

## **Annex 4**

### **Policy, Legal and Institutional Framework**

## **Policy, Legal and Institutional Framework**

This annex includes a summary of the laws, regulations and institutional setup relevant to environmental and social management in the Gaza Strip, with particular focus on sludge management, water reuse and social rights. National and international guidelines for environmental assessment, treatment plants and technical design requirements were reviewed and key points are presented. . A review of the most pertinent regulations and standards governing health and safety has been included. In addition, analysis for the gaps between Palestinian Laws and International Laws were presented in order to develop some mechanisms to fill in the gaps. The section also includes a review of environmental quality standards for ambient air, drinking water, and limited values for liquid and gaseous emissions.

### **1. PALESTINIAN LEGAL FRAMEWORK**

Palestinian Legal Framework includes the laws, regulations and guidelines related to the preparation of the project (EIA), the standard for ambient air, water quality for groundwater and drinking water as well as the sludge reuse (is not yet endorsed). The Consultant reviewed the available laws, regulations and guidelines ensure that the procedure for the implementation process is done according to the relevant laws applied in Gaza Strip. In addition, the Consultant, based on the task assigned for each authority related to the water, sludge and water collection and distribution identified the relevant authority to implement the project components, both during construction and operation phase.

Concerning the land acquisition, the Consultant reviewed the relevant laws related to the land ownership, compensation and the involuntary resettlement applied in Gaza Strip. Based on the available laws, the Consultant compared it with the International guidelines (in this regard the WB Operational Procedure concerning the involuntary resettlement as the project is financed by the WB).

As to the Palestinian Environmental Assessment Policy (PEAP), the EIA is a prerequisite for the approval of any project in Palestine. The EIA is the project document informing the relevant permitting authorities and the Environmental Quality Authority (EQA) that a project is being considered. It is the document used by the EQA to screen the project for its disposition under the EA Policy, and to consider permitting conditions. The EIA should list what environmental and other permits must be obtained and complied, it indicates how the expected conditions of these permits will be fulfilled, and it includes a signed statement by the proponent that these conditions will be fulfilled.

Each project is subject to a screening process in which the level of required Environmental Assessment (EA) is determined. The list of the projects that require a full detailed EA includes WWTP and its processes. In this study, as the recovery water resulted from partially treated wastewater, decommissioning of WWTP and remediation of effluent lake is a part of WWTP management, therefore the project "NGESTP, Effluent Recovery and Reuse System and Remediation works" will require an EIA.

In order to determine what environmental and social issues should be covered by an EIA, a scoping process is done in which the stakeholders and impacted entities and locals are invited. The scoping sessions are then to address the project and get feedback on the concerns and subjects to be addressed. The EQA issues the Terms of References (ToR)

based on the scoping and the experiences gained. Nevertheless, scoping is essential as it will inform about the project and enhance the acceptance and the understanding of the environmental and social impacts.

The Palestinian Ministerial Council approves the Palestinian Environmental Assessment Policy, through resolution No: 27-23/4/2000. This Policy shall be interpreted and implemented to support the sustainable economic and social development of the Palestinian people through assisting in meeting the following goals:

- Ensuring an adequate standard of life in all its aspects, and not negatively affecting the basic needs, and the social, cultural and historical values of people as a result of development activities.
- Preserving the capacity of the natural environment to self-clean and sustain.
- Conserving biodiversity, landscapes and the sustainable use of natural resources.
- Avoiding irreversible environmental damage, and minimizing reversible environmental damage, from development activities.

There are three types of EA documents that represent sequential stages in the project life cycle and the EA review process. These are Application for Environmental Approval, Initial Environmental Evaluation (IEE), and Environmental Impact Assessment (EIA). The EQA shall provide guidance on the content and preparation of the EA reports. The Initial Environmental Evaluation (IEE) is for projects where significant environmental impacts are uncertain, or where compliance with environmental regulations must be ensured; whereas An Environmental Impact Assessment (EIA) is required for projects, which are likely to have significant environmental impacts. An EIA may be carried out as a result of an IEE.

A determination of whether or not IEE or EIA must be conducted is based on a screening criterion. The screening process will be based on requirements of relevant land use plans, and on whether the project is likely to:

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

Based on the Application for Environmental Approval, screening criteria are used to determine whether an Initial Environmental Evaluation or an Environmental Impact Assessment is required for a project. An EIA shall be conducted for the different types of major development projects. Among which are Wastewater treatment plants including main sewers.

Without limiting its content, an Environmental Approval may specify:

- Required measures to mitigate adverse environmental impacts or capture potential environmental benefits, including a compliance schedule,

- Measures that the proponent must implement in order to comply with relevant standards and requirements; and
- Monitoring and reporting duties of the proponent.

The following is a summary of the laws and regulations reviewed by the Consultant in the course of conducting the ESIA:

**Table 1 Summary of the reviewed Palestinian Laws**

Name of Law	Law Summary	Year
<i>Environmental laws and regulations</i>		
<b>Law 7/1999</b>	Palestinian Environmental Law	1999
<b>Law 3/2002</b>	Palestinian Water Law	2002
	Regulations for Groundwater Pollution Control	
	Guidelines for Wastewater Reuse in the Gaza Strip, Palestine	2002
	Water Pollution Control System	
<b>Decree No. 90/1995</b>	Regarding The establishment of Palestinian Water Authority (PWA)	1995
<b>Decree No. 6/2002</b>	The Environment Quality Authority was established by Presidential decree No 6/2002	2002
<b>TS 34/2012</b>	The Palestinian Treated Wastewater Standard (Technical Specification)	2012
<b>Solid Waste regulations</b>	Solid Waste Management Regulations	2004
<i>Social laws and regulations</i>		
<b>Law 7/2000</b>	Palestinian Labor Laws 7/2000	2000
	Health and safety	
<b>Law 3/2011</b>	Land Ownership	2011
<b>Law 2/1953</b>	Expropriation Law (Istmlak)	1953
<b>Antiquities Law 1966</b>	Palestinian Antiquities Law	1966
<b>Basic laws</b>	Basic Laws declaration for Palestinian Human Right	2003
<b>Law 21</b>	Consumer protection laws	2005
<i>Other laws and regulations</i>		
<b>JSC Regulations</b>	Joint Service Council (JSC) Regulations	2006
<b>PRDP</b>	Palestinian Reform and Development Plan (2008 -2010)	2008-2010
<b>Law 1/1997</b>	Local Council Law	1997

### 1.1 Palestinian Environmental law 7, 1999

The Environmental Law of Palestine (PEL) includes a framework for environmental protection including reused treated water and sets roles and responsibilities for the EQA as follows:

- **Chapter 1 (Article 4):** To promote environmental awareness in schools, universities and clubs and encourages volunteer work aiming to protect the environment
- **Chapter 1 (Article 5):** To ensure the right of every individual to live in a sound and clean environment and stress on resource conservation and sustainable development including the protection of water resources, soil quality, flora and fauna
- **Chapter 1 (Article 6)**The different entities should cooperate with the EQA regarding the policy of land use in order to protect the natural resources that have particular nature and preserve environment and ensures the protection of natural resources and areas with special habitats
- **Chapter 1 (Articles 11 to 13)** To ensure a safe disposal of hazardous wastes and to prohibit the import of such waste to Palestine
- **Chapter 1 (Article 14):** the EQA is responsible, with other entities, for addressing the environmental conditions for manufacturing, distributing, and storage of the pesticides, chemical fertilizers that might be hazardous to the environment
- **Chapter 2 (Article 20):** The owner of the project is responsible for health and safety of all workers against any type of pollutants inside the working environment
- **Chapter 3 (Articles 28):** The EQA addresses with other ministries the quality of accepted potable water.
- **Chapter 3 (Articles 29):** It is the responsibility of EQA to address the standards of water collection, treatment and disposing in environmentally sound way that preserve the environment
- **Chapter 3 (Article 30):** To prohibit the discharge of any solid or liquid or other substance unless conforming to the regulations.
- **Chapter 3 Environmental Impact Assessment (Articles from 45-57):** that includes some subsections regarding EIA requirements, licenses and inspections (monitoring). Part IV of the law gives the authority to EQA to periodically inspect and to acquire all needed information and collect all necessary samples. EQA has the authority to apply penalties on projects not complying with the laws/regulations.

## 1.2 Palestinian Water Law 3/2002

The Water Law No. 3 of 2002 has to be considered as the basic legislation for any activities related to water sector. This law comprises of all regulations that govern water in the Palestinian territory and Gaza Strip. The following are some of the important articles that will regulate the project:

- **Chapter 2 (Article 6)** According to this law an organization should be established under the auspices of the Palestinian Authority in order to be responsible for water sector and should be named as Water Authority.
- **Chapter 2 (Article 7)** discusses the responsibility of water authority which is as follow: 1) assume full responsibility for the management of water resources and sanitation in Palestine. 2) the preparation of water policy and public action to implement them in cooperation and coordination with the concerned authorities and submit periodic reports on the water situation for the Council. 3) survey of

water sources and propose various aspects of water allocation and priorities for their use.4) the establishment of protection zones of the risk of contamination and to exercise control and supervision and approval of the transfer of water between geographical areas.5) permit the usage of water resources including the establishment of public and private wells, organizing and drilling water wells and the drilling of exploratory and experimental, productivity, and any matters or activities related to water and sanitation in cooperation and coordination with the concerned authorities.6) study of water projects, sanitation or supplementing it, and the development of design standards, quality control, technical specifications and to monitor their application.7) the rehabilitation and development of water services to provide water all over the country as a national water facilities and determine the responsibilities and functions under the regulation issued by the Cabinet for this purpose.8) coordination and cooperation with relevant agencies to develop plans and programs for regulating water use and prevent waste and rationalizing consumption and awareness-raising campaigns in this area.9) supervision of the profession of well drilling and rehabilitation contractors in the establishment of water facilities in accordance with procedures prescribed by law. 10) developing plans and programs for the training of technical personnel working in the field of water for the development of water resources management and supervision of the implementation and development.11) work towards equitable distribution and optimum utilization of water resources to ensure the sustainability of groundwater and surface and in cooperation and coordination with the relevant authorities and to find solutions and appropriate alternatives in case of emergency.12) regulation and supervision of research and studies related to water and sanitation and follow-up with the specialized and relevant.13) rehabilitation centers, research, studies and training working in the field of water in accordance with procedures specified by the regulation .14) participate in the development of the approved specifications of the quality of water to various aspects of their use with the competent authorities and mainstream application.15) work on the development and coordination of technical cooperation programs of international, regional and bilateral cooperation in the field of water resources and the holding of conferences, seminars and representation of Palestine in the regional and international meetings in this area.16) the preparation of draft laws, regulations and instructions relating to water resources, implementation and provision of technical opinion in disputes concerning the sources of water.17) Any other tasks entrusted to them under the provisions of laws and regulations in force.

- **Chapter 5 (Article 18-20)** discussed the licenses and tariff mechanisms
- **Chapter 7 (Articles 25-27)** that discusses the water utilities roles and responsibilities, which can be summarized as follow: A25) a regional water facilities shall be established at the behest of local authorities and water users associations to provide water services, sanitation and define its functions and powers, composition and management, and resolution of financial resources and all matters relating to its work under a regulation issued for this purpose. A26) Facilities and regional associations of water users determine the price of water for different queries according to the tariff system headquarters.A27) Authority may contract with regional facilities for the operation of alternative water systems. A 28) the power of supervision and control of regional facilities and water users associations in cooperation and coordination with the relevant authorities and to take all necessary actions right inconsistent with the provisions of this Act or the

regulations or instructions issued there. the Council, upon the recommendation, of the relevant authorities decides that the decision to stop or cause the dissolution of the management services of any of the facilities or regional associations of water users and this decision be appealed to the competent court

- **Chapter 8 (Articles 29-32)** environmental protection for the water sources. However, the most crucial item is article 30 that indicated: The Authority is able to issue a decision to stop production or supply of water if they determine that pollution source, the supply system and has a closed source system, or if the pollution and shall notify the competent authorities that, and get rid of pollutants.
- **Chapter 9 (Article 33-35)** related to inspection and monitoring for water quality

### 1.3 Regulations for Groundwater Pollution Control

The Water Law No. 3 of 2002 has to be considered as the basic legislation for these Regulations. In addition, the Environmental Law No. 7 of 1999 prescribes development of relevant regulations and standards, contributes to clarification of the division of roles and responsibilities between different relevant authorities within this field, and constitutes also a part of the legal basis for these Regulations.

PWA has in its mandate set out in Article 7.4 of the Water Law No. 3 of 2002 the task to create reservation areas for protection from the danger of pollution, exercising oversight and supervision over such areas, and approval of transfer of water between the different geographic areas.

**Article 31** of the Water Law No. 3 of 2002 states that any area contains groundwater is considered a protected area if the quality or quantity is in danger.

These Regulations aim to regulate groundwater pollution control to prevent contamination of groundwater, or restore polluted groundwater, to obtain an acceptable water quality in accordance with prevailing standards. In addition, these Regulations aim to contribute to a sustainable integrated water resources management in the Palestinian Territories to the best for the society as a whole.

Following are the main regulations:

- **Chapter Two: Prevention of pollution of groundwater** discusses in four articles (5-8) the regulations related to prevention of pollution  
**Article 5** declared that “The Authority shall, to as large extent reasonable in relation to its capacity and need for prioritising, determine a well head protection area applying to the entire surface and subsurface area surrounding a well or a well field, supplying a public or private water system, through which contaminants are likely to reach such a well or well field after a period varying from at least 50 days to up most 10 years.”  
**Article 6 (Zoning)** “The Authority shall divide a well head protection area into three different zones, taking into consideration the ToT and associated need for protection against pollution. The zoning shall be related to the following criteria:
  - a. Zone I: 50 days ToT or 50 meters radius, whichever indicates the largest area;
  - b. Zone II: 2 years ToT; and
  - c. Zone III: 10 years ToT.

The criteria described under subsection (1) are indicative. Based on all relevant factors and the extent of available information, the Authority shall make an individual decision seeking an optimal solution for zoning of each well head protection area.

**Article 7 (Restriction of activities):** (1) In order to prevent or reduce the risk of pollution of groundwater, EQA shall develop one or more lists of activities which may be restricted within the different zones of a well head protection area. The reason to restrict activities is the connection between those activities and regulated substances. This list, or those lists, shall be incorporated as an annex to these Regulations. (2) The Authority may decide that some activities specified in the annex shall be prohibited within one or more of the zones as described under Article 5. Other specified activities may only provide guidance to the Authorities' decisions to be made in conjunction with licensing. The Authority may differ between existing activities and establishment of new activities of the same type.

**Article 8 (Regulated substances):** EQA shall develop one or more lists of substances applicable in relation to the Authority's considerations of restriction or licensing of activities, discharge, disposal or storage. The involvement of listed substances may make it mandatory for the Authority to reject applications, or the list or those lists, may only give guidance for the Authority's considerations and decisions. Such list, or lists, shall be incorporated as an annex to these Regulations.

- **Chapter Three – Licensing and licenses :**

- **Article 9 License requirements)**

The most important items mentioned under this article are as follow:

1. No person may execute any activity involving discharge, disposal or storage of substances listed in an annex to these Regulations, or to construct, alternate, own or operate a disposal system, within any zones of a well head protection area, without a licence granted by the Authority. This licence requirement applies to both existing and intended activities.
2. Subsection (1) does not apply to:
  - a) drilling fluids and additives associated with drilling of new wells; and
  - b) Application of fertilisers, pesticides or other agriculture chemicals approved for that purpose by EQA or any other empowered authority, and in compliance with prevailing standards regulating such activities in particular.
3. The Authority may exempt activities regulated under subsection (1) from licensing if the quantity or adverse impacts of the discharge or disposal is considered to be insignificant.
4. A person who executes an activity regulated under subsection (1) prior to these Regulations becoming effective, shall submit an application for a licence to the Authority within a timeframe from the effective date, to be determined by the Authority by a decision applying to groups of prospective licensees, or to individual prospective licensees. The Authority is responsible for notifying all prospective licensees in a way ensuring them attainment of knowledge about the licensing requirement.

- **Chapter Four – Well head protection plans. Article 22 (Well head protection plans)**

1. Each existing or prospective owner of a well with an abstraction capacity larger than [determine volume] or of a well-intended for public water supply, shall fence zone I surrounding their well and all activities shall be prohibited within this zone.



2. The Authority, in cooperation with EQA and other relevant stakeholders, may prepare well head protection plans for protected areas outside zone I of any well regulated under subsection (1).

- **Chapter Five – Reporting, records and inspections Article 23(Reporting)**

A licensee shall report to the Authority on its findings of state of activity facilities and volume and contents of its discharge and disposal obtained by own inspection and monitoring in accordance with Article 14, and specified in its licence conditions. The samples of discharge and disposal shall be analysed only by laboratories approved by the Environment Quality Authority.

- **Chapter Seven – Disputes, offences, penalties and appeals Article 26 (An offence)**

A licensee violating these Regulations, conditions imposed by licences granted under these Regulations, or the Authority's individual decisions made according to those legal instruments, commits an offence and shall be liable to a fine imposed by the Authority.

**Article 28 (Appeals)**

1. All decisions made by the Authority directly affecting rights or duties of non-governmental parties may be appealed to the Authority within 20 days after the directly affected parties are informed about the decision.
2. Other parties than the appellant also directly affected by the decision, shall receive a copy of the appeal and from the Authority and be requested to lodge their representations within 20 days of receipt of the appeal.
3. Based on all available information, the grounds set out in the appeal and received representations; the Authority shall make a final decision.
4. The Authority's final decision may be appealed to the Court.

#### **1.4 Guidelines for Wastewater Reuse in the Gaza Strip, Palestine**

This guideline is for reuse of treated wastewater from housing, municipality, industry and commercial enterprises in the Gaza Strip and to provide information for collection, additional treatment, and storage of treated effluent in such manner that the use of groundwater can be replaced, the aquifer can be enriched and the inflow of saline water into coastal aquifer can be reduced. (Article 1 and 2)

- **Chapter I Article 6: Principles of the Water Reuse**

##### **1. Economic and financial principles**

Water is not a usual commercial product but a scarce natural resource which must be protected, defended and treated correspondingly and must be provided as a basic need by supplying safe water to all consumers. One of the important components for wastewater reuse is wastewater tariff charge and the incentives must be given to promote the widespread reuse. In addition, demand and supply management for treated wastewater has to be considered.

##### **2. Environmental Principles**

Activities related to the reuse of wastewater need to be planned and implemented with due regard for all their environmental implications, including the protection of aquifer from pollution and over exploitation. In addition, the short- and long-term effects of the reuse of wastewater should be monitored so that the improvements can be encouraged and detrimental impacts minimized.

### **3. Institutional and management principles**

The role of the responsible authorities and all official bodies at all levels should be clearly defined and the areas of responsibility officially established. The structure and system of the wastewater reuse management should be designed in such a way as to facilitate the involvement by the responsible authorities at different levels with encouragement of private sector involvement. In addition, capacity building for all institutions for treated wastewater reuse has to be envisaged and intermediary bodies such as association, NGP and local councils has to be enhanced.

- **Chapter II: Article 7: Technical Principles**

#### **1. General Technical Principles**

All wastewater shall be collected, treated and used according to these guidelines to minimize the deficit in the water balance. The treated wastewater reuse should comply with the standards and has to be transported in accordance to the guidelines (closed pipes). Dilution of the wastewater to reach the compliance standard and direct injection to the aquifer without treatment is forbidden. In addition, wastewater treatment operator shall provide information and test results of quality of wastewater or any other information as requested.

#### **2. Technical Principles for Irrigation and Recharge**

Industrial and commercial wastewater is allowed to be used for irrigation and groundwater enrichment, only if the compliance with the standards is durably guaranteed during operation. The use of wastewater for irrigation and ground water enrichment is forbidden in drinking water protection zones. The ground water enrichment by wastewater is only allowed in facilities that are operated with a license from the competent authorities.

The reuse of wastewater for irrigation is only allowed if it follows the regulations and standards according to the relevant type of cultivation and irrigation technique. The use of sprinklers is not allowed for irrigation.

All kinds of vegetables are not allowed to be irrigated by treated wastewater. Irrigation with treated wastewater has to be stopped two weeks before harvest. Fruits on the ground from trees that have been irrigated with treated wastewater are forbidden to eat, to process or to sell.

- **Chapter III: Competent Authorities and Responsible Areas**

This chapter includes responsibilities of National water council (NWC), Palestinian Water Authority (PWA), The Ministry of Environmental Affairs (MEnA), Ministry of Health (MoH), Ministry of Agriculture (MoA), Coastal Municipal Eater Utility (CMWU) and formation of Committee for the reuse of wastewater (that consisting of representative from NWC, PWA, MEnA, MoH, MoA, Palestine Institute for Standardization and Measurement (PSI), Gaza Municipality, Rafah Municipality, Khanyounis Municipality, Islamic University of Gaza, El Azhar University, and Birzeit University.

Application and approval for wastewater reuse process is following EA administrative procedure (that describes in the Palestinian Environmental Assessment Policy (See Chapter 2). Licenses and permission is prepared by PWA with coordination with MoA. (Article 9)

Regarding wastewater reuse, PWA is responsible for technical, financial and operational issues, including compliances (chemical, microbial, samples, groundwater measures, and wells). MEnA is responsible for environmental issues supervision. MoH is responsible for the public health supervision in regards to the consumption of food products that are irrigated by wastewater reuse and employees working on the reuse system. (Article 10)

Monitoring of groundwater, wastewater quality, soil quality of product and human health is required to ensure proper treatment, avoiding environmental degradation, minimizing adverse health impacts and increasing the agriculture production in a sustainable manner. The monitoring of facilities and operation includes self-monitoring, compliance with regulations of facilities and operations and required control facilities and documentations. In addition, sampling analysis and conservation shall follow Annex 1 of this guideline (Article 11, 12 and 13)

- **Article 8: Competent Authorities and Responsibility Areas**

- 1. National Water Council (NWC)**

NWC is responsible for:

- a. Setting the policy for reuse of wastewater for Palestine and submitting it to the Council of the Palestinian National Authority for approval.
- b. Reinforcing regional and international co-operation in reuse of treated wastewater.
- c. Determining the budget required for investment in reuse of wastewater.

- 2. Palestinian Water Authority (PWA)**

PWA is responsible for:

The strategic planning for the reuse of treated wastewater, e.g., for setting up the water management plan

- a. Issuing licenses related to the operation of facilities for the groundwater recharge
- b. Giving permission for the use of ground water and irrigation with treated wastewater.
- c. Monitoring the quality and quantity of treated wastewater.
- d. For the reuse of treated wastewater PWA is working in close cooperation with other stakeholders mainly the Ministry of Environmental Affairs, the Ministry of Health and the Ministry of Agriculture.
- e. Instruct the Coastal Municipal Water Utility with special design tasks.

- 1.5 Technical Specification (TS) 34 / 2012**

This Technical specification divide the quality of treated wastewater into 4 categories, high quality (A), Good quality (B), Moderate quality (C) and Poor quality (D). In addition, this specification regulate that the effluent quality of the treated wastewater for irrigation has to be approved by the Ministry of Irrigation and Ministry of Agriculture to use of the treated wastewater for irrigation in accordance to their standards and specification.

- 1.6 Solid Waste Management Regulations 2004**

*Solid Waste Management Regulations (2004)*

The Solid Waste Management Regulations, issued by the EQA in 2004, are the first trial to develop regulations that aims to complement the Environmental Law. These include the following key guidelines related to waste collection:

- MSW collection is the responsibility of municipalities and village councils, as well as ensuring that this the process does not have health and/or environmental implications.
- It is prohibited to dispose of waste outside the street containers designated for this purpose. These containers should be closed and manufactured out of a metallic or similar material. The number of these containers should be sufficient and waste has to be collected at least three times per week in urban areas.
- It is the responsibility of industrial, commercial and agricultural waste generators to arrange for the collection and transport of their wastes to the designated treatment/disposal areas. This has to be pre-arranged with the authorities.

The regulations also include an article about classification of the different waste streams into MSW, construction and demolition waste, and other waste streams depending on the generating industry

*Key guidelines for landfills included in the regulations*

In general, the construction of a waste landfill is subjected to an environmental approval according to the conditions and instructions of Environmental Impact Assessment Policy. The co-mixing of hazardous and non-hazardous wastes is prohibited. And the different cells of the landfill should be classified according to one of the following types:

- Inert landfills;
- Non-hazardous landfills;
- Hazardous landfills.

The landfill operator shall be responsible for the landfill for a period of 20 years following its closure. Additional technical considerations related to the site selection and landfill design include the following:

- The site should be fenced, and located at a considerable distance from residential or commercial areas – no distance has been indicated.
- The landfill site should be lined with a protective insulation layer in order to protect groundwater.
- A leachate collection system should be constructed.
- The site should have sufficient quantity of soil which will be needed for daily covering the waste.
- Regular inspection of the monitoring wells.
- The landfill operator should prepare a waste register.

### **1.7 National Strategy for Solid Waste Management in the Palestinian Territory, 2010**

The National Strategy for Solid Management in the Palestinian Territory was endorsed by the Cabinet in May 2010 and represents the first cross-sectoral strategy for solid waste

in Palestine. The strategy aims at establishing the framework to all decisions, programs, activities, and mid-term investment plans to develop the solid waste sector in Palestine.

At institutional level, the strategy confirmed the urgent need to address major issues like:

- Ineffective legislative framework
- Lack of standards for various stages of SWM
- No division of tasks and responsibilities among various stakeholders
- Lack of resources (human, financial, organizational capacity) in the instates involving in SWM
- No unified system to manage data related to SWM
- Limited participation of the private sector
- Insufficient public awareness in SWM issues and weakness of participation.

Among the strategy's policies are the following:

Policy (1) Strategic Objective 1: Development and update of the legislative framework supporting integrated SWM

Policy (2) Strategic Objective 1: Strengthen the organizational framework of national institutions and supporting their complementary roles in SWM.

Policy (3) Strategic Objective 2: Establishing an integrated, coordinated, and sustainable institutional approach to support institutional capacity building in the SWM sector.

Policy (4) Strategic Objective 3: Developing the current management systems for SW collection and transport, in order to improve the quality and effectiveness of services and its availability to all citizens

Policy (5) Strategic Objective 3: Safe and efficient disposal of SW in regional sanitary landfills servicing all communities

Policy (6) is concerned with diverting waste from landfills through waste minimization, reuse and recycling. The MoLG shall play a vital role as the key executing party for achieving most of the strategic objectives. This shall be considered in any new institutional set-up for SWM in GS. The municipalities in GS are the main parties responsible for the SWM at all stages including primary collection, secondary collection, and landfill management.

Policy (7) – Strategic Objective 3: Prohibiting the use of random dump sites and closing or rehabilitating the existing sites to limit their environmental and health risks.

Monitoring the implementation of the solid waste management strategy has been assigned to the national team for solid waste management by a Ministerial Council Cabinet Decision in 16 May 2010. This is the steering committee which develops the solid waste management strategy and is chaired by the Minister of Local Government.

Policy (14) of the strategy promotes private sector participation in SWM projects

### **1.8 Palestinian Labor Law 7/2000 and supplementary bylaws**

This law governs the whole labor activities and arranges the relation between laborers and employers.

- **Chapter 2 Article 34** indicates the importance of applying health and safety procedures

- **Chapter 4: health and safety. Article 90** indicates the importance of using protective clothes to rescue the workers from any danger. Health and safety inside work place. Needed medical supplies inside work. Periodical examine for all of the workers.
- **Chapter 4 Article 91** discussed the regulations according to which the organization can set its own health and safety procedures and penalties that should be indorsed by the Ministry and disclosed in a visible place
- **Chapter 4 Article 92** indicated that the worker should not pay for health and safety arrangement
- **Chapter 4 Article 93** banned any employment for the children less than 15 years old.

### 1.9 Land Ownership Law 3, 2011

Law 3 Year 2011 concerns with land ownership, acquisition and compensations. This law comes to amend Law 2 Year 1953. The law stipulates all the regulations and procedures related to the acquisition of private land for the purpose of public interest projects. It defines the meaning of public interest projects and presents the entitlement requirements including land registries and ownership documents needed to prove the affected person entitlement to compensation. It also regulates the cases where disputes over ownership may occur.

### 1.10 Land Expropriation Law2/1953

Land expropriation is one of the key issues of relevance to the project. The most important articles related to this law are as follow:

- **Article 3:** Initiation of the expropriation
  1. the beneficiary should publish an advertisement in the Official Gazette for a period of fifteen days after declaring his intention to precede to the Cabinet a request for expropriation of the land described for Public Benefit
  2. The transactions related to Secretion<sup>1</sup> (*Ifrath*) that takes place after publication of the notice mentioned in paragraph (1) above, shall not affect the right of the government or the municipal council or the local council to expropriate 25% of an area of land before secretion without compensation, which is similar to the provisions of **Article (21)** of this law.
- **Article 4** presents the types of expropriation including: 1) permanent 2) temporarily 3) Not allowing full use of land 4) forcing certain use of land
- **Article 5** is related to the disclosure of expropriation activities and inventory for the affected groups
- **Article 6** is about the informing of land owners
- **Article 8;after the declaration of land expropriation. The land registration officer should ban** any action or activities to be applied through putting a reference number. The Ref. No of the land should be attained from Land Authority to stop any action on this land if it is registered
- **Article 9** is about the negotiations with the affected persons

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<sup>1</sup> According to law the government has the right to expropriate 25% of the owned lands for roads and any other projects without paying any compensation

- **The articles from 10-21** discuss the entitlement of compensation and strategies to pay it. As well, the different cases that enable the affected people to stop the expropriation actions and retain their lands
- **Article 22** discussed the taxes needed due to any change of the value of land due to the implementation of the project

### 1.11 Antiquities Law of 1966

Since the establishment of the Palestinian Ministry of Tourism and Antiquities in 1994, the Ministry, in cooperation with governmental and non-governmental institutions, academics and intellectuals, has drafted its own version of a National Antiquities Law. However, this draft has never been enacted as law, and therefore the Jordanian Antiquities Law of 1966 is still applicable in the Palestinian Territories today.

There is no unified legal regime in the Palestinian Territories. In fact, there are different laws that are applicable in these territories. This is because Palestine was subject to different rulers since the end of nineteenth century. The British Mandate, Jordan, Egypt, and the Israeli Occupation issued large amounts of legislation, some of which is still applicable in the West Bank and the Gaza Strip.<sup>2</sup>

The Palestinian Legislative Council (PLC) that was inaugurated in March 1996 also issued legislation on different fields of life in the Palestinian Territories. However, the different scopes of sovereignty of the Palestinian Authority in the West Bank and the Gaza Strip (areas A, B, and C), the continuing application of the Israeli military orders in area C, the continuation of the Israeli occupation to East Jerusalem and application of the Israeli law there, and the reoccupation by Israeli troops of the PA areas (since 2002) put serious constraints on the legislative role of the PLC, the role of the judiciary, and the executive role of the PA to enforce this legislation.

The existing legal regime concerning cultural and natural heritage in the Palestinian Territories are the British Mandate Law of Antiquities of 1929 (applicable in Gaza Strip only), the Jordanian Law of Antiquities of 1966 (applicable in the West Bank) and the Israeli laws of 1978 in East Jerusalem.

The Palestinian Basic Law of 2003 contained a paragraph of relevance to heritage protection. Under this paragraph, the President swears, "...to be faithful to the homeland and holy places, to the people and its national heritage..." This is currently the only reference to "heritage", and it is limited, in the draft constitution.

Since there is not yet an approved Palestinian constitution, the protection of cultural and natural heritage remains, until today, without a solid constitutional basis. As it stands today the Constitution is in its fourth reading. The major Deficit of the 1966 Law of antiquities is the Definition, which reads:

*"Antiquities are any movable or immovable remains or any part of it that was constructed, or formulated, or decorated, or inscribed or built in any form or any addition by a human being before 1700 AD. Antiquities also include human or animal remains prior to the year 600 AD. It also includes any structure built after 1700 AD, which is declared by the Director of the Department of Antiquities to be ancient antiquities"*.

The definition clearly excludes any archaeological sites (including historic buildings) and artifacts (movable objects), which postdate 1700 AD. The definition also excludes

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<sup>2</sup>Cultural Heritage in Palestine, RIWAQ New Experience and Approaches, NazmiJu'beh Ramallah-Palestine, June 2009

religious buildings, as well as natural heritage sites. Neither architecture (groups of buildings, monuments) nor movable objects are defined or included as separate categories in these two laws.

### 1.12 Basic Laws

Within the framework of the provisional period, resulting in the Declaration of Principles Agreement, the establishment of the Palestinian National Authority with its three pillars – the legislative, executive and judicial branches – became among the most urgent of national missions. The establishment of the Palestinian Legislative Council, through free and direct general elections, made the adoption of a Basic Law suitable for the interim period a necessary foundation upon which to organize the mutual relationship between the government and the people.

#### Title Two – Public Rights and Liberties

- **Article 9:** Palestinians shall be equal before the law and the judiciary, without distinction based upon race, sex, color, religion, political views or disability.
- **Article 10: Basic** human rights and liberties shall be protected and respected. The Palestinian National Authority shall work without delay to become a party to regional and international declarations and covenants that protect human
- **Article 31:** An independent commission for human rights shall be established pursuant to a law that will specify its formation, duties and jurisdiction. The commission shall submit its reports to the President of the National Authority and to the Palestinian Legislative Council.

### 1.13 Consumer protection law 21/2005

This law discusses intensely the consumer rights which might be triggered during the implementation of the project. The most relevant articles related to the project are as follow:

- **Chapter Two: Consumer rights Article (3)** The consumer has the following rights: 1 - Maintain his health and safety when using any type of good or service in terms of quality
- **Chapter three. Article (4):** Formation of the Palestinian Council for consumer protection and consumer protection associations. “Established under the provisions of this law advisory board called "the Palestinian Council for Consumer Protection" and consists of the following entities: - Member of the Ministry of National Economy - Member of the Ministry of Finance. - Member of the Ministry of Health - Member of the Ministry of Agriculture - Member for Environment Authority - Member of the Institution for Standards and Metrology Palestinian - Member of the Chamber of Commerce - Member of the industry associations - Member of the Federation of Contractors - Member of the Business Association - five members of associations of consumer protection
- **Chapter three .Article (5):** The Council aims at protecting consumer rights and ensures that he is not exposed to any risks or damages resulting from using any



types of goods and services provided through the following: 1 - Participation in the formulation of the relationship and coordination between all relevant agencies to protect the consumer. 2 - Support and strengthen the role of consumers in the national economy.

- **Chapter four. Product safety Article (9)** “Each product that might result any dangerous must be signed by the warning showing the type of risk.
- **Chapter four. Article (11).** If the provider observed that the good or service that is purchased has a defect or more would be detrimental to the safety of consumer or health or that they may pose a threat to it, for the supplier to take and immediately the following procedures: 1 - to inform the competent authorities and inform the public by the media about these defects and warned of the risks that may result from them. 2 - Item withdrawn from the market. 3 - To recover the goods that were sold or leased and re-paid the price. 4 - Replace the goods at provider’s expense and re-paid the price in case they could not fix it. 5 - Get rid of them, in ways that are correct and not harmful to the environment, and at his expense.
- **Chapter V. Integrity of the economic transactions, Article (15)**  
The promotion should apply advertising of products that takes into account the consensus is to be announced and the reality of the advertised product specifications, and must not imply that declaration to deceive or mislead the consumer

#### **1.14 Joint Service Council (JSC) Regulations, 2006**

The JSC regulations were issued by the MoLG in 2006; they set the managerial system and authorities for the JSCs. The work of the JSC shall be organized by the Minister of Local Government in coordination with the councils of concern.

#### **1.15 Palestinian Reform and Development Plan (2008-2010)**

The Palestinian Reform and Development Plan 2008 - 2010 (PRDP) is a national plan which sets out Palestinian Authority medium term agenda for Palestinian reform and development. Among the primary objectives set out in the PRDP is "strengthen public institutions" which is of support to "good governance" as one of PA national goals. This is to increase the capacity of the public sector organizations in delivering basic health services which will have a direct positive effect on the daily life of the citizens as has been stated by PRDP. This is also in line with "strengthening the local government" policy and objective set out in PRDP. That is work with local government unit to empower and increase the accountability and effectiveness through intensive capacity building.

The Palestinian National Policy Agenda (PNPA) has conservation and recycling of natural resources including SW as one of its objectives. This is under the “development of physical capital” objective and is stated as "Equitable, efficient and environmentally friendly management of solid waste". The other PNPA objective of developing affordable and regional SWM is listed in the development budget resources. The main two objectives and targets in this regard stated in PRDP are complete construction of a new sanitary landfill in the West Bank and increase number of SW tons disposed of in regional sanitary landfills.

### 1.16 Local Council Law, 1/ 1997

The local council law issued in 1997 has replaced the old law and is currently the prevailing council law. After perusal of the Municipalities Law No. 29 of 1955 in force in the provinces of the West Bank, and the Municipalities Law No. 1 of 1934 in force in the Gaza Strip, and the Law on Management of villages No. 5 of 1954 applicable in the provinces of the West Bank, and the Law on Management of villages No. 23 of 1944, in force in the Gaza Strip, and the draft law submitted by the Council of Ministers, the Legislative Council after the adoption of the bill, we have issued the following law. According to the new law, water collection and disposal are the responsibility of local councils, which was clearly stated as follows:

- Provision of potable water and other types of water. Addressing specification of water equipments i.e. pipes and water meter. Arrange for the distribution of water, the tariff and prevention of pollution to the wells, basins and springs
- Planning the town and roads including, road development planning and closing of roads, modification, set the length and width, paving, construction and resurfaced, cleaning, lighting, maintenance, naming or numbering and numbering its buildings, beautification, plantation and monitoring of street conditions.
- Protection measures for safe public health shall also be taken by the council; this includes the implementation of an efficient waste collection system.

The law provides for municipalities the possibility to form JSCs through which they can join forces and collaborate onto the delivery of municipal services including water tariff. Regulations to give effect to this law were adopted the following year.

### 1.17 Project Approval Requirements

- **Article 45 of the PEL;** “The Ministry (EQA), in coordination with the competent agencies, shall set standards to determine which projects and fields shall be subject to the environmental impact assessment studies. It shall also prepare lists of these projects and set the rules and procedures of the environmental impact assessment”.
- **Article 47 of the PEL states that;** “The Ministry (EQA), in coordination with the competent agencies, shall determine the activities and projects that have to obtain an environmental approval before being licensed. This includes the projects that are allowed to be established in the restricted areas”.

According to the PEL and the Palestinian Environmental Assessment Policy (PEAP), was approved through resolution No: 27-23/4/2000, the project proponent must first obtain an initial approval from the appropriate ministry or local planning committee. The proponent then submits an application for environmental approval to the EQA. The EQA notifies the appropriate permitting authorities that an application for environmental approval has been received. The application should also list what environmental and other permits must be obtained and complied with, indicate how the expected conditions of these permits will be fulfilled, and include a signed statement by the proponent that these conditions will be fulfilled.

An Environmental Approval may specify:

- Required measures to mitigate adverse environmental impacts or capture potential environmental benefits, including a compliance schedule. This may include land compensation measures issued by the Higher Planning Council after reviewing the project. The procedures involve the Ministry of Finance, the MoLG and municipalities of concern.
- Measures that the proponent must implement in order to comply with relevant standards and requirements.
- Monitoring and reporting duties of the proponent.

The project proponent shall express the commitment to the standards and requirements for the protection of the environment and to apply all the required mitigation measures addressed in the EIA. The proponent shall express the legal commitment towards the EIA.

## **2. WORLD BANK SAFEGUARD POLICIES AND GUIDELINES**

The WB has ten environmental and social policies referred to as the Bank's "Safeguard Policies" that should be considered in its financed projects.

Based on the information to be collected of each project, the environmental initial assessment for each project is addressed through:

- Reviewing the safeguard policies and ensuring that the proposed project does not trigger a safeguard policy that makes it ineligible.
- Describing any safeguard issues and impacts associated with the construction of the project. Identifying and describe any potential large scale, significant and/or irreversible impacts.
- Describing any potential indirect and/or long term impacts due to anticipated future activities in the project area
- Describing measures taken to address safeguard policy issues. Provide an assessment of project proponent capacity to plan and implement the measures described.
- Identifying the key stakeholders and describing the mechanisms for consultation and disclosure of safeguard policies, with an emphasis on potentially affected people.

Among the ten safeguard policies of the WB, five are considered by the Consultant to be relevant to the NGESTP and have been taken into account during this ESIA study; these are listed and discussed below:

- Environmental Assessment (OP 4.01), that was previously discussed in section 3.4 of the current chapter.

- Involuntary Resettlement (OP 4.12)
- Disclosure (OP 17.50)
- Natural Habitats (OP 4.04)
- Cultural Property (OPN 11.03)
- Project on International Waterways (OP 7.50)

### 2.1. OP 4.12 - Involuntary Resettlement

The WB Operational Policy OP 4.12 on Involuntary Resettlement deals with involuntary resettlement in wider terms than the physical displacement of people due to development projects. It rather considers individuals who might be subjected to other sorts of adverse economic impacts on their livelihoods.

The overall objectives of the Bank's policy on involuntary resettlement are:

- Involuntary resettlement should be **avoided where feasible, or minimized, exploring all viable alternative project designs;**
- Where it cannot be feasibly avoided, **resettlement activities should be conceived and executed as sustainable development programs**, providing sufficient investment resources to enable the displaced persons to share the project benefits. **Displaced persons should be meaningfully consulted and should have opportunities to participate** in planning and implementing resettlement programs and compensation measures; and,
- Displaced persons should be **assisted in improving their livelihoods and standards of living or at least in restoring them, in real terms, to pre-displacement levels** or to levels prevailing prior to project implementation, whichever is higher.

The policy cover the involuntary taking of land resulting in relocation or loss of shelter, loss of or access to productive assets, or loss of sources of income or means of livelihood, whether or not the affected persons must move to another location. It also covers the involuntary restriction of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons.

Based on the survey conducted by the Consultant, the OP. 4.12 related to the involuntary resettlement is trigger. Therefore, the ToR of RPF and RAP were prepared and presented as an Annex in the SESIA study to be reviewed by the donors. Afterward, the donor will approve the ToR and the Client will prepared the tender for performing RAP.

### 2.2. OP 17.50 - Disclosure

WB policy OP 17.50 on Disclosure is also relevant to the project. This policy details the Bank's requirements for making operational information available to the public. The Bank reaffirms its recognition and endorsement of the fundamental importance of transparency and accountability to the development process. In addition, timely

dissemination of information to local groups affected by the projects and programs supported by the Bank, including non-governmental organizations, is essential for the effective implementation and sustainability of projects.

The Consultant conducted the disclosure procedures in accordance to the WB procedures. The activities were done as early as possible to ensure the disclosure processes takes place in a manner that the project affected people as well as the stakeholders were fully informed and involved during report preparation. The detailed processes conducted by the Consultant regarding the disclosure processes are presented at different chapters and Annexes of the SESIA report.

### **2.3. OP 4.04 - Natural Habitats**

The WB does not finance projects that degrade or convert critical habitats. Effects on non-critical habitats would be tolerated only if no alternatives are available and if acceptable mitigation measures are in place. It is essential to apply a precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development.

Concerning the remediation works and the decommissioning of the BLWWTP, the OP 4.04 is triggered. Therefore, the degree of the impacts and the mitigation measures has to be presented to reduce the impacts. However, the habitats expected to be disturbed during the project implementation are not consider endanger. In addition, after the activities (rehabilitation and the decommissioning), the health and the disturbance of the neighboring community due to the outbreak (as a result of the operation of BLWWTP and Effluent Lake) will be eliminated.

### **2.4. OP 11.03 – Cultural Property**

The core requirements for this Safeguard Policy include investigation and inventory of cultural resources that are potentially affected by the project and set appropriate mitigation measures when there are adverse impacts on physical cultural resources.

The Consultant conducted the review of the cultural resources within the project component. In addition, the clarification and confirmation from the Antiquities Authority was obtained to ensure the project components do not trigger the cultural property.

### **2.5. OP 7.50 - Project on International Waterways**

The core requirement for this Safeguard Policy include investigation of the Project that might affect the International or shared waterways or water bodies. Impact on the international shared waterways or water bodies could be tolerate only if no alternatives are available and if acceptable mitigation measures are in place.

The project component of reuse system is nearby the Israeli border. The Consultant reviewed the groundwater characteristics at the surrounding site. In addition, based on the groundwater modeling, the expected impact is presented. The detailed explanation of the impacts on the groundwater might affect the neighboring country (Israel) due to the reuse system is presented in detailed at Chapter 5. In addition, as the storage tanks is located nearby the Israeli border, due to security, the emergency plan in case the storage tanks is damage or not functioned is presented as well on the SESIA report, Chapter 6.

### **3. ISRAELI PALESTINIAN JOINT WATER COMMITTEE**

There is an agreement or understanding (Memorandum of Understanding) on guidelines and technical criteria for sewerage projects. The project component of reuse system has to follow this guideline. In particular, the guidelines concerning reuse scheme are as follows:

- **Article 14 Effluent Reuse and Disposal;** In general no discharge of effluent to wadis and / or to rivers and their tributes is permitted. Under exceptional circumstances, and only in the absence of any other disposal route, discharging to certain wadis and river may be permitted by the Joint Water Committee in accordance with the quality specification in schedule 1 and 2. All precautions shall be taken to prevent any possible environmental hazards. The reuse of treated effluent for irrigation shall be in accordance with the provisions detailed in schedule 1 and 2.
- **Article 15 Sludge Reuse and Disposal;** Disposal of sludge shall take place at an agreed waste disposal site or reused in accordance with the provision detailed in schedule 3.

The Consultant reviewed the design of the reuse system and ensures that the articles mentioned above are followed. In addition, the standard of the effluent reuse and sludge reuse is following the available limit by Israeli laws and standard. Please note, according to the design criteria, the sludge limit guideline is following the EPA standard (according to the design criteria) and the effluent reuse, beside the Israeli guidelines, the guideline according to the Egyptian standard was compared.

### **4. REGIONAL LEGAL FRAMEWORKS (JORDAN, ISRAEL AND EGYPT) CONCERNING WASTEWATER REUSE AND SLUDGE MANAGEMENT AND REUSE**

Palestine by law has a standard and guideline for recovered water (groundwater) quality standard to be used for irrigation. However, the regional legal framework as well as the standard guidelines from the region (especially Jordan, Israel and Egypt) and the International standard for wastewater reuse were reviewed and compared. The Consultant reviewed the available frameworks and guidelines to ensure that the recovered water proposed within this project is according to the framework and guidelines applied in the region and according to the acceptable international guidelines.

In addition, as the guidelines for sludge management and reuse in Palestine is not yet endorsed the frameworks, including guidelines, and practices from countries within the region and international guideline for sludge reuse were reviewed by the Consultant. The Consultant ensures that the guideline provided by the Palestine is in accordance to the practice and in comparison with the regional and international standards.

#### **4.1. Wastewater Reuse Policy in Jordan, Israel in comparison with the FAO standards for irrigation**

Authority of Jordan has established the standard of wastewater reuse for irrigation purposes in 2006. These standards are currently applied to all municipal wastewater treatment systems. The standards establish a variable standard for wastewater quality for

7 categories of discharge or direct reuse. The direct use of treated wastewater for the irrigation of crops normally consumed raw was explicitly forbidden by the Standard.

The 1995 Standard # 893 includes the following categories of wastewater reuse standards depending on the fate of domestic wastewater after it is released from the wastewater treatment facility:

- Recycling of water for irrigation of vegetables that are normally cooked,
- Recycling of water used for tree crops, forestry and industrial processes,
- Discharges to receiving water such as wadis and catchment areas,
- Use in artificial recharge to aquifers,
- Discharge to water bodies containing fish,
- Discharge to public parks or recreational areas,
- Use in irrigation of animal fodder.

The 1995 standard enabled design engineers and concerned health officials to adjust the level of treatment and, hence, the cost of treatment to the actual conditions of treated effluent reuse. Standards for BOD were limited to 150 mg/l for most forms of agricultural reuse and a more stringent standard was created for amenity irrigation in areas that can be accessed by the public.

Similarly, Israeli has similar policy of reusing treated wastewater for irrigation with different quality standard. Table 1 and 2 below present the comparisons of quality standards of Jordan, Israel, Palestine and the standard comparison with FAO.

#### **4.2. Wastewater Reuse Policy in Egypt**

**Law 48/1982** concerning protection of the river Nile from pollution that restrict the discharge of the wastewater on different water bodies (groundwater and surface water) and Ministry of Water Resource and Irrigation (MWRI) whereas, the Ministry of Health and Population (MoHP) are responsible for monitoring effluent. In addition, only discharge of treated municipal wastewater can only discharge to brackish water bodies. Moreover, the reuse of drainage water is also regulated.

**Law 12/1982** is the legal basis for irrigation and drainage is set out in Law 12/1982 and its supplementary Law 213/1994, which define the use and management of public and private sector irrigation and drainage systems including main canals, feeders, and drains.

**Law 12/1982** defines inter alia public properties related to irrigation and drainage: the River Nile, the main canals, public feeders, and public drains and their embankments. The law regulates the use of groundwater and drainage water (construction of wells or the use of drainage water and water pumps). It provides regulations for the development of new land and the price that has to be paid for the irrigation and drainage of land.

**Law 93/1962—Wastewater disposal and reuse;** Decree No. 649/1962 of the Minister of Housing issued the executive regulations for Law 93/1962. It specifies regulatory standards for wastewater disposal. It was updated in 1989 by Decree No. 9/1989, in which a distinction was made between wastewater disposal on sandy soils and clay silt soils.

In 1995, an amendment was made by both the Ministry of Irrigation and the Ministry of Agriculture and approved by the Ministry of Health. In 2005, new standards for the reuse of wastewater were set in the Egyptian Code for the Use of Treated Wastewater in Agriculture.



**Table 1 Comparisons of quality standards of Jordan, Israel, Palestine and the standard comparison with FAO**

Parameter	UM	Jordan JS 893/2006				Palestine TS 34-2012				Israel <sup>1</sup>	FAO <sup>2</sup>			
		A	B	C	D	A	B	C	D	unrestricted irrigation	Degree of restriction on use			
		Cooked vegetables Parks Playgrounds Roadsides	Fruit trees Landscaped roadsides of highways	Industrial crops Forest trees	Collecting flowers	High quality	Good quality	Medium quality	Low quality		unrestricted irrigation	none	slight to moderate	severe
<b>Physico-chemical characteristics</b>														
BOD <sub>5</sub>	mg/l	30	200	300	15	20	20	40	60	10				
TSS		50	200	300	15	30	30	50	90	10				
COD		100	500	500	50	50	50	100	150	100				
pH		6-9				6-9				6.5-8.5	6.5 - 8			
Turbidity	NTU	10			5									
EC	dS/m									1.4				
- salt sensitive		(EC: ~ 2.34)									< 0.7	0.7 - 3.0	> 3.0	
- medium salt tolerant														
- salt tolerant														
- highly salt tolerant														
TDS	mg/l	1500				1200	1500	1500	1500		< 450	450 - 2000	> 2000	
Ammonium as NH <sub>4</sub> -N	mg/l					5	5	10	15	10				
Nitrate as NO <sub>3</sub> / NO <sub>3</sub> -N		30 / 6.8	45 / 10.4	70 / 16.1	45 / 10.4	- / 20	- / 20	- / 30	- / 40		< 5	5 - 30 / 1.2 - 6.8	> 30 / > 6.8	
Total Kjeldahl N		45	< 70	100	70	30	30	45	60	25				
PO <sub>4</sub> -P		30				30								
Chloride		400				400				250	~ < 400	~ 400 - 1000	~ > 1000	
residual Chlorine										1				
Bi-carbonate (HCO <sub>3</sub> )		400			400						< 1.5 (me/l)	1.5 - 8.5 (me/l)	> 8.5 (me/l)	
<b>Microbiological characteristics</b>														
Escherichia coli	MPN/100 ml	100	1000		< 1.1	100	1000	1000	1000	12				
Feacal coli						200	1000	1000	1000	10	1000 F. coli (irrigation of crops likely to be eaten uncooked; otherwise no standard recommended)			
Intestinal Nematodes	viable eggs/l					< 1	< 1	< 1	< 1					
Intestinal Helminthes		< 1	< 1	< 1	< 1						1 (irrigation of crops likely to be eaten uncooked)			

**Table 2 Comparisons of quality standards of Jordan, Israel, Palestine and the standard comparison with FAO (continued)**

Parameter	UM	Jordan JS 893/2006	Palestine TS 34-2012	Israel <sup>1</sup>	FAO <sup>2</sup>		
		A - D	A - D		Degree of restriction on use		
					none	slight to moderate	severe
<b>Heavy metals / trace elements</b>							
Arsenic	mg/l	0.1		0.1	0.1		
Cadmium		0.01	0.01	0.01	0.01		
Chromium		0.1	0.1	0.1	0.1		
Copper		0.2	0.2	0.2	0.2		
Lead		0.2	0.2	0.1	5.0		
Mercury		0.002	0.001	0.002			
Nichel		0.2	0.2	0.2	0.2		
Zinc		5.0	2.0	2.0	2.0		
Aluminium		5.0	5.0	5.0	5.0		
Boron		1.0	0.7	0.4	< 0.7	0.7 - 3.0	> 3.0
Lithium		2.0 (0.075 for citrus)		2.5	2.5 (0.075 for citrus)		
Iron		5.0	5.0	2.0	5.0		

#### 4.3. Sludge Management and Reuse Policy in Jordan and Israel

- **Jordanian Standard # 1145/1996 -- The Uses of Sludge in Agriculture**

According to (JS-1145) 1996, this standard is concerned with the conditions that must be available in the sludge resulting from the stations for the treatment of sewage water intended to be used in agricultural land.

The “Wastewater Management Policy” of Jordan was prepared in 1998 and consisted of 67 main points that were listed under 13 subtitles. The following key policy issues were included in the wastewater management policy:

- Wastewater shall not be treated as waste and therefore disposed. Wastewater shall be part of the national water budget.
- Adequate wastewater collection and treatment facilities should be available for all the major cities and towns in Jordan to protect the environment and public health.
- Priority of reuse of treated effluents should be directed as a source for irrigation.
- Treatment of wastewater shall be targeted towards producing an effluent fit for reuse in irrigation that complies with the WHO and FAO guidelines.
- A high importance should be given for the establishment of a section in the Water Authority to be responsible for the development and management of wastewater systems, wastewater treatment and reuse.

- A basin management approach shall be adopted where possible. The use of treated wastewater in irrigation shall be given the highest priority and pursued with care.
- Effluent quality standards shall be set based on the best attainable treatment technologies, and calibrated to support or improve ambient receiving conditions, and to meet public health standards for end users.
- Wastewater intended for irrigated agriculture shall be regulated based on the soil characteristics of the irrigated land, the type of crops grown, the irrigation methods, and whether other waters are mixed with the treated wastewater.
- Industries shall be encouraged to recycle part of its wastewater and to treat the remainder to meet standards set for ultimate wastewater reuse or disposal.
- Wastewater from industries with significant pollution should be treated separately to standards allowing its reuse for purposes other than irrigation or to allow its safe disposal.
- Consideration shall be given to isolating treated wastewater from surface and ground waters used for drinking purposes, and to the blending of treated effluent with relatively fresher water for suitable reuse.
- Priority shall be given to protecting public health and water resources from chemical and microbiological pollutants.
- The transfer of advanced wastewater treatment technologies shall be endorsed and encouraged. However, appropriate wastewater treatment technologies shall be selected with due consideration to operation and maintenance costs and energy savings, in addition to their efficiency in attaining and sustaining quality standards.
- Treated wastewater effluent is considered a water resource and is added to the water stock for reuse. Priority shall be given to agricultural reuse of treated effluent for unrestricted irrigation. Blending of treated wastewater with fresh water shall be made to improve quality where possible. Crops to be irrigated by the treated effluent or blend thereof with freshwater resources shall be selected to suit the irrigation water, soil type and chemistry, and the economics of the reuse operations.
- Farmers shall be encouraged to use modern and efficient irrigation technologies. Protection of on farm workers and of crops against pollution with wastewater shall be ensured.
- Treated effluent quality should be monitored and users are alerted to any emergency causing deterioration of the quality so that they will not use such water unless corrective measures are taken.
- Sludge produced from the treatment process would be processed so it may be used as fertilizer and soil conditioner. Care shall be taken to conform to the regulations of public health and environment protection norms.

- Wastewater charges, connection fees, sewerage taxes and treatment fees shall be set to cover at least the operation and maintenance costs. It is also highly desirable that part of the capital cost of the services shall be recovered. The ultimate aim is for a full cost recovery.
- Appropriate criteria in order to apply the "polluter pays" principle shall be established.
- Treated effluent shall be priced and sold to end users at a price covering at least the operation and maintenance costs of delivery.
- All crops irrigated with treated or mixed waters shall be analyzed and monitored periodically.
- The role of the private sector will expand with management contracts, concessions and other forms of private sector participation in wastewater management such as BOO / BOT.
- The role of private sector in reuse of treated wastewater shall be expanded.
- **Israeli Standard 5764 – 2004; sludge stabilization and sludge treatment generated from WWTP to be used as a condition for agriculture use or soil conditioning.**

The standard establishes maximum limits for heavy metal and pathogen concentrations and odor limits on sludge designated for agricultural use, set recording and laboratory testing requirements, define specific uses for different classes of sludge (A and B), set limitations on areas of sludge use, and prescribe requirements for warning signs, transport and storage. Requirements for class A sludge, which is virtually pasteurized and highly stabilized, came into force in 2008.

*U Directive 86/278 EEC:* The purpose of Directive 86/278 EEC is to regulate the use of sewage sludge in agriculture in such a way as to prevent harmful effects on soil, vegetation, animals and man, thereby encouraging the correct use of such sewage sludge as in common with other EU directives, the Sludge Directive is presenting a framework'. EU member states are obliged to derive its one national regulation.

Being introduced in 1986 the EU Sludge Directive is far from being up-to-date.

Most relevant parameter such as heavy metals and sanitary requirements are presented in the following table.

It becomes clear, that the Israeli standard is by far more rigid than the current EU standard and for some parameter (copper, nickel, lead, chrome) even stronger than the EU concentrations proposed to be introduced in the year 2015.

**Table 3. Israel standard of sludge reuse in agriculture comparison with EU Directive**

	EU		Israel	
	Directive 86/278 EEC	medium-term (ca. 2015) <sup>1</sup>	Class A	Class B
<b>Heavy Metals (mg/kg DS)</b>				
Cadmium	20 - 40	5		20
Copper	1.000 – 1.750	800		600
Mercury	16 - 25	5		5
Nickel	300 - 400	200		90
Lead	750-1.200	500		200
Zinc	2.500 – 4.000	2.000		2500
Chrome	(1.000 – 1.500)	800		400
<b>Sanitary requirements</b>				
Feacal coliforms (MPN/1g DS)			1.000	2.000.000
Echerichia coliforms (MPN/g)		at least 2log <sub>10</sub> reduction <sup>2</sup>	-	-
		at least 6log <sub>10</sub> reduction <sup>3</sup>	-	-
Salmonella (MPN/4g DS)		non	3	
Enteric viruses (PFU/1g DS)			1	
Helminthes eggs (number/g)			1	

#### 4.4. Wastewater Reuse Policy in Egypt

##### Law 276/1994—Use of Sewage Sludge

Law 276/1994 is the most specific law on reuse of wastewater sludge. It was amended by Decree No. 214/1997 and Decree No. 222/2002, which deal with the requirements for use of sewage sludge in agriculture. The standard of sludge reuse according to Egyptian Standard Decree 214/1997 is presented at the table 4 below.

**Table 4 Composition of Sludge reuse according to Egyptian Standard**

Determinant	Standard requirements	
	Limit Value	Units
Volatile solids	-	%
Dry solids	-	%
Nitrogen	-	%
Phosphorus	-	%
Potassium	-	%
Magnesium	-	%
Magnesium	-	%
Calcium	-	%
Iron	-	%
Copper	1,500	mg kg <sup>-1</sup> DS
Cadmium	39	mg kg <sup>-1</sup> DS
Chromium	1,00	mg kg <sup>-1</sup> DS
Nickel	420	mg kg <sup>-1</sup> DS
Lead	300	mg kg <sup>-1</sup> DS
Zinc	2,800	mg kg <sup>-1</sup> DS
Molybdenum	18	mg kg <sup>-1</sup> DS
Arsenic	41	mg kg <sup>-1</sup> DS
Selenium	36	mg kg <sup>-1</sup> DS

Determinant	Standard requirements	
Mercury	17	mg kg <sup>-1</sup> DS
Coliforms count	10 <sup>3</sup>	count g <sup>-1</sup> DS
Salmonella count	3 per 4 g DS	count g <sup>-1</sup> DS
Helminth	1 per 5 g DS	count g <sup>-1</sup> DS
Virus	1 per 5 g DS	count g <sup>-1</sup> DS

## 5. INTERNATIONAL AGREEMENTS INVOLVING PNA

The Oslo Accord I (1993) between the Palestinian and the Israelis stated that a joint committee should be established on Economic Cooperation to focus among other matters on environmental issues. The Oslo Accord II (1995), which has been ineffective since the Intifada in 2000, stated that the Israelis and the Palestinians agreed to cooperate in order to prevent damage to the environment. Both parties also agreed to adopt and comply with internationally recognized environmental standards for air and liquid emissions and to take appropriate measures to prevent pollution of soil and water resources. These agreements may have had an influence of the development of Palestinian National Environmental Quality Standards.

## 6. STANDARDS/GUIDELINES

The following national and international standards and guidelines were reviewed during the course of conducting the current ESIA:

- IFC Occupational Health and Safety Guidelines.
- World Health Organization (WHO) Guidelines for Air and Water Quality.
- WHO Guidelines for the wastewater reuse in agriculture 1989
- WB Guidelines Effluent Discharge Requirements.
- European Commission Environmental Standards.
- Israeli Environmental Standards.
- Jordanian Environmental Standards
- Egyptian Environmental Standards
- Palestinian Environmental Law Limit Values for Ambient Air Quality.

## 7. RELEVANT MINISTRIES AND INSTITUTIONS

The Consultant reviewed the relevant ministries and institutions relevant to reuse system. Based on this assessment, the institution responsible for construction and operation phase of the project components (for management and monitoring) we developed.

As this project is mainly related to water, wastewater and sludge management, more than one entity is responsible for the implementation of the project. However, the main actor is the Palestinian Water Authority. Through cooperation with other Ministries and

institutions, the project might be implemented in an easier way. The following figure presents some relations of the PWA with other entities



Source: PWA website

Figure 1. Some organizations that play a role in the project

### 7.1. The Palestinian Water Authority

PWA is responsible for management of the available water resources in Palestine to achieve the balance between available water quantities and qualities, and the needs of the Palestinian people in the present and the future. Law No.2 for 1996 identified the role of PWA in the following areas:

1. *Strategic planning for the water resources:* In this context, PWA has the authority to develop, enhance and allocate the water resources among the various demand sectors in order to achieve its goals which are:
  - Find the optimal way to manage, protect, and conserve the limited national water resources.
  - Guarantee the right of access to water of a good quality for both present population and future generations at cost that they can afford.
2. *Monitoring and protection of water resources:* PWA has developed a comprehensive monitoring program. The program identified the needs, the number of

monitoring wells and their locations. Also vulnerable areas by different sources of pollution like wastewater treatment plant, industrial estates, ports and intensive farms were considered carefully [PWA Monitoring, 1998].

3. *Regulation: Aiming at maximization of the benefit from the water resources and due to existing conflict of interests, it is necessary to have a mature regulator for the water sector in general. Regulations should organize the relationship between service providers, the and the service users of environment and water resources. The role of PWA will be:*

*Environmental Regulation:* aims at controlling the utilization of water resources and wastewater disposal and/or reuse in such a manner that enables the environment and optimizes the benefit.

*Water Quality Regulation:* aims at controlling the drinking water quality. In this context the PWA will be responsible for imposing a set of regulations on the service provider. These regulations should satisfy the requirement of the various stakeholders and mainly the Ministry of Health (MOH).

*Economic Regulation:* aims at reviewing the prices of water in order to protect the customer from the service provider, which is normally working in a monopolistic environment. Also the regulator should ensure that all cost related activities are performed adequately by the utility.

## **7.2. Environmental Quality Authority (EQA)**

Presidential Decree No. 6 in June 2002 established the Environment Quality Authority as the successor body to the Ministry of Environmental Affairs during the administrative reforms.

The responsibility of EQA is to promote a sustainable environmental development of the Palestinian society. Its main task is the protection of the environment, including its water, soil, air, natural resources, nature and Biodiversity, and the prevention of public health risks related to environmental issues. The main responsibilities of EQA are in the field of planning, monitoring, licensing and enforcement. EQA is responsible for the development of the environmental policy, legislation and environmental planning. It is also responsible for developing standards, norms and guidelines for creating environmentally sustainable Engineering and Management Consulting Center Annex II conditions. For a number of standards EQA has primary responsibility. The Agency, EQA, plays a complementary role to the MOH in setting standards related to the conservation and protection of the environment such as:

- Minimum water requirement to preserve the environment.
- Disposal of treated sewage in wadis, streams, rivers, lakes and seas.
- Disposal of treated sewage in environments, which affects the bio-diversity.
- Regulation of the industrial wastewater which is not treated by the utility.
- Disposal of brine from the desalination plants.



- Monitoring of the physical environment is an important task of EQA. It also includes the monitoring of the compliance with the environmental laws and regulations, as well as the enforcement by means of putting sanction on violations and transgressions.

### **7.3. Ministry of Agriculture**

The Ministry of Agriculture plays an important role in managing the agricultural resources in Palestine. Its responsibilities are summarized as follows:

- Achieving food security.
- Establishing cooperation with the Palestinian Water Authority
- Rehabilitation of water sources, their protection from pollution, and promotion of their rational and economic use for agricultural production.
- Achieving the legislation that controls the extension of urban areas at the expense of agricultural areas and ensure sustainable development.
- Establishing methodologies for conservation of biological diversity and for sustainable use of resources by utilizing legislation, rules, procedures, budgetary allocations and other regulatory measures.
- Advancing public awareness concerning the advantages of Biodiversity conservation and sustainable development.
- Indicating the types of crops that can be irrigated by treated wastewater using the international standards.

### **7.4. Ministry of Local Government**

Historically, local governments have been the cornerstone of Palestinian governance and the key providers of public goods and services in the West Bank and Gaza. Municipalities, in particular, have a well-established service delivery and regulatory functions including electricity, water supply, sanitation, solid waste management, local roads, libraries, parks and recreation, slaughterhouses, markets, land use planning, building and development approval, and business and professional licensing. Until November 1996 the governmental organization basically consists of two levels: central and local levels. In November 1996 a new intermediate level was introduced as Governorate, thus; three levels were established: central, regional and local governments. MOLG is responsible for the following activities:

1. To work towards an inclusive and unified local administration and establish local and municipal councils.
2. To provide the infrastructure services to all areas, both within and outside municipal boundaries.
3. To develop the organizational structure and public administration at local levels based on studies and a close dialogue with concerned localities.

## **7.5. The Ministry of Health**

Environmental Health Department (EHD) is a central department in the Ministry of Health.

One of the main objectives of EHD is to promote research and information exchange related to health and environment (water, air, hazardous waste, vectors, and toxic materials). The Preventive Medicine Department (PMD) is responsible for monitoring the water quality. The MOH plays an important role in the water industry regulation. This covers setting the standards, which are related to the public health such as:

- Drinking water quality.
- Disposal of treated sewage in bathing waters.
- Disposal of treated sewage in environments which affects the quality of some products like fish.
- Treated wastewater reuse for irrigation, which may affect the agricultural products.
- Disinfection and drinking water storage.

## **7.6. Ministry of Planning (MOP)**

MOP also took the initiative to develop an Emergency Natural Resources Protection Plan through their former Environmental Protection Directorate (EPD) and the Regional Development Plans through their Directorate for Urban and Rural Planning (DURP). MOP objectives are matching with the current objectives of EQA, which aim at the distribution of responsibilities and tasks among the ministries, institutions and agencies for the sake of achieving or working towards sustainable development. The development objectives of MOP are to:

- Institutionalize the strategic planning process at the national level;
- Support the participation of the all ministries and agencies of the PNA in the preparation and implementation of the three - five years plans “Palestinian Development Plan (PDP)”.
- Coordinate the development at the national level between environment, socio-economic and physical sectors in a sustainable manner.

## **7.7. Ministry of Public Works and Housing (MPWH):**

The main responsibilities of the Ministry of Housing and Public Works are:

1. To improve the standard of housing to safeguard the health of the inhabitants; which comprises improvement of the housing conditions and services such as sanitary facilities and ventilation.

2. To complete and upgrade the infrastructure required for economic development and social activities and to improve the quality of public buildings.
3. To ensure the use of high-quality construction materials to improve safety standards.
4. To concentrate on issues that has a direct impact on the environment such as air pollution and wastewater treatment and disposal.

### **3.6.2. Ministry of labor**

The Department of Occupational Safety is responsible for:

- Performing periodical visits to work places and giving instruction regarding workers and equipment safety,
- Monitoring chemical, physical and biological impacts on workers, and
- Keeping records and monthly reports on work places.

### **7.8. Ministry of Energy and Natural Resources (MENR)**

The objectives of the Ministry of Energy and Natural Resources are to develop current electricity sources and develop sustainable and cost-effective new sources and to minimize the emission of air pollutants. This can be achieved by full adoption of the actions specified in the National Environmental Action Plan (NEAP) to protect health and the environment from the effects of air pollution.

### **7.9. Ministry of Tourism and Antiquities (MoTA):**

The ministry in general has the following responsibilities:

1. To protect antiquities.
2. To develop internal and external tourism,
3. To bring Palestinian history to the world's fingertips,
4. To work with other institutions in establishing specialized department/programs that is specialized in protecting ancient sites, cemeteries and monuments.

### **7.10. Ministry of Religious Affairs**

The ministry is responsible for management the religious issues in the West Bank and Gaza Strip. The ministry manages the Waqf lands. Some of these lands may be rented to other ministries to implement a public facility.

### **7.11. United Nations Relief and Works Agency (UNRWA)**

UNRWA has a monitoring program for drinking water in refugee camps.

### 7.12. North Gaza Joint Service Council

The North Gaza JSC is responsible for the waste collection in Gaza North Governorate which includes the municipalities of Beit Hanoun, Jabalia, Beit Lahia and Um Al Nasser Village. The population of Gaza North Governorate is around 300,000. The JSC was established in August, 2002 by a statute endorsed by the MoLG as a non-profitable public enterprise and started functioning since April 2004. The North Gaza JSC operates the following facilities:

- a) The council headquarters and office at the service yard in BeitLahia; and
- b) Garage and workshop at the service yard in BeitLahia.

Primary collection is performed using street containers, donkey-carts and small tractors with trailers the council contracts private firms to transfer solid wastes to Johr al Deek Landfill.

The North Gaza JSC Board includes the mayors of the municipalities and a supervisor from the MoLG, The organizational chart of the JSC is shown in Figure 2. In total, there are 222 workers in North Gaza JSC.

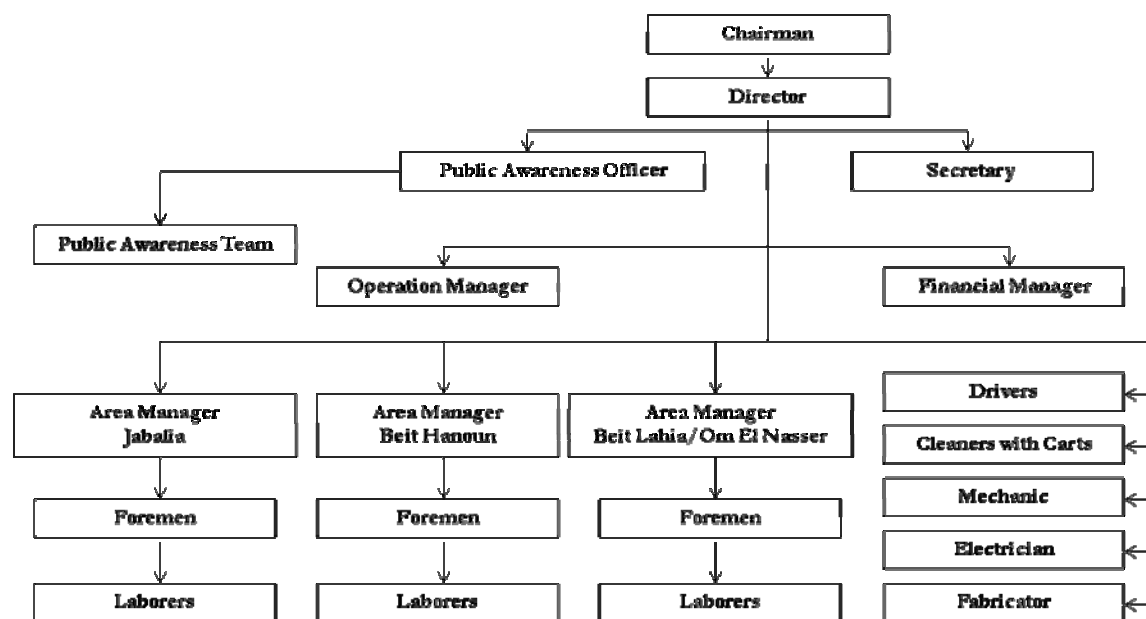


Figure 2. Organization Chart – North Gaza Joint Service Council (UNDP/PAPP 2011)

### 7.13. Municipalities

The main two municipalities working closely with the projects are Gaza and Jabalia municipalities who are responsible for land planning and acquisition. They address the plans for land to be expropriated under the 25% for public benefits in order to construct roads, etc. They are responsible also for any compensation to be paid to the affected groups entitled to be mitigated. As well the municipalities might get money from the expropriated lands in case of the value of lands raised due to the implementation of roads.