Total		129.1	12,511

(2) Conditions

(i) Time of Estimation: August 2009.

(ii) Currency Exchange Rate: 1US$ = JPY 97.19 EURO =JPY 131.10
1NIS = JPY 23.97

(iii) Construction Period: Detailed design and construction period are stated in the previous chapter.

(iv) Other Remarks: Cost estimation shall be conducted based on the principles of the Government of Japan's Grant Aid for Community Empowerment.

2-5-2 Operation and Maintenance Cost

Operation and maintenance cost necessary after the completion of the Project is listed in Table 2-47.

1) The central Ministries bear the operation and maintenance cost for the following components.

a. Medical facilities : As the estimated annual operation and maintenance cost for the medical facilities is 0.2% of MoH's 2008 budget, MoH is able to bear the cost.

b. Educational facilities: As the estimated annual operation and maintenance cost for the educational facilities is 0.08% of MEHE's 2008 budget, MEHE is able to bear the cost.
c. Veterinary clinic: As the estimated annual operation and maintenance cost for the veterinary center is 0.47% of MoA's 2008 budget, MoA is able to bear the cost.

2) The recipient LGUs bear the operation and maintenance cost for the following components.
a. Educational facilities: As the cost for the sewage disposal is estimated to be 16,000NIS on average, each LGU is able to bear the cost from their annual budget which is 520,000 NIS on average.
b. Road : No regular maintenance is needed except for when some damage is found after the rainy season. As the annual cost for materials and equipment for the road maintenance is roughly estimated to be from 23,000 NIS to 46,000 NIS, each recipient LGU is able to bear the cost from their annual budget which is 520,000 NIS on average.
c. Electricity: As maintenance cost for monthly check up and measurement of voltage, current and insulation resistance is estimated to be 2,000 NIS, each recipient LGU is able to bear the cost from their annual budget which is 920,000 NIS on average.

3) The following components generate income, from which the operation and maintenance cost is paid.
a. School buses: The operation plan was made according to the operation experiences in the targeted area, and the financial plan is also feasible. Therefore, the recipient LGUs are able to bear the cost.
b. Community facilities: The civil groups who use the facilities are to be shoulder the operation and maintenance cost as the rental fee. Considering the current activities of those groups, they are able to pay the rental fee.

Table 2-47 Major Operation and Maintenance Items

(Unit : USD)

Facility	Item	Borne by	Operation & Maintenance Cost	Income	Budget
Borne by the annual budget of central Ministries					
Medical facilities	Personnel for new staff	MoH	647,021		36,000,000
	Operation and maintenance for PHC, ambulance, mobile clinic car		137,920		
		Total MoH	784,941		
Educational facilities	New teachers and staff	MEHE	313,975		398,000,000
	Electric and water bills		652		
	Re-painting and others		6,020		
		Total MEHE	320,648		
Other basic infra-structure	New staff for the veterinary center	MoA	85,167		210,325
	Operation and maintenance cost for the veterinary center and mobile veterinary cars		13,686		
		Total MoA	*98,853*		
Borne by the annual budget of LGUs					
Education-al facilities	Sewage disposal	Ein Elbeidah	2,616		113,457
	Sewage disposal	Al Nasariyah	5,232		157,201
Other basic infra-structure	Road repair	Al Aqrabaniyah	497		175,817
	Road repair	Al Nasariyah	759		157,201
	Road repair	Al Jiftrik	392		156,131
	Road repair	Al Neweimeh & Al Dyouk	1,020		33,348
	Electricity check and repair	Ein Elbeidah	544		113,456
	Electricity check and repair	Bardalah	544		93,836
	Electricity check and repair	Mid-west JC	544		489,149
Borne by the income of the activities					
Community facilities	Bardalah CBO center	Civil groups	11,034	11,034	
	Einshibli Multipurpose hall	Civil groups	1,229	1,229	
	Aqrabaniyah women's center	Civil groups	1,308	1,308	
	Fasayal women's center	Civil groups	4,708	4,708	
	Al Newemeh multipurpose hall	Civil groups	3,557	3,557	
Other basic infra-structure	Operation and maintenance cost for school buses	North JC	39,123	39,123	
	Operation and maintenance cost for water tankers	South JC	407,270	407,270	

2-5-2-1 Medical Facilities

(1) Personnel Cost

Additional personnel cost is required through newly staff deployment as shown in Table2-48.

Table 2-48 Annual Salaries for New Staff

Unit :US$

	Occupation	Salary/Year	No. of Staff	Total
Medical Facilities	Dentist	11,140	4	44,560
	Lab. Technician	7,680	4	30,720
	X-ray Technician	7,920	4	31,680
	Clerk	6,216	4	24,864
	Sub Total			131,824
Ambulance	Paramedic	13,920	2	27,840
	Medical Officer	24,960	2	49,920
	Driver	11,400	2	22,800
	Sub Total			100,560
Mobile Clinic Cars	General Practionner	12,480	4	49,920
	Nurse	7,920	2	15,840
	Driver	5,700	2	11,400
	Sub Total			77,160
Grand Total				**309,544**

Annual salaries are estimated at 131 thousand dollars, 100 thousand dollars and 77 thousand dollars for the four medical facilities, one ambulance and two mobile clinic cars respectively.

“This Palestinian Reform and Development Plan (PRDP) 2008-10” is a national plan which sets out the PA’s medium term agenda for Palestinian reform and development. In this plan, 30 medical facilities are targeted for construction to improve the quality of health services. Its costs are expected 13 million dollars totally (3 million dollars in 2008, 4 million dollars in 2009, 6 million dollars in 2010). MoH will disburse the estimated salaries from PRDP budget for the 2010 year and will allocate it from its own annual budget after the 2011 year.

(2) Operational Cost

The operational cost is required through upgrading medical facilities and introducing an ambulance and mobile clinic car as shown in Table 2-49.

Table 2-49 Annual Operational Cost for Medical Facilities, Ambulance and Mobile Clinic Cars

Unit:US$

	Item	Cost	Nos	Total Cost/Year
Medical Facilities	Pharmaceutical and Medical Supplies	16,000	4	64,000
	Sub Total			64,000
Ambulance	Pharmaceutical and Medical Supplies	3,600	1	3,600
	Fuel oil	9,000	1	9,000
	Other	2,000	1	2,000
	Sub Total			14,600
Mobile Clinic Cars	Pharmaceutical and Medical Supplies	10,800	2	21,600
	Fuel oil	9,000	2	18,000
	Other	6,000	2	12,000
	Sub Total			51,600
Grand Total				130,200

Annual operational costs are estimated at 64 thousand dollars, 14.6 thousand dollars and 51.6 thousand dollars for four medical facilities, one ambulance and two mobile clinic cars respectively. MoH will disburse those cost from the PRDP budget for the 2010 year. For the following years, MoH will allocate it from its own annual budget.

(3) Maintenance Cost

The maintenance cost required for upgrading medical facilities and introducing an ambulance and mobile clinic cars as shown in Table 2-50.

Table 2-50 Annual Maintenance Cost for Medical Facilities, Ambulance and Mobile Clinic Cars

	Cost	Nos	Total Cost/Year
Medical Facilities	16,000	4	64,000
Ambulance	3,600	1	3,600
Mobile Clinic Cars	6,000	2	12,000
Total			**79,600**

Annual maintenance costs are estimated at 64 thousand dollars, 3.6 thousand dollars and 12 thousand dollars for four medical facilities, one ambulance and two mobile clinic cars

respectively. MoH will disburse those costs from the PRDP budget for year of 2011. For the following years, MoH will allocate it from own annual budget. MoH appropriates about 15% of own budget for maintenance annually.

(4) Total of Operational and Maintenance Cost

According to MoH financial data, year-on year increase of expenditure is 6-20% in the five past years (2004-2008). The total cost to implement the Project comes to 519 thousand dollars annually. The ratio of the cost of the project to total MoH expenditure in 2008 is only 0.2% and thus it is likely that MoH could manage the Project.

2-5-2-2 Educational Facilities

2-5-2-2-1 Educational Facilities

(1) Teachers' and Staff Salaries

With the implementation of the Project, MEHE needs to budget the following sum per annum for employing additional teachers' and staff.

	Monthly Salary		No. of Staff		Months		Subtotal
Teacher	2,210	x	37	x	12	=	981,240
Headmaster	2,650	x	2	x	12	=	63,600
Secretary	2,210	x	2	x	12	=	53,040
Janitors	1,375	x	3	x	12	=	49,500
SW	2,210	x	2	x	12	=	53,040
Grand Total (NIS)							**1,200,420**

(2) Educational Facility Operation Cost

MEHE shoulders NIS 600 per annum on average per school for electricity. Hence, MEHE is responsible for paying about NIS 600 for the two brand new schools respectively, and the additional utility charges for the extended schools[7]. Also, MEHE is responsible for covering water charge for PN-02 Ein Elbeidah Girls School with its establishment. (However, as for PW-03 Al-Nassariyah Girls School, no water charge is expected as the entire region uses well-water.) The following table indicates the estimated utility charges to implement the Project.

[7] The average annual electricity cost for a school as large as 2,000 sqm is about NIS 600. The additional electricity cost for the extended school is calculated based upon the area of extension. In addition, at present, about NIS 100 per month is paid for water for the Ein Elbeidah Co-ed School and the water charge for the new school is calculated as follows. NIS 100 x 9 months = NIS 900.

Table 2-51 Estimated Educational Facilities Operational Cost

No.	Educational Facility Name	Annual Electricity Charge (NIS)	Annual Water Charge (NIS)
PN-02	Ein Elbeidah Girls School	600	900
PW-03	Al-Nassariyah Girls School	600	-
PW-04	Ein Shibli Co-ed School	124	-
PE-03	Al-Zubeidat Boys School	83	-
PS-02	Al-Auja Girls School	235	-
Total		**1,642**	**900**

(3) Educational Facilities Maintenance Cost

Repair is not necessary for a few years after the completion. However, repainting of columns, eaves, parapets, and corridors is needed every decade. Hence, the following table indicates the annual cost for the repainting. As the amount is too big for each school to cover with its budget, MEHE shall bear the cost.

Table 2-52 Estimated Educational Facilities Maintenance Cost

No.	Educational Facility Name	Cost per year (NIS)
PN-02	Ein Elbeidah Girls School	7,076
PW-03	Al Nassariyah Girls School	9,536
PW-04	Ein Shibli Co-ed School	1,785
PE-03	Al Zubeidat Boys School	1,197
PS-02	Al-Auja Girls School	3,385
Total		**22,979**

In addition, a educational facility not connected to the sewage system needs to dispose of wastewater, every time the wastewater tank gets full. The wastewater disposal cost is shouldered by the respective village. Therefore, Ein Elbeidah village and Al-Nassariyah village where a brand new girls' school will be established respectively, need to budget the following amount.

Table 2-53 Estimated Waste Water Disposal Cost

No.	Village	Waste Disposal Amount[8]	Annual Village Budget	①÷② x 100
PN-02	Ein Elbeidah	10,000	433,780	2.3%
PW-03	Al Nassariyah	20,000	601,025	3.3%

(4) Total of the Operation and Maintenance Cost

With the implementation of the Project, MEHE needs to bear the following cost each year. The total of operation and maintenance cost covered by MEHE is NIS 1,255,674 is no more than 0.08% (NIS 15.2 billion) of MEHE budget of 2007/8. Hence, it is considered a payable amount.

Table 2-54 Total of Operation and Maintenance Cost shouldered by MEHE

Item	Cost per year (NIS)
Teachers' and Staff Salary	1,210,420
Electricity	1,642
Water	900
Repainting	22,979
Total	**1,235,941**

On the other hand, Ein Elbeidah and Al-Nassariyah villages are requested to additionally budget NIS 10,000 and NIS 20,000 respectively for the new schools' sewage disposal. The cost is approximately high, accounting for 2.3% and 3.3% of the village annual budget of Ein Elbeidah and Al-Nassariyah respectively. Hence, both of the villages are required to secure fund for the sewage disposal.

2-5-2-2-2 School Buses

A project of operation and management of school buses is planned for implementation by the North JC. The North JC formulated a financial plan for operation and management of school buses to serve Kardalah and Al-Mellah Bedouin Community. The financial plan is presented in Table 2-55. Based on this revenue and expenditure structure, operation and management shall be financially self-sustaining. Yet depreciation costs are not taken into consideration.

[8] It is assumed that 200 users per day and 400 users per day use toilet at Ein Elbeidah Girls School and Al-Nassariyah Girls School respectively. In addition, at present, about NIS 100 per month is paid for water for the Ein Elbeidah Co-ed School and the water charge for the new school is calculated as follows. NIS 100 x 9 months = NIS 900.

Table 2-55 Financial Plans for Operation and Management of School Buses

	Kardalah School Bus	Al-Malleh School Bus
Tariff	NIS 2.00 (flat rate per child per day)	NIS 3.00（BASIC: per child pre day） NIS 3.00（DISCOUNT rate for distance family） NIS 5.00 (TWO for two children per day）
No. of Students	120	150 (90 for Basic: 50 for Discount and10 for family with two)
Average No. of service per month	22 days per month	22 days per month
No. of months per year	9 months	9 months
Financial Plan	Revenue 1 Regular Revenue NIS 2 x 120 x 22 x 9 47,520 2 Special Revenue (through summer camp) 9,000 NIS 600 x 15 times **56,520** **Total** Expenditure 1 Salary for Driver NIS 1,800 x 12 21,600 2 Fuel NIS 800 x 12 9,600 3 Insurance (annual) 3,500 4 License (annual) 1,700 5 Maintenance 6,000 **Total 42,400**	Revenue 1 Basic NIS 3 x 90 Disount NIS 3 x 50 Family NIS 5 x 10 NIS 470 x 22 x 9 93,060 **Total 93,060** Expenditure 1 Salary for Driver NIS 2,000 x 9 18,000 2 Fuel NIS 5,500 x 9 49,500 3 Insurance (annual) 7,000 4 License (annual) 2,000 5 Maintenance 9,000 **Total 85,500**

Remarks：

1) A difference in insurance fee and licensing fees between Kardalah and Al-Mellah has been noted since each village contacted with a different insurance company.
2) Al-Malleh Bedouin community plans to employ a driver only for nine months reflecting the life patterns of Bedouins, who do not have a sedentary pattern of life.

2-5-2-3 Community Facilities

(1) Salary, allowances and related expenditures for personnel

No personnel is planned to be employed by any community centers, and consequently each community centre is planned to be operated and maintained by an administrative body consisting of representatives from users' communities. Accordingly, no expenses shall be estimated for salaries and related expenses for personnel. In case when it may become necessary to employ someone, the administrative body shall make a decision to cover required costs through membership fees and other internal revenues.

(2) Operation and maintenance costs

It was agreed in principle that any costs required for operation and maintenance of a facility shall be covered by users' organizations based on a modality of beneficiary-payment for benefit. It was also agreed that users' organizations shall utilize financial resource earning through self-income generation schemes in cases when they encounter a financial deficit. It was also reached to consensus that each Village Council shall be ready to make up for any financial shortfall if expenditures are unexpectedly higher than the level of revenues from users' organization.

When a Village Council encounters a financial deficit in which expenditures for operation and maintenance are beyond revenue capacity, Village Council is said to mobilize its mechanism of revenue-expenditure system. Currently each Village Council is given an official mandate to regularly collect electricity fees as well as water fees and make a payment to the respective companies. For instance, the unit price of electricity established by an Israeli company is set at the rate of NIS 0.50 per khw. In the case of Al-Aqrabaniyah, the Village Council set up internal rules and a rate of charge at NIC 0.65 per khw from each household. Based on this mechanism, the Village Council will have revenue at the rate of 0.15 per khw as public income. As a result, the financial statement of Al-Aqrabaniyah on electricity for the month of June 2009 indicated surplus income in the amount of NIS 732, which is treated as revenue for the Village Council and is to be utilized for public expenditures. Ein Shibli Village Committee introduced the same system and their financial statement on electricity for the month of June 2009 recorded NIS 895.10 as surplus revenue to be utilized for public expenditures.

On the other hand, the MoLG estimates an average monthly utility charge of each community centre at a rate of USD 100 based on empirical knowledge. This implies that the average annual expenditures of each community center may account for NIS 4,700 at least.

In reference to the above estimation, it is assessed that all the community centres, except the Multi-purpose Center in Ein Shibli, would reach a financially self-sustaining level by membership fees to be collected for operation and management of the centre. In the case of Ein Shibli, it is anticipated that within the current financial capacity, Ein Shibli Village Committee will provide financial support in an amount of NIS 200 annually to its community center by achieving a revenue surplus to be attained through the electricity revenue mechanism, until the community centre reaches a financially self-sustaining level. The estimated revenue structure by each community center is presented below.

Table 2-56 PN-09: Construction of CBO Centre in Bardalah

	Description	Annual revenue
1	Membership Fees (1) Rate of membership fee: NIS 55 per year (2) No. of members: 367	20,185
2.	Income generation through sales of feeding by Animal Husbandry Cooperative Society	5,000
3.	Income generation through renovation of plastic house by Northen Aghwar Agricultural Cooperative	10,000
4.	Income generation through sales of plants by Medical Plants and Herbs	3,000
5.	Income generation through sales of embroidery by Rural Women Development Society:	4,000
Total		42,185

Table 2-57 PW-12: Construction of Multi-purpose Center in Ein Shibli

	Description	Annual revenue
1	Membership Fees (1) Rate of membership fee: NIS 25 per year (2) No. of members: 180	4,500
2.	Income generation through sales of processed foods	unpredicted
3.	Income generation through sales of handicrafts	unpredicted
Total		4,500

Table 2-58 PW-13: Construction of Al-Aqrabaniyah Women's Centre

	Description	Annual revenue
1	Membership Fees (1) Rate of membership fee: NIS 50 per year (2) No. of members: 100	5,000
2.	Income generation through sales of processed foods	unpredicted
3.	Income generation through sales of clothes sewed	unpredicted
Total		5,000

Table 2-59 PS-10: Construction of Fassayel Women's Centre

	Description	Annual revenue
1	Membership Fees (1) Rate of membership fee: NIS 10 per month (2) No. of members: 150	18,000
2.	Income generation through sales of products	unpredicted
Total		18,000

Table 2-60 PS-15: Construction Multi-Purpose Center in Al-New'imeh

	Description	Annual revenue
1	Membership Fees Charitable Society (1) Rate of membership fee: NIS 100 per year (2) No. of members: 55 Youth Club (1) Rate of membership fee: NIS 100 per year (2) No. of members: 86 Women Center (1) Rate of membership fee: JD 75 per year (2) No. of members: 72	NIS 13,600 JD 5,400
2.	Donations to be provided by supporting agencies to Charitable Society and Income generation through bazzar	unpredicted
3.	Donations to be provided by supporting agencies to Youth Club	unpredicted
4.	Income generation by shop, rent chairs and sales of food processing products	unpredicted
Total		NIS 13,600 JD 5,400

2-5-2-4 Other Basic Infrastructure

(1) Veterinary Centre

Based on prior experience in operation and management of the Yatta Veterinary centre, MoA has estimated the operation and maintenance cost of the intended centre. The cost estimation is presented in Table 2-61.

Table 2-61 Financial Plan for Operation and Maintenance of Veterinary centre

(Unit: USD)

No.	Cost item	Unit Cost (in USD)	Calculation	Annual Estimated Cost
(1) Fixed Cost				
1-1	Salary for Director （1）	1,000	12	12,000
1-2	Veterinarian (2)	900	12 x 2	21,600
1-3	Para-Veterinarian (4)	500	12 x 4	24,000
1-4	Administrator (1)	500	12	6,000
1-5	Driver (2)	500	12 x 2	12,000
1-6	Co-worker （1）	400	12	4,800
			Sub-total of Fixed Cost	80,400

(2) Variable Cost				
2-1	Electricity	150	12	1,800
2-2	Water	50	12	600
2-3	Fuel and Lubricants	300	12	3,600
2-4	Vaccines	(provided)	(provided)	(provided)
2-5	Medicines	(provided)	(provided)	(provided)
2-6	Telephone and communication	60	12	720
2-7	Maintenance	10% of equipment cost	1 (annually)	5,000
2-8	Vehicle Maintenance（2 cars）	50	12x2	1,200
Sub-total of Variable cost excluding 2-4, 2-5 & 2-10				12,920
Annual Operation and Maintenance Cost excluding Vaccines and Medicines				**93,320**

Source: MoA

4~4.7 percentage increases in annual public expenditures of MoA have been accounted in the past three years, though the rate of increase varied from year to year. The total amount of annual operation and maintenance costs, which excludes the cost for vaccines and medicines, is estimated to be USD 93,320 (US Dollar Ninety Three Thousand and Three Hundred Twenty Only) of which shall amount to approximately 0.5 % of the total public expenditure of MoA. Hence, MoA has enough capacity to shoulder the operation cost for the project.

With regard to necessary cost for vaccines and medicines, the Spanish Government and UNDP pledged to provide MoA with financial support until the year 2010. By using this support, necessary vaccines and medicines are planned to be provided. It is said that financial support by the Spanish Government and UNDP is expected to be continued from the year of 2011 onwards.

（2） Road Facilities

While it is desirable that the central government subsidizes the road maintenance cost, it is necessary that the relevant JCs and/or villages cover the entire maintenance cost as no subsidy is allocated today. Currently, each village uses its balance from the utility charges to repair and maintain public infrastructure such as roads. Even assuming that the villagers voluntarily take part in labor, the fund for material is still needed. According to Mid-West JC, the annual cost per km for maintenance materials is NIS 500. The following table shows the annual maintenance cost and its ratio to the annual budget of each village.

Table 2-62 Maintenance Cost for Roads

No.	Road Length (km)	①Maintenance Cost (Annual)	②Village Budget (Annual)	①÷② x 100 (%)
PW-09	7.46	3,730	673,201	0.55%
PW-10	5.64	2,820	601,025	0.47%

PE-05	5.00	2,500	596,937	0.42%
PS-04	13.60	6,800	127,500	5.33%

(3) Electrical Facilities

Each village needs to budget 26 man-days per-diem annually. (Monthly checks and once-a year insulation resistance test.) The actual annual cost is estimated at NIS 2,080 for a village. (NIS 80/man-day x 26 days) At present, a village electrician maintains the electrical network as a part timer in each village. Since it is expected that the frequency of maintenance work will decrease significantly due to the projects, the maintenance cost shall not strain the finances of each village.

(4) Water Tanker

A project for water supply by water tanker is planned to be implemented by the South JC under a modality of a financially self-sustaining system.

Based on a community consultation meeting as well as in reference with experiences through NGOs, a consensus has been reached that the rate of water tariffs shall be set at NIS 25 per m^3. Through empirical knowledge, the service period of one year is classified into two seasons; namely, (i) a higher-consumption season for 210 days; and (ii) a lower-consumption season for 155 days during which 90 % of water consumption of that in the higher consumption season is estimated. Accordingly, a total of NIS 1.57 million in revenue is estimated, while a total of NIS 248,000 shall be estimated for annual expenditures. The financial plan prepared by South JC is presented in Table 2-63.

Table 2-63 Tentative Financial Plan for Operation and Maintenance of Water Tankers by South JC

<Revenue>

No.	Item	Calculation	Annual Amount
1	Water Fees -1	Water Tariff: NIS 25.00 per m^3 Estimated Daily Consumption: 180.5m^3 Days of Operation: 210 days NIS 25 x 180.5 x 210 = NIS 947,625	NIS 947,625
2	Water Fees -2	Water Tariff: NIS 25.00 per m^3 Estimated Daily Consumption: 162.45 m^3 Days of Operation: 155 days NIS 25 x 162.45 x 155 = NIS 629,493	NIS 629,493
		Estimated Total Annual Revenue	**NIS 1,577,118**

<Expenditure>

No.	Item	Calculation	Annual Amount
(a) Fixed Cost			
1	Salary for two drivers	NIS 1,500 x 2 x 12	NIS 36,000
2	Insurance fees	NIS 5,000 x 2	NIS 10,000

3	Licence fees	NIS 5,000 x 2	NIS 10,000
Sub-total (a)			NIS 56,000
(b) Variable Cost			
4	Fuel	NIS 5 x 433 / 5 x 365	NIS 158,100
5	Lubricants	NIS 250 x 2 x 12	NIS 6,000
6	Maintenance	〔NIS 11,000 (wheel) + NIS 3,000 (filter)〕 x2	NIS 28,000
Sub-total (b)			NIS 192,100
		Estimated Total Annual Expenditure	**NIS 248,100**

Source: South Joint Service (2009), Financial Plan

As described earlier, South JC prepared its tentative financial plan by adopting 50 liters per capita per day as its daily domestic water consumption and NIS 25 as its water tariff. On the other hand, the World Bank revealed in its report[9] that the average water tariff by water tanker in PA shall be set at the rate of NIS 12 per m^3 while minimum domestic water consumption is set at 20 liters per capita per day. By adopting the rate from the World Bank, at least NIS 302,908.8[10] can be estimated as surplus revenue for the intended water supply programme by South JC. Accordingly, the intended operation and management by South JC is financially feasible, and this operation is expected to strengthen the financial base of the JC.

[9] World Bank (2009), Assessment of Restrictions on Palestinian Water Sector Development (Report No.47657-GZ), page-18

[10] NIS 12 x (20 x 3,610 / 1000) x 210 + NIS 12 x (20 x 3,610 / 1000 x 0.9) x 155 = 302,806.8

Chapter 3: Project Evaluation and Recommendations

Chapter 3 Project Evaluation and Recommendations

3-1 Project Effects

(1) Direct Effect

The Project is expected to bring about the following direct effects by constructing, extending and rehabilitating the basic infrastructure.

1) In Jordan Valley where no level II medical facility exists, approximately 27,000 residents will be able to enjoy the level III medical services such as X-ray, clinical, dental and etc., by upgrading an existing level II facility to level III in 4 JCs respectively.
2) In Jordan valley, 635 students who are studying in multi-grade classes and/or non-classroom buildings such as a village office will be able to enjoy lessons in an appropriate educational environment.
3) As each JC will have a girls school within, the number of students of the girls schools will increase from 572 to 1,172 in total in the 4 JCs.
4) 15 LGUs in Jordan Valley will have facilities to be exclusively used for the community activities. And they will invigorate those community activities.
5) Among the other basic infrastructure such as road, water and electrical network and etc., the components with high propriety and needs of JCs will be constructed/ procured.

(2) Indirect Effect

The following indirect effects are expected by the Project.

1) The living environment of the residents will improve after the construction and procurement of basic public infrastructure.
2) The quality of the public services provided by JCs and/or LGUs will improve.
3) The capacity of JCs and LGUs will improve by their close cooperation with the ongoing technical cooperation project “Improvement of Local Governance System.”

3-2 Recommendations

The following issues must be addressed by the PA side, in order that the facilities and infrastructures provided by the Project will be used continuously and effectively.

(1) Medical Facilities (MoH and Health Department of Jericho Governorate)

- Assign the necessary and qualified staff to the medical facilities which are upgraded by the Project and allocate the necessary amount of budget for medicines and consumables to operate the clinics.

- Assign the necessary staff to the ambulance and mobile clinic cars which are provided by the Project and allocate the necessary amount of budget for medicines, consumables, fuel and such to operate the vehicles.

(2) Educational Facilities (MEHE and related LGUs)

- Enroll the appropriate number of students in the Project schools and divide them into classes appropriately.
- Assign the necessary number of teachers and staff to the Project schools and allocate the necessary amount of operation and maintenance costs including utility to the schools. Especially, every 10 years, relatively a large amount of repainting cost must be budgeted.
- Carry out continuous supervision and guidance for the LGUs to dispose wastewater.
- Hire drivers, purchase fuel and other necessary items, carry out regular maintenance and repair when necessary, using the revenue from the patrons of the school busses.

(3) Community Service Facilities (CBOs and related LGUs)

- Organize a facility management committee consisting of CBOs which use the facilities provided by the Project.
- CBOs using the community service facility will bear the operation and maintenance costs from own membership fee. In the event that the membership fee is not enough, the LGUs will subsidize a part of the operation and maintenance costs.

(4) Other Basic Infrastructure (Related LGUs and MoA)

- Assign the necessary and qualified staff to the veterinary centre and mobile cars and allocate the necessary amount of budget for medicines, consumables, fuel and such.
- (When necessary) Call for volunteers from the LGUs to maintain the road rehabilitated by the Project. The LGUs are responsible for purchasing the necessary equipment and materials.
- Carry out monthly ocular check and annual voltage/current check for the power supply network rehabilitated by the Project. The fee must be borne by the LGUs.
- Hire drivers, purchase fuel and other necessary items, carry out regular maintenance and repair when necessary, using the revenue from the patrons of the water tankers.