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**Abstract**  
Palestine is confronting important water allocation and sector development issues. This report was prepared as an input to the process of strengthening of Palestine's water and wastewater master planning capacity. It presents background on features and specific actions regarding water and wastewater master planning responsibilities of the Palestinian Water Authority (PWA). The report elaborates on how to activate PWA's role as the key water master planning authority, the development of appropriate information and planning tools, the reinforcement of PWA's co-operation with other relevant authorities, and on the integration of the wastewater sub-sector in water master planning.

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**Palestinian National Authority**  
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**Water Master Planning Co-operation**  
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Strengthening of  
PWA's Planning Capacity

Mission Report

## **Preface**

Palestine is encountering important water allocation and sector development issues. As population and economic activities expand, demand for water sector investments is becoming more accentuated. The promotion of water master planning efficiency through the adoption of an appropriate institutional framework supported by the introduction of sound information technologies is defined as an important element of future water sector interventions in Palestine. This report was prepared in close co-operation with senior PWA officials as an input to the process of strengthening of Palestine's water and wastewater master planning capacity. It is a follow-up to the recommendations of the Introductory Mission February from 15 to 28, 1997. It presents background on features and specific actions regarding PWA's water and wastewater master planning capacity.

It should be noted that this Mission Report is presenting the author's own perception and assessment of water master planning issues in the Palestinian Territory. Therefore, the statements and recommendations made herein do not necessarily reflect the opinion of the Palestinian Authority, nor those of NORAD or other organisations or people met during the mission.

Oslo, September 18, 1998

*Torbjørn Damhaug*

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# Summary and Recommendations

## General

This is a report from a NIVA mission to Palestine from June 5 to 19, 1998 concerning the strengthening of PWA's water master planning capacity. The main purpose of the mission was to create a basis for PWA's monitoring and co-ordination of ongoing water and wastewater projects and identify appropriate tools, procedures and collaborative frameworks for sector planning and investments towards the target year 2020. It was agreed with PWA that the mission should concentrate on the following focal issues: (i) activation of PWA's Role as the Key Water Master Plan Authority; (ii) development of appropriate information tools for water and wastewater master planning; (iii) strengthening of PWA's interactions with relevant planning and sector ministries; (iv) integration of the wastewater sub-sector in water master planning.

The recommendations made in the following are specific responses to the high priority issues called for in the mission's Terms of Reference, and they are complementary to the conceptual frameworks and actions proposed in Chapter 3. The TOR's call for a proposal on how PWA could co-ordinate and overview the ongoing water and wastewater projects, including identification of gaps and overlaps, and how these projects can be applied and linked together in a possible National Master Plan. The main answer to these points lie with the enhancement of PWA's role as the key water sector authority in general, and in particular with the reinforcement of its internal information, planning and analytical capacity. The particular recommendations are given in the following.

## Recommendations

### 1. Organisation of PWA's Master Planning Activities

It is proposed that the overall sector development and co-ordination responsibility should remain the domain of the **Deputy Head**, whereas the **Water Resources & Planning Department** should be the core department in charge of water resources and project information, planning and analytical functions.

The various sections in the Technical Department and in the Regulatory Department will be important partners in the master planning process according to their respective areas of responsibility. Table 1 suggests a more detailed arrangement for sharing of tasks and responsibilities as a basis for further internal discussions in connection with the PWA Workshop.

### 2. PWA – LFA Water Master Planning Workshop

As a high priority measure, it is recommended that PWA should organise and implement an internal LFA Master Planning Workshop. It is envisaged that the workshop would focus on common issues aimed at developing a common understanding of PWA's master planning responsibilities, identification of lines of co-operation, and promotion of resource mobilisation and collaborative actions among departments and sections.

The workshop should take place after the senior management of PWA has elaborated on and accepted the suggestions of this mission report, tentatively in November – December 1998. It should preferably be organised as a Logical Framework Approach combined with some key presentations on some of the issues presented in this report as follows:

1. Information demands for water and wastewater master planning and appropriate databases and related information products, including data collection and information exchange routines.
2. Concepts on how PWA should facilitate co-ordination between the World Bank DANIDA-UNDP “Water Sector Strategic Plan Study” and the master planning component of the Norwegian Institutional Support Programme in order to create optimum synergies between these initiatives in reinforcing PWA’s planning operations. The workshop would serve as an opportunity to set the stage for such co-operation.
3. Outline approach for the development of a wastewater sub-sector strategy.
4. A summary of the planning principles and up-to-date lessons learned from the Southern Area Water and Sanitation Improvement Project with regard to the new rules and regulations institutional reforms and planning and funding of this integrated infrastructure services development project.

The outcome of this workshop would be a set of specific actions with agreed schedules and implementation responsibilities.

### **3. Presentation of the Master Planning Issue for the National Water Council (NWC)**

It is recommended to consider the appointment of a working group with the task of preparing PWA’s presentation of the water and wastewater master plan issue at the forthcoming National Water Council Meeting.

Considering the fundamental importance of the master planning process as an instrument for directing water sector investments it is important to refer this issue to the NWC at the earliest opportunity. The presentation should be based on a synthesis of the recommendations of this mission report combined with the outcome of the workshop and its succeeding actions. It is envisaged to arrange the Water Council meeting shortly after the completion of the Workshop.

### **4. Development of Appropriate Information Tools for Water and Wastewater Master Planning**

PWA should bring forward the preparation of a water sector information and planning system along the lines of responsibility and outline tools suggested in this report.

This could take place in co-operation with an external IT expert who would assist in defining the most appropriate solutions, and preparation for the workshop presentation. After the workshop, PWA should continue the development of project and planning databases and related information products, including strengthening of the data collection and information exchange routines in co-operation with relevant authorities and other key actors on the water sector.

### **5. Inter-ministerial Round-table Meeting**

It is recommended that PWA’s interactions with relevant planning and sector ministries should be enhanced through an inter-sectoral Round-table Meeting.

It would be an advantage to base this initiative on the outcome of the internal workshop the messages of the Water Council meeting and subsequent resource mobilisation for the master planning process. Tentative subjects and activities in connection with the round-table meeting would be to:

1. Carry out necessary internal preparations and mobilisation within PWA.
2. Present the water and wastewater master plan concept.

3. Discuss water development planning issues of mutual interest, linking the topic of master planning to the evolving national water management strategy.
4. Develop a common perception of water master planning principles and procedures among the ministries.
5. Establish jointly agreed principles and common planning criteria where conformity between sectors is necessary, for instance related to geographical planning framework, population growth, sector water demands etc..
6. Establish mechanisms for regular communication and co-operation between the ministries attached to the water sector.
7. Discuss and agree upon procedures and responsibilities for public hearing and approval of the water master plan.

#### **6. Wastewater Sub-sector Strategy**

<p>The mission suggests that PWA commences the development of its own wastewater sub-sector strategy for later endorsement by the PA.</p>
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The wastewater initiative could take place in consultation with other related authorities, interest groups, experts and funding agencies. Some important issues and approaches have been indicated in this report. Revise the Water Resources Comprehensive Planning Framework (CDM report) and carry out an evaluation of institutional arrangements on how to integrate the wastewater sector in the new water utility structure, with particular emphasis on the Southern Utility project. The commencement of the strategy development is envisaged in January 1999.



# 1. INTRODUCTION

A mission by Torbjørn Damhaug (NIVA) visited Palestine from June 5 to 19, 1998 to follow up on the water master-planning component under the Norwegian Institutional Support Programme. This component was initiated in February 1997 by an introductory visit to the Palestinian Territory. The mission met with the Deputy Head, and other senior staff of the PWA-WB and the WBWD, to discuss issues and appropriate follow-up actions in connection with strengthening of Palestine's water and wastewater master planning capacity. The mission also included participation in a logical framework based workshop on the Water Strategy and subsequent follow-up work. Another task during the stay was to read and comment upon the Inception Report (May 1998) for the Regional Plan for the West Bank - Water Plan study initiated by MOPIC.

The mission was received with great hospitality and would like to express its appreciation and gratitude to all people met for their collaboration and support during the mission's stay. The focal points of this mission were identified in co-operation with the Deputy Head and senior professionals of PWA, the mission suggested that particular emphasis and immediate attention should be placed on the four "focal points":

1. Activation of PWA's Role as the Key Water Master Plan Authority
2. Development of Appropriate Information Tools for Water and Wastewater Master Planning
3. Strengthening of PWA's Interactions with Planning and Sector Ministries
4. Integration of the Wastewater Sub-sector in Water Master Planning

In addition the consultant was asked to prepare an outline framework for a water and wastewater sector master plan. This report elaborates in detail on the issues raised in the mission's Terms of Reference with special emphasis on these four essential points.

# 2. OBJECTIVES

The long-term objectives of the master planning support are to:

- strengthen PWA's water and wastewater master planning capacity
- develop a framework for PWA's implementation of its master planning responsibilities

The specific objectives of this mission as stated in the TOR are to:

- a) prepare a proposal on how PWA could co-ordinate and overview the ongoing water and wastewater projects with relevance to master planning.
- b) establish how the outcome of these projects can be applied and linked together in the overall National Water and Waste Water Master Plan that eventually will be prepared by the PWA.
- c) identify possible overlaps, conflicts and gaps in present and planned activities, and recommend actions to be taken to amend these shortcomings
- d) propose specific actions out of the proposed issues for immediate implementation
- e) prepare an outline framework for a master plan for the water and wastewater sector which covers the whole of the Palestinian Territory, and whose target year is the year 2020 to remedy the current challenges and to meet the future needs in the sector.

## **3. FINDINGS AND ASSESSMENTS**

### **3.1 STRENGTHENING OF PWA'S ROLE AS THE KEY WATER MASTER PLAN AUTHORITY**

#### **3.1.1 The Role of the National Water Council**

The National Water Council (NWC) is the superior water sector authority responsible for overarching water policy and strategic matters. NWC's focal points include water rights and water resource preservation and development in the broader context towards economic and social development and raising the health standards in Palestine. The particular obligations of PWA involve:

- ❑ setting the policy for developing and exploiting the water resources of Palestine in co-operation with the relevant parties and presenting this policy to the Council of the Palestinian National Authority (PNA) for acceptance;
- ❑ reinforcing regional and international co-operation in water matters;
- ❑ implementing the strategic decisions relating to the execution of the water policy of the PNA including monitoring pollution and environmental protection;
- ❑ determining the Monies required for investment in the water sector;
- ❑ reinforcing and supporting the work of the PWA and overcoming any difficulties that obstruct its work;
- ❑ any other important matters that are referred to it by the PWA.

Considering the fundamental importance of the master planning process as an instrument for directing water sector investments, it is evident that PWA will refer this issue to the NWC at the earliest opportunity. This mission report and its succeeding actions will serve as a basis for PWA in presenting the water master plan issue at the next Council meeting.

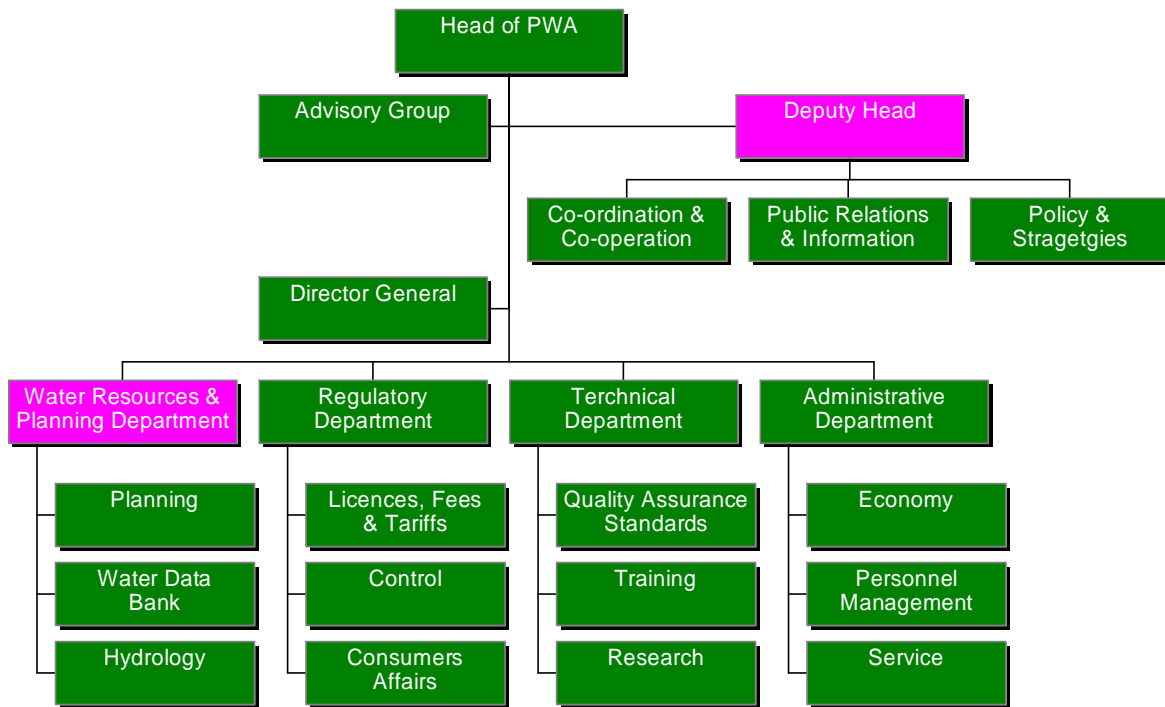
#### **3.1.2 PWA's Development**

The PWA is the main regulatory and co-ordinating body on the water sector in Palestine. Since it was established PWA has been through a difficult transitional process where it has been faced with a broad range of tasks and challenges to be dealt with simultaneously:

- ❑ development of its institutional structure, functions, and administrative procedures;
- ❑ employment of managers and staff at all levels, and organisation of necessary education and training activities;
- ❑ consolidation of PWA's position in relation to other authorities, the public, and international funding agencies, as the core water sector management body in Palestine;
- ❑ establishment of national water policy and strategies;
- ❑ attend to urgently needed co-ordination of a large number of donor projects, both technical assistance as well as high-priority infrastructure investments;
- ❑ respond to requests from smaller communities to supervise the construction of urgently needed water supply systems.

The mission recognised that many of these tasks have now been partly resolved or turned into routine operations. Moreover, it is evident that PWA is rapidly developing its water master planning capacity, and is gradually taking control over its responsibilities regarding planning and implementation of

future capital investments on the water sector in Palestine. The PWA is also involved in a number of international water related co-ordination activities under the Joint Water Committee (JWC) and the Multilateral Working group on Water in the Peace Talks. Co-ordination of financial and technical assistance from a large number of bi-lateral donors and funding agencies is another important objective of PWA. Concerning PWA’s organisational structure the mission learned that minor adjustments are being made to meet PWA’s evolving responsibility for strategic planning, co-ordination, information, training and regulatory services. Figure 1 illustrates the most recent organisational structure of PWA.



: Key master planning responsibilities

**Figure 1. Organisational Chart PWA with Indication of Principal Master Planning Nucleus**

### 3.1.3 PWA’s Master Planning Responsibilities

PWA is in charge of a wide range of water and wastewater master planning responsibilities, shared between its various departments and sections. The mission feels that it is necessary to clarify and streamline the internal water sector planning and co-ordination functions, in order to establish common targets and a comprehensive approach to cope with the master planning challenges. Even if master planning is a cross-departmental topic, it is important to identify responsible core units within the organisation and establish clear lines of responsibility among the various units. The table below provides a background on identified water sector master planning functions, divided into two main categories: a) overall sector development co-ordination duties; and b) water resources and project information, planning and analytical services. Against this backdrop, the consultant recognises that the principal departments responsible for PWA’s master planning will be (i) the domains of the Deputy Head; and (ii) the Water Resources & Planning Department. The other departments will of course play important roles in supporting and interacting with these two leading units. Since the master planning tasks are partly overlapping between the different departments and units it is not possible to make clean cut distinctions between the areas of responsibility. However, the table suggests some main features as a basis for further elaboration based on this mission report.

**Table 1. Suggested Distribution of Master Planning Responsibilities within PWA**

<b>Water Master Planning Task</b>	<b>Executing Unit</b>	<b>In co-operation with</b>
<b><i>1. OVERALL SECTOR STRATEGIC PLANNING AND CO-ORDINATION</i></b>		
<b>Main Responsibility: Deputy Head</b>		
1. Finalise the development of the integrated Strategy for Water Management in Palestine, including international water right issues.	Policy and Strategies Section	All departments
2. Develop a national strategy for wastewater collection and water re-use sub-sector.	Policy and Strategies Section	WRPD-Planning Section. TD- Research Section
3. Establish appropriate institutional arrangements for development of the water sector, i.e. the regional utility structure for integrated planning and implementation, private sector co-operation.	Policy and Strategies Section	Regulatory Department
4. Explore opportunities for project funding and donor co-ordination within the framework of the Palestinian Public Investment Programme (PIIP)	Co-ordination and Co-operation Section	WRPD-Planning Section
5. Co-ordination and information exchange with national planning authorities and provision of water and wastewater sector planning input to the Palestinian Development Plan (PDP)	Co-ordination and Co-operation Section	WRPD-Planning Section
6. Pursue the participatory planning approach versus the civil society and s build consensus between central and local authorities and stakeholders	Public Relations and Planning	RD-Section for Consumers Affairs
7. Specify and implement the process of official hearing and approval of master plans including the interactions with planning and sector authorities at national and local level	Co-ordination and Co-operation Section	WRPD/Planning Section
8. Supervise and monitor the implementation of agreed development projects and infrastructure investments	Co-ordination and Co-operation Section	TD-Section for QA and Standards RD-Control Section
9. Plan and implement an Inter-ministerial Round Table Meeting and promote the establishment of an Integrated Planning Forum	Co-ordination and Co-operation Section	WRPD-Planning Section
<b><i>2. INFORMATION, PLANNING AND ANALYTICAL SERVICES</i></b>		
<b>Main Responsibility: Water Resources and Planning Department (WRPD)</b>		
1. Develop and operate a water sector project database including relevant information products.	Planning Section	TD-Section for QA and Standards
2. Operation of the Water Resources Data Bank	Section for Hydrology	WBWD
3. Long term development of a central water data bank (quality-quantity) and related presentation tools (GIS) and dissemination procedures	Water Databank Section Hydrology Section	TD-Section for QA and Standards
4. Allocate water resources and identify necessary protection measures and licensing implications for new/proposed water development projects	Water Databank Section and Section for Hydrology	RD-Section for Licences Fees and Tariffs
5. Establish a central water and wastewater infrastructure inventory system	TD-Section for QA and Standards	WRPD-Planning Section
6. Analyse present and planned projects and programs in terms of gaps, overlaps and identify investment needs	Planning Section	Deputy Head TD-Section for QA and Standards
7. Prepare regional and municipality master plans for future water development and capital investment projects for rehabilitation and extension of infrastructures and services	Planning section	Deputy Head All Departments
8. Pursue the national water and wastewater master planning process	Planning Section	Deputy Head All Departments

### 3.1.4 Key Projects and their Bearings on Water Master Planning

Since 1995, a large number of studies, analysis and technical assistance projects related to water and wastewater master planning have been carried out, mostly by foreign experts, in the Palestinian Territory. These projects were administered by different if it could Palestinian executing agencies and implemented with limited national co-ordination. Although these initiatives appear to be fragmented, their outcome provide important first generation sources of information and recommendations that need to be structured and analysed by PWA in terms of follow-up implications for the respective departments. As a background, some recent WMP related projects have been listed and briefly commented upon in Appendix 1. The table below gives a simple comparison of the main focal points of some selected projects and activities related to water master planning, as seen by the mission.

**Table 2. Studies and Activities related to Water Master Planning**

Project	WMP Focus							
	Promote integrated water res. mgmt. and internat. water rights	Develop PWA's role as the key WMP authority	Promote PWA's co-operation with other planning authorities	Contribute to the developm. of planning criteria and guidelines	Build Water resources monitoring, database and information services	Develop project database & planning tools	Promote water sector investments and reforms	Integrate the Wastewater sub-sector in master planning
1. Strategy for water mgmt. NORAD	■■■	■■■	■■■	■■	■	■	■	■
2. Water Resources Program CDM USAID	■■	■	■	■■	■■■	■	■■■	■■
3. Southern Area Water & Sanit. Project	■	■■	■	■■	■	■	■■■	■■■
4. Strategic Study World B. UNDP DANIDA	■■■	■■	■■	■■■	■■■	■■	■■■	■■
5. Master plan co-operation NORAD	■	■■■	■■■	■	■■	■■■	■	■■■

**Legend:** Main focus: ■■■ Some focus: ■■ Less focus: ■

1. Strategy for Water Management in Palestine. The creation of this strategy is a fundamental process for all water sector interventions in Palestine, including the preparation of water and sanitation master plans. It covers the important water rights issues, promotes the consolidation of PWA position as the major policy and planning authority in Palestine, and strengthens the links to other planning and sector authorities. In order to become operational in the context of master planning, these strategic efforts will depend on complementary actions through other project initiatives, as indicated in Table 2.

2. Water Resources Program. The USAID funded Water Resources Program had a number of water master planning components aimed at the creation and funding of investment “packages”, preparation of water resources master plans for the West Bank and Gaza Strip, strengthening of water resources information systems, and development of planning guidelines. It is important that PWA will be able to

benefit from this substantial programme after its completion, by revising and adapting its output and merge them with the future water sector initiatives.

3. Southern Area Water and Sanitation Improvement Project. This multi-donor project is considered to be an important project in many respects, i.e. (i) it is a concerted effort between several donors where PWA plays a key co-ordinating role; (ii) it covers both urban and rural services, water supply as well as wastewater; and (iii) the project implies water and wastewater sector utility reforms. Therefore, this water and sanitation improvement project provides an exceptional opportunity for PWA to link its water and wastewater master-planning efforts to a high impact investment project. Through its key position in the steering committee of this investment program, PWA will be able to:

- ❑ secure that the conditions and criteria stated in the master planning framework will be applied in new infrastructure investments;
- ❑ link the design of the institutional framework for future development of the water supply and wastewater utility sector to a concrete investment project, since decisions taken in connection with this project will have bearings on the institutional reforms in other areas;
- ❑ activate the regional utility structure, develop rules and regulations for private sector involvement, participate in consensus building between local and central authorities and actors, and establish mechanisms for donor co-ordination;
- ❑ provide direct feed-back and experience from the above participation to the planning, technical and regulatory department staff in PWA so that they can benefit from lessons learned within their respective areas of responsibility, and direct their services towards the mentioned key issues.

PWA will benefit from the Deputy Head's key position in the steering board of the Southern Area Project regarding further development and implementation of the new rules and regulations for the utility sector reforms. The first action should be to prepare that should be presented at the internal PWA workshop as a basis for discussions.

4. Water Sector Strategic Study. This upcoming World Bank/UNDP/DANIDA supported study is highly relevant for the strengthening of Palestine's water planning and implementation capacity, as it deals directly with PWA's master planning operations. It is understood that the main focus of this study is the development of a water sector investment programme along with an institutional development component within the one-year time frame. The study will involve a thorough review of key studies related to the sector to determine the adequacy of available information and data. Moreover, the study will also include an analysis of water supplies and demand and make demand projections to cover domestic, industrial and agricultural needs. According to the project documentation, the study will also require a lot of data, information and introduction of new planning tools. Its outcome will be a priority investment program to the feasibility stage and financing plans. It should, however, be kept in mind that the learning of how to prepare an investment programme is equally important as the end products (reports) themselves. Therefore, in order to benefit from this study it is necessary that PWA participates from the beginning and mobilises sufficient resources to be able to control and internalise the study as it emerges. This is to ensure that the approach and the planning tools of the study are appropriate and compatible with PWA's existing and planned systems.

5. Master-planning Co-operation (this project). It is envisaged that the strategic study and the NORAD supported master planning co-operation will complement each other as indicated in Table 2. The following chapters will deal with the anticipated actions to be taken to internalise the water master planning within PWA and the ensuing co-operation between PWA and relevant Palestinian authorities.

## **3.2 INFORMATION TOOLS FOR WATER AND WASTEWATER MASTER PLANNING**

### **3.2.1 Existing Water Sector Project Data Bases and Information Systems**

#### General

As stated in the introductory mission report (February 1997), development of appropriate project inventory system is a prerequisite for efficient project planning and co-ordination. This information system depends on access to sources of consistent, reliable and relevant data and information about ongoing and new projects. Preparation and monitoring of master plans require a wide range of technical, socio-economic, institutional and administrative information. It is essential that planning authorities and executing agencies sharing data and information co-ordinate their design of data collection formats and project identification systems. All partners of such information network must establish appropriate administrative routines for continuous updating and securing the quality of all project information. In the case of PWA, it is a prerequisite to develop a project information system that combines data from internal and external sources into information products to support monitoring and planning of future projects and investment programmes.

#### MOPIC's Project Database

Last year's mission learned that the Ministry of Planning and International Co-operation (MOPIC) is in charge of a Project Data Base for overall monitoring, co-ordination and reporting of existing and completed donor-funded projects within a broad range of infrastructure sectors and socio-economic interventions. The introduction of this planning and monitoring tool had also included capacity building and training of the Aid Co-ordination Department within MOPIC to operate and maintain the database. Aggregated information should be should released as quarterly monitoring reports. The system builds on a multilevel database capable of tracking key project information related to project title, category, sources of funding, yearly disbursements against commitments, time schedule, and actual progress. The MOPIC database is mainly meant for general monitoring of donor funded projects, and it would need substantial upgrading to cover specific water sector information needs in order to suit the purpose of a water master-planning tool. Data collection routines, reporting regularity and information accessibility would also need to be enhanced.

#### Palestinian Development Plan Database

This is a multi-sectoral project information tool to support the preparation of Palestinian Development Plans. The database, administered by MOPIC, contains information about planned and tentative projects, including funding and time schedules. It is necessary to explore the possibilities of establishing links of co-operation between the water and wastewater section of this database and the PWA water sector database suggested in this report.

### **3.2.2 Infrastructure Inventory**

In order to develop investment plans at all levels, and supervise their implementation, it is essential to have an inventory of all infrastructure components on a standard format that could be entered into a common database. For the water and wastewater utilities or municipalities, such inventory is a prerequisite for checking of compliance with material standards, operation and maintenance of the assets as well as for accounting (depreciation and replacement cost), and for planning of rehabilitation or extension works. The PWA would need a central water and wastewater infrastructure database with aggregated information for comparative assessment of the operating and financial performance of the water and sewage works, and for the preparation and prioritisation of investment programs. Most water supply areas in the West Bank have not prepared complete or systematic inventories of the existing water and wastewater infrastructure, even if there is a lot of information available at the various municipalities and MP reports. Some of the asset databases are being developed in conjunction with master plans at various levels. The situation in the Gaza Strip is, however, somewhat different,

since LEKA has made inventories of existing systems in Gaza. The development of an infrastructure inventory at the West Bank should therefore benefit from the experience in Gaza. The inventory ought to include technical specifications, capacities, age, cost data etc. for all infrastructure components of the water and wastewater works.

### **3.2.3 Water Resources Data Base**

The water resource data base and associated information systems is of major importance for overall planning of water sharing between Governorates, and allocation of water among sectors and users, and an invaluable tool for regulation of licences. Although the water resource information services was not a primary issue for this mission as such it was noted, without going in detail, that the joint WBWD/PWA water resources information system appeared to be well developed. Examples of water demand and water resources balances were demonstrated as combined numerical – graphical information presented on maps. The PWA water database will serve as the primary source of data and information related to water resources in the future water and wastewater master plans. Concerning groundwater quality, data is collected by WBWD and transferred to PWA's hydrogeological database. The mission was informed that the status regarding hydrogeological studies is as follows: (i) Eastern Aquifer: Report Completed, (ii) Western Aquifer: not yet finished; (iii) North-Eastern: Will be studied by BGS as a continuation of the EU supported project.

### **3.2.4 Preliminary Water Sector Project Inventory**

While awaiting the release of project statistics from MOPIC's database, the last year's mission manually compiled a temporary inventory of ongoing technical assistance activities and investment programs (Mission Report April 1997). Project information was entered into matrixes of issues and geographic locations as shown in Appendix H. This was made to examine gaps and possible overlaps among ongoing activities and investment projects. This effort was inevitably quite sketchy, since it was not possible to capture all projects, and available information from the various sources was not consistent and comparable (geographical planning areas, project ID, budgetary information, funds committed, disbursement status etc.). According to the TOR for this mission, the consultant was supposed to identify possible overlaps, conflicts and gaps in the current and planned project portfolio, and recommend actions to mitigate these insufficiencies. The sources for updated information about gaps and overlaps would be the "First Quarterly Monitoring Report of Donor Assistance" regarding the existing projects, possibly complemented by the water and sanitation project proposals in the PNA Palestinian Development Plan 1998-2000 to analyse the planned sector investments.

The mission received the latest available version of June 5, 1997. Information about all water sector relevant projects in this report was entered into an EXCEL sheet for further examination and preparation of some examples of information products. The information was cross-checked against the project inventory of the previous mission report, and it appeared to be many discrepancies in terms of registered projects and economic figures. This underscores the need for an appropriate and active project database. An update of project gaps and overlaps based on available information are presented in Appendix H.

### **3.2.5 Proposed Integrated Project Information System for Water Master Planning**

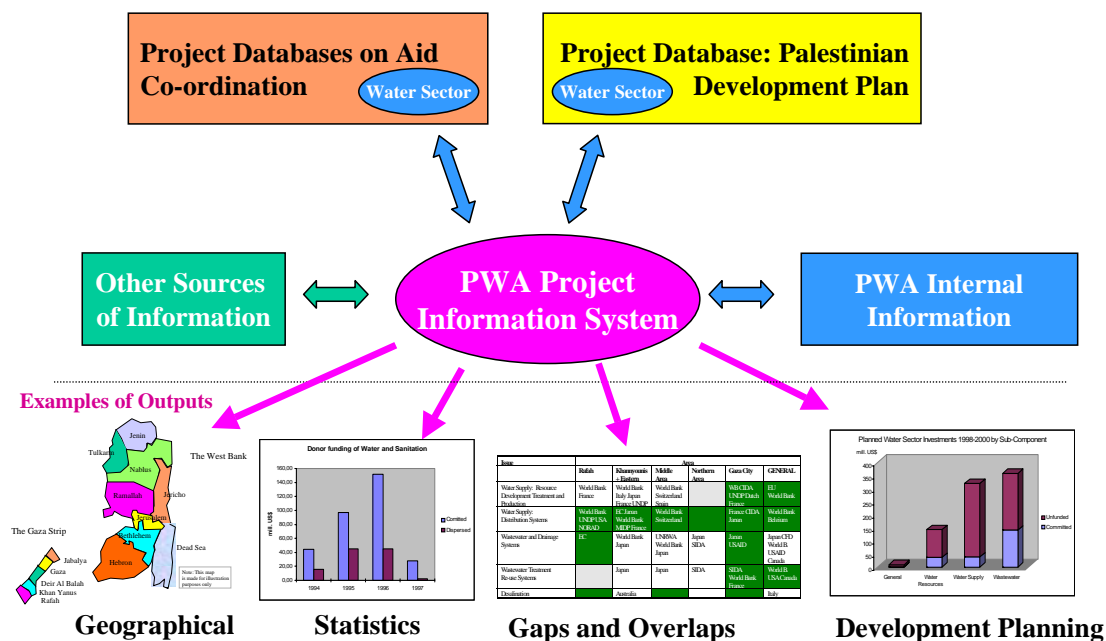
#### Structure

An appropriate project database and associated information products are essential tools for PWA in performing its master planning and project co-ordination responsibilities. This would allow PWA to have access to all relevant information about the existing water sector project portfolio and be in possession of a planning tool to evaluate future investment demands and priorities. A project information database has, however, little value for planners and decision-makers unless it is embedded in an institutional setting that:



- ❑ allows systematic and continuous collection of data
- ❑ assures the quality and reliability of collected data and information
- ❑ provides services for processing of data and presentation of results, statistics, and planning/investment scenarios
- ❑ secures regular delivery of reports and information
- ❑ has the ability to communicate the pertinent information to executing agencies and other users

PWA should consider establishment of an integrated system which would (i) provide relevant information about ongoing and completed projects (retrospective), as well as (ii) a tool for registration and analysis of new project proposals (forward looking). The figure below illustrates some of the main features of the proposed “PWA Water Planning System”. Such unified system should be based on a universal project identification key, and a consistent structure for geographical identification and collection of project data and information.



**Figure 2. Suggested Water Sector Project Information System**

Examples of Information Products

Further to Figure 2, the appendices 3 to 7 illustrate some types of information products the system could provide to planners and decision-makers. The figures, statistics and examples presented in these appendices are based on data from MOPIC’s first quarterly monitoring report and other available project information. It has to be underlined that these presentations are only examples for illustration purposes and are not necessarily reflecting the current situation. In the future the new project database and information would allow presentation of plans and statistics down to municipality and village levels.

Data Collection Form

To be more specific about what kind of primary data should be collected, the mission has put together an indicative list of attributes for further consideration. Many of these attributes are already included in existing project databases, but not all of them are compatible and suitable for processing. It is important that the project identification key is precise and that all other attributes is defined according to a commonly agreed set of specifications. Table 3 proposes some key elements of a data collection sheet for a joint project inventory and project-planning framework on the water sector

**Table 3. Outline project data collection form**

<b>TYPE OF INFORMATION</b>	<b>COMMENTS</b>
<b>1. General information</b>	
Dates	<i>Date of registration and updating of information</i>
Main Institution	
Implementing Agency	
Project Owner	
Project category/output	<i>Could preferably be organised as a check-box system. Infrastructure, Institutional Building, Technical Assistance, O&amp;M Assistance Equity, Equipment, and others</i>
Sub-sector	<i>Water supply, Wastewater, Agriculture, Industry</i>
Project ID Number	<i>According to agreed system</i>
Project Title	
Geographical Location	<i>Could preferably be organised as a Hierarchical Pick-list. WB/GS, Governorate, Multi-Governorate, Municipality, Village, Camp, Regional Utility Area, Other. (see example Figure 6)</i>
Priority	<i>High, Medium, Low or standard scale</i>
<b>2. Project Description</b>	
Briefs	<i>Justification, Objectives, Beneficiaries, Scope, etc.</i>
<b>3. Capacities</b>	
Coverage	<i>Total Population % of Population served before/after Project</i>
Water Production	<i>Existing and Increase due to Project</i>
Wastewater Collected	<i>Existing and Increase due to Project</i>
WS/WW Treatment Capacity	<i>Existing and Increase due to Project</i>
<b>4. Project Status</b>	
Progress	<i>On-going, Committed, Under negotiation, New Proposal</i>
Permits	<i>Status of PIJWC licence: Application under Preparation, Approval Pending, Expected Approval, Approved,</i>
<b>5. Implementation</b>	
Schedule	<i>Period, Starting Date, Completion Date – Original and Adjusted</i>
Milestones for Studies	<i>Proposal, Feasibility Study, Design</i>
<b>6. Budget</b>	
Currency	
Total Cost	
Annual Cost	
Cost Breakdown	<i>Matrix: Budgetary Items vs. Year</i>
<b>7. Funding</b>	
External Sources	<i>% of Total</i>
Domestic Sources	<i>% of Total</i>
Funding Agencies and Contribution	<i>Matrix: Country, Name vs. Amount Pledged/ Committed/Disbursed</i>
Uncovered funding	<i>% of Total</i>
<b>8. Acquisition of Data</b>	
Data Entered by Whom	<i>Name, Department, Section</i>
Data Updated by Whom	<i>Name, Department, Section</i>
Source of Information	<i>Organisation, Department etc.</i>

### Implementation hints

It is suggested that PWA should start the preparation of the proposed planning information system, if needed in co-operation with external expertise. This exercise should build on existing project information systems and the system should be universal for both the West Bank and the Gaza Strip. This preparatory activity should be part of the recommended PWA seminar.

The issues of systematic data collection, verification routines and dissemination procedures should also be addressed by this occasion. As a starting point for PWA's design of a water sector project database and planning tool, it is necessary to explore the possibilities of a closer co-operation in exchange of data and information. A possible enhanced co-operation with MOPIC would also serve the purpose of linking the water sector master planning to the national multi-sectoral planning framework. The latter justifies a closer co-operation to refine and harmonise the respective information systems.

Another relevant planning tool to systemise and analyse new project proposals is the database used for the preparation of the three years Palestinian Development Plans. The water sector components of this planning system should interact with the future PWA project and planning information system.

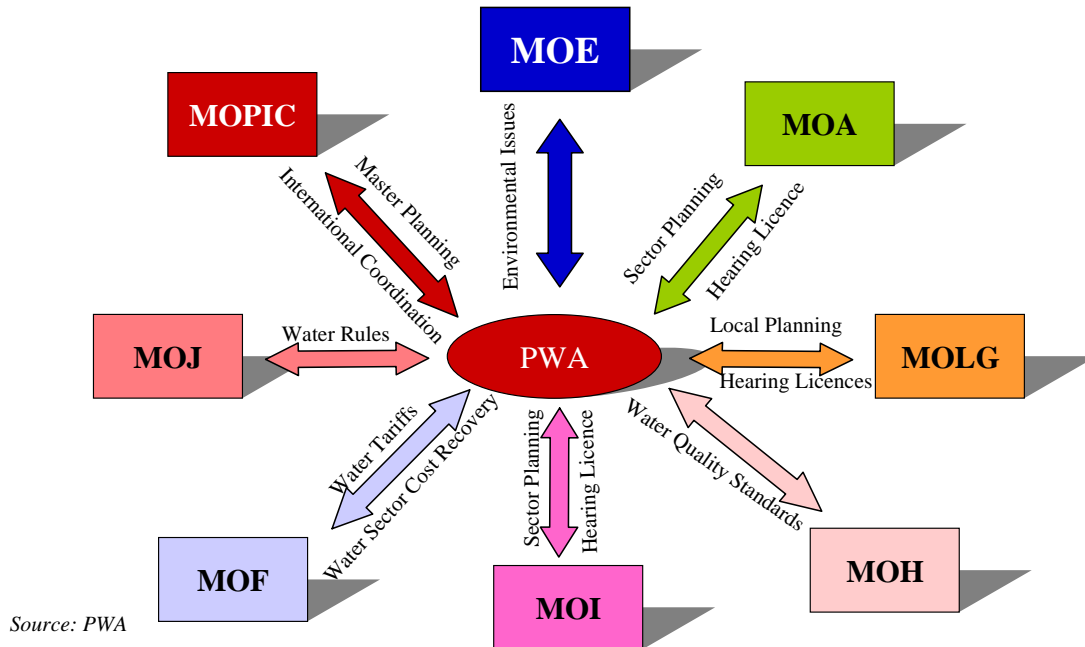
PWA should also approach relevant sector ministries (Agriculture and Industry) to seek data exchange and planning co-operation. This could be combined with the arrangement of the Round- table Seminar envisaged under key point C. of this report.

## **3.3 STRENGTHENING OF PWA'S CO-OPERATION WITH PLANNING AND SECTOR MINISTRIES**

### **3.3.1 Main Lines of Co-operation**

Implementation of all activities in conjunction with the National Water and Wastewater Master Plan will require full co-operation between the PWA and a number of ministries, utilities, local authorities, NGOs and donors. The National Water Council (NWC) is the superior water sector authority responsible for overarching water policy and strategic matters. It is responsible for the establishment of the National Water Policy and the approval of related legal measures taken by PWA in the implementation of the Water Law. Considering the fundamental importance of the ongoing master planning process as an instrument for directing water sector investments, it is clear that PWA will refer this issue to the NWC at a pertinent Council Meeting.

The key interactions between PWA and the most relevant ministries for water sector interventions have been illustrated in the figure below. As can be seen the co-operation will include both ministries with sectoral responsibilities (MOA, MOH, MOI) as well as ministries of a cross-sectoral nature (MOF, MOJ, MOPIC, MOLG and MOE)



**Figure 3. Lines of Co-operation between PWA and Relevant Ministries**

### 3.3.2 MOPIC and MOLG

The Directorate for Urban and Rural Planning (DURP) within the Ministry of Planning and International Co-operation (MOPIC) is responsible for the development of general policies, development programs, norms, standards, and guidelines as related to physical planning at the national and regional levels. The Ministry of Local Government (MOLG) is in charge of local planning, organising the operator level, and participation in hearings regarding licensing. The Environmental Planning Directorate (EPD) within MOPIC is in charge of the environmental components of development planning.

Water and wastewater master plans and investment programs are important components of the multi disciplinary national plans, and it is required to link the planning procedures for the water sector closer to the national and local development planning. Among the many manners and levels of co-operation between PWA and MOPIC/MOLG the following aspects are related to water master plans:

- ❑ Placement of the Water Master Plan in the context of the national planning framework;
- ❑ Co-ordination of financial assistance to the water sector within the framework of the national development plans;
- ❑ Monitoring of existing projects and programmes and planning of new projects and investments;
- ❑ Provision of compatible systems for planning data and information to be used in further national, regional and local planning (elaborated under point B. of this mission report);

### **3.3.3 Ministry of Agriculture**

The agriculture sector is a major user of freshwater within the Palestinian Territory, and therefore the development of this sector will have important bearings on water sector master planning. Cheap subsidised water used for irrigation is leading to excessive and wasteful use by the farmers, and the value of the produce cannot justify payment of real cost of water. It is clear that allocation of freshwater for irrigation must be vigorously controlled in the future and a political trade-off between water for drinking and for other purposes, such as irrigation. Substitution of freshwater with reclaimed wastewater is one opportunity that has to be explored. The Ministry of Agriculture should take the responsibility for the implementation of the agriculture-related parts of the Policy and Strategy for Water Management in Palestine. MOA will also participate in the water licensing hearing for agriculture sector projects. According to the Palestinian Development Plan (PDP), the Ministry of Agriculture (MOA) along with the MOPIC has identified major strategies to be followed by the agriculture sector through 1997-2010 period. It is essential to strengthen the planning co-ordination links between MOA and PWA.

### **3.3.4 Ministry of Industry (MOI)**

The industrial sector in any economy is regarded as one of the major engines to create employment, capital formation and accumulation and generation of welfare. The Palestinian industry under the occupation has been subjected to a set of measures, which hindered its development and growth and limited its ability to perform its role in the overall economic development. Plans for development of industrial sites are underway, and it is required to evaluate the plans in terms of future water demands and potential impacts on the water resources. In this connection, MOI will be dealing with the issues of effluent standards and re-use of industrial wastewater. The ministry also has an important role to play in sector planning and public inquiries about water licences.

### **3.3.5 Ministry of Justice (MOJ)**

The legal system inherited by the PNA is a maze of legal rules and regulations, making the planning system complicated and inefficient in a normal civil situation. Moreover, all legislation and military orders previous to the establishment of the PNA remain in force unless otherwise revoked by the Joint Israeli-Palestinian legal committee, thus giving the Israelis a veto over revocations of military orders. Moreover, any new legislation to be promoted by the PNA must be approved by the Israelis. New initiatives of relevance to water planning is the proposal for a Palestinian Planning and Building Act, being prepared by MOLG, MOPIC and Ministry of Justice and the new Water Rules under the auspices of PWA.

### **3.3.6 Ministry of Health**

Ministry of Health (MOH) is in charge of public health aspects and water quality standards. Among specific tasks can be mentioned chemical and biological drinking water analysis, identifying locations where effluent from industrial, domestic or other sources of pollution may represent health risks to the local communities.

### **3.3.7 Ministry of Finance**

The Ministry of Finance (MOF) is responsible for aspects related to the national economy, cost recovery, and tariff issues.

### **3.3.8 Ministry of Environment**

The Ministry of Environment (MOE) is a new ministry with a highly relevant function when it comes to water sector planning and development. Its overall objective include the responsibility for formulating policies, strategies, and environmental planning criteria to ensure ecologically and environmentally sound management of natural resources. MOE will also be in charge of monitoring

and control of water pollution and degradation. In performing this task, the ministry will be conducting and supporting research activities of institutions involved in monitoring and control of pollution and its environmental effects. MOE will also be responsible for environmental impact assessment procedures in connection with new water development projects.

### **3.3.9 The Need for Concerted efforts.**

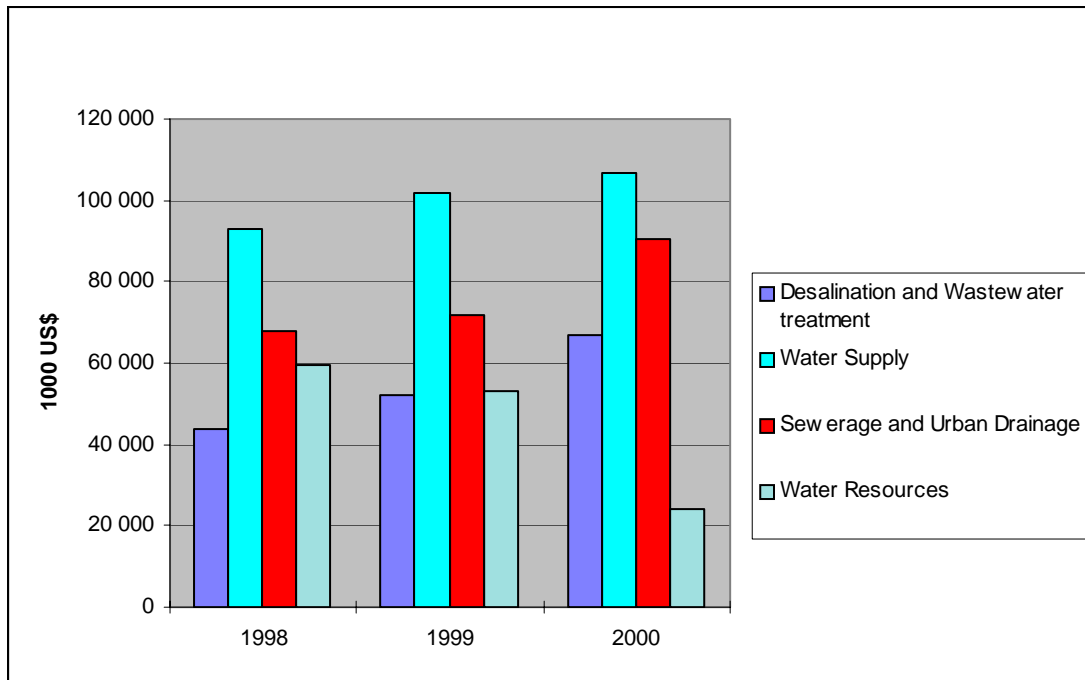
The creation of an enabling environment for efficient water master planning within Palestine is a key element for future success within the water sector. It is important that the domestic expertise and managerial capacity join forces to develop a common understanding of the objectives and means to reach the water sector, and the national development goals. This will require enhanced co-operation between ministries, institutions and individuals affected by or dealing with water resources planning and development. More specifically, the master plan process will opt for enhanced transparency and productive co-operation between PWA and other key authorities, institutions and stakeholders involved in water management and development in Palestine. Furthermore, the water and wastewater master plan should be linked to the overall national planning framework

### **3.3.10 Inter-ministerial Round Table Meeting & Planning Forum**

As a first step, it is suggested that PWA takes the initiative to arrange a Round-table Meeting with the objective to ensure that water issues are properly taken care of in planning activities carried out in other ministries and authorities (Figure 3). The mission noted with satisfaction that PWA has already initiated a consultative and participatory process to involve other authorities and stakeholders in the ongoing development of a "Strategy for Water Management in Palestine". A series of meetings and workshops attended by key ministries, water sector specialists, utilities, donors, and NGOs have already been held, and more consultations have been scheduled. The envisaged Round-table Meeting would benefit from these collaborative actions. This suggestion will be further detailed in the Recommendation chapter of this report.

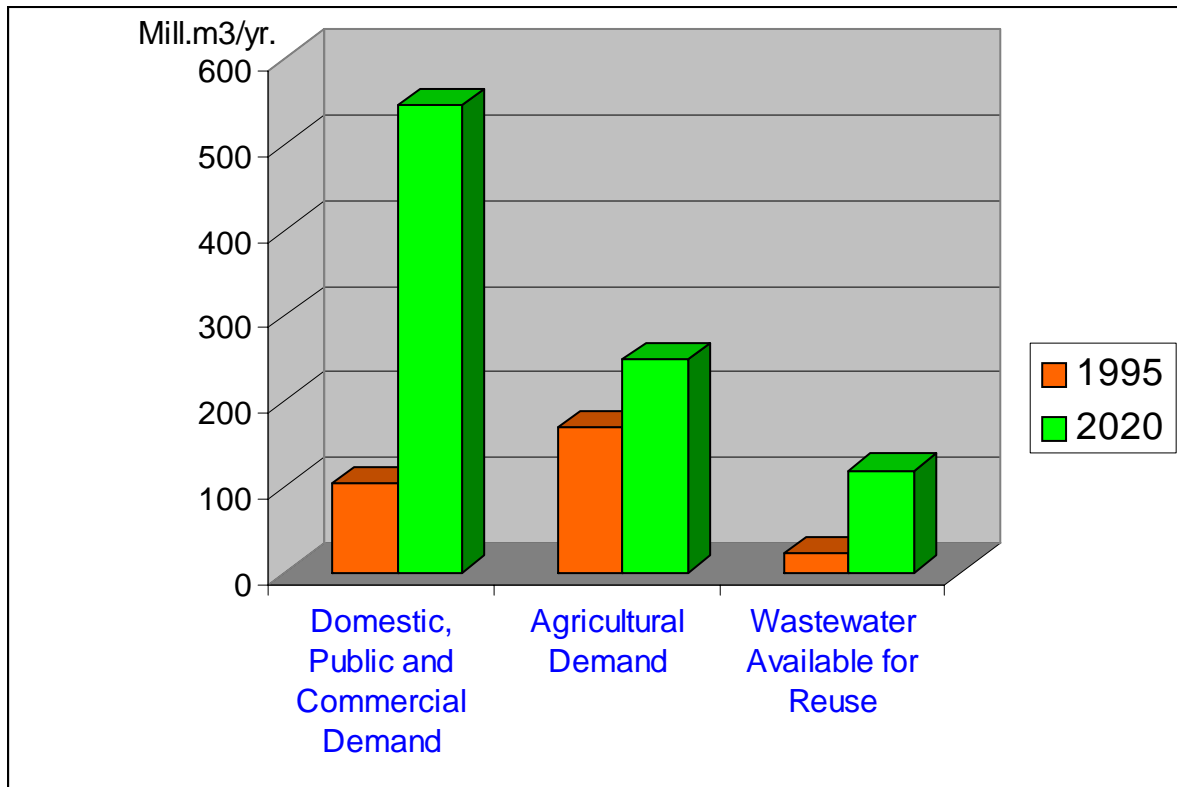
## **3.4 INTEGRATION OF THE WASTEWATER SUB-SECTOR IN WATER MASTER PLANNING**

According to the Water Resources Comprehensive Framework (CDM-PWA 1997) reclaimed wastewater constitutes an integral part of the available water resources in the West Bank and Gaza Strip as recognised by the Policy Elements of the PWA. Consequently, it is essential that the required reclamation and reuse systems be designed and constructed. The wastewater systems of Palestine are at their preliminary stages of development. The mission noted that wastewater reclamation and reuse is becoming a high priority issue in Palestine, as can be seen from the level of proposed investments wastewater systems in the Palestinian Development Plan for 1998-2000 (the red column in Figure 4). However, against this backdrop it is necessary to focus on the real wastewater investment demands in a longer prospective, and make investment predictions a part of the strategic targets of the wastewater sub-sector.



**Figure 4. Planned Water Sector Investments 1998-2000**

Investments in wastewater collection and treatment facilities has several advantages, not only as a remedy for water pollution control, and a better health environment, but reclaimed wastewater could also constitute an integral part of “available” water resources. The Comprehensive Planning Framework Report (Task 4 of CDM) presents estimates of reclaimed raw wastewater and treated wastewater that may be available for reuse in the various districts of the West Bank and Gaza Strip for the years 2020 and 2040. The gross amounts of wastewater that may be available for reuse in comparison to anticipated water demands are summarised in Figure 5. The quantities of wastewater which will be reclaimed and treated is approximately 30 percent of the total municipal, public and commercial water supply (not shown in the figure), and the quantities considered available for reuse is in the order of 22 percent of the total non-agricultural water demand.



**Figure 5. Quantities of Wastewater Available for Reuse Compared to Demands**

The figure gives the order of magnitude of the potential quantities of wastewater that may be used to substitute the consumption of fresh water for agricultural and for other purposes that can manage with water of lower quality.

It should be noticed that there are many issues to be addressed to find an optimum wastewater strategy. Reclamation and reuse of wastewater in Palestine has been dealt with in various studies, such as:

1. "Wastewater Treatment and Reuse Strategy" (PECDAR 1994)
2. "District Water Master Plan Ramallah" (FINNIDA 1996);
3. "Water Conservation in Palestine" (World Bank);
4. "Water Resources Comprehensive Planning Framework" (CDM-PWA 1997)

The consultant for the upcoming Water Sector Strategic Planning Study states that the CDM-PWA Comprehensive Planning Framework will be used as a guide for their study. Therefore, PWA should take the initiative to revise the wastewater component of the CDM-PWA framework document in formulating its own wastewater sub-sector strategy official strategy to be endorsed by the PA. This could take place in consultation with other related authorities, interest groups, and funding agencies followed by an official approval. Some important issues to be examined in this connection would be to:

- ❑ Establish the status of treated wastewater in the context of the international water right negotiations;
- ❑ Revise the estimates of quantities of raw and reclaimed (available) wastewater quantities in the various districts of the West bank and Gaza Strip;
- ❑ Explore opportunities and constraints concerning possibilities for joint Palestinian – Israeli sewerage and wastewater treatment works;



- ❑ Assess the marginal costs of facilitating wastewater reuse, taking into consideration the extra costs of collection, treatment, transmission and redistribution versus the costs by using optional sources, such as harvested flood water and wadis runoff, desalination, and if possible extended use of freshwater;
- ❑ Examine the upcoming agriculture sector strategy in terms of water resource implications including:
  - water demand, seasonal demand variations,
  - effluent quality criteria,
  - anticipated water price and farmers ability to pay for it;
  - willingness of farmers regarding the substitution of freshwater for irrigation with treated wastewater;
  - cropping patterns and market response to treated wastewater irrigation crops;
  - cultural aspects related to reuse of wastewater;
  - PWA and Ministry of Agriculture to develop jointly agreed planning principles;
- ❑ Make a comparative evaluation (water balance, technical and economic factors) of alternative treatment levels and uses of reclaimed wastewater like irrigation, industrial purposes, dual supply systems for toilet flushing, groundwater recharge, and discharge to wadis or surface waters;
- ❑ Examine possibilities for alternative cropping pattern and optimised use of treated wastewater for agricultural production, provided wastewater reuse for irrigation will be the predominant reuse scheme.
- ❑ Assess challenges and opportunities for integration of water and sewerage services in joint utilities, local and regional (example from the Southern Utility).

The proposed follow-up actions are summarised under “Summary and Recommendations”.

### **3.5 OUTLINE FRAMEWORK FOR A MASTER PLAN**

This chapter presents an outline structure of a possible master plan for the water and wastewater sector. The proposed outline framework will be subject to further refining in the coming phases of WMP co-operation.

#### **3.5.1 Goals and Objectives of the National Water Master Plan (NWMP)**

In principle, the NWMP is the water sector part of a multi-disciplinary, comprehensive planning instrument linked to capital and social improvement programmes aimed at promoting national political priorities for physical and socio-economic development in accordance with national objectives. The NWMP has a national/regional as well as a local orientation. At the national level, the NWMP will act as a policy instrument to promote national objectives and interests through actions related to local conditions, and at municipality level, it will serve as a management tool for the authorities in achieving the required development of the local society.

The more specific purposes of the NWMP process are to:

- ❑ provide a sound justification of Palestine's future water needs to be used in the water right negotiations between the PNA and the Israeli government;
- ❑ establish guidelines, tools, and proposals to prioritise and finance future investment programs and projects;
- ❑ provide water sector input to regional plans for the West Bank and the Gaza Strip;
- ❑ Strengthen the basis of understanding in terms of data, human resources, and inter-ministerial interaction needed to meet the future planning challenges.
- ❑ give guidance to local water sector planning authorities.

#### **3.5.2 Planning Assumptions, Criteria and Standards**

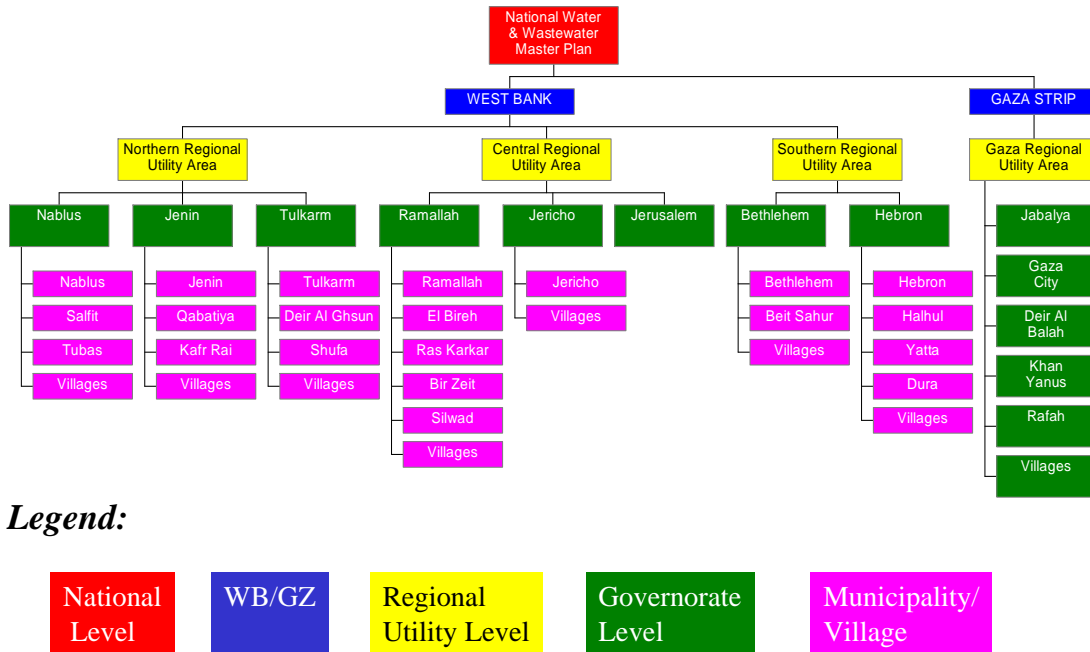
Given the number of political, technical and institutional uncertainties facing to-days situation, the proposed NWMP should be regarded as a first step in an iterative national planning process, which should be subject to regular revision and updating as the planning assumptions and conditions are changing. Hence, the immediate purpose of the NWMP would be to identifying the main planning issues within the water sector in a short to medium term perspective, and propose a problem-oriented and performance based plan, in order to accommodate the implementation of current proposals and projects.

#### **3.5.3 Planning Framework**

The various levels of the planning hierarchy, as understood by the mission, are presented in Figure 6. It is necessary to discuss and agree upon a framework as part of the master planning process.

## Palestine: Water & Wastewater Master Plan

### Geographical Framework



**Figure 6. The Geographical Planning Hierarchy in Palestine**

#### 3.5.4 Suggested Characteristics of the Master Plan

There are numerous types of water master plans depending on the situation in each country i.e. what are the key water resources and water use issues, planning traditions, institutional capacity, etc. One possibility is to develop rigid multi-volume master plans providing large amounts of facts, data, and detailed plans, in contrast to a simple master plan that would provide the necessary policy and planning framework to facilitate and guide sector development, without presenting detailed investment plans. Since water master planning often take place under rapidly changing conditions, there is a trend towards making simpler and more flexible master plans. The below features of a Palestinian Water Master Plan suggest a flexible approach in the view of the dynamic investment situation and rapidly increasing planning and co-ordination capacity of the country. The master plan should have a horizon up to 2020, but have the necessary flexibility to adapt to changing conditions. Moreover, it is proposed that the national master plan document should:

- ❑ be specific and action oriented;
- ❑ in a descriptive way, provide overall guidance to planning, co-ordination, funding and implementation of water and wastewater infrastructure;
- ❑ be designed as a flexible planning instrument subject to periodic corrections as the water and wastewater sector develops;
- ❑ avoid repetition at length of well known facts and background information;
- ❑ be presented in a brief document, and detailed descriptions of tools. Comprehensive background information statistical material etc. should be referred to or just presented in annex volumes.

The outline structure in Table 4 suggests the main headings and some indications of the contents of the respective chapters.

**Table 4. National Water and Wastewater Master Plan – Proposed Structure**

<p><b>1. National Objectives, Administrative, Legal and Policy Framework</b> Water master planning in relation to sectoral and overall national and regional development plans, sectors: public water, sanitation, health, agriculture, industry, and environment</p> <p><b>2. The Objectives and Goals of Water Master Planning</b> Background, Definitions, NWMP as an instrument to achieve the determined water sector development goals at local, regional and national levels.</p> <p><b>3. Planning Assumptions, Criteria, Guidelines and Standards</b> Time, geographical planning structures, population growth and forecasts, water demand projections, water in the context of environmental protection</p> <p><b>4. Master Planning Tools</b> Water information databases and analytical tools, such as socio-economic data, water resources, consumption, wastewater, infrastructure inventories, licensing, project information (existing and proposed), monitoring, costs, budgets, disbursements, funding agencies, tools for identifying gaps, overlaps and analysis of investment needs, and targeted information products.</p> <p><b>5. The Water Master Planning Process</b> Planning elements, organisation PWA, inter-ministerial co-operation, communication, hearing and public participation, approval procedures, updating process, communication and information.</p>
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### 3.5.5 Outline Plan of Action

#### Objectives

The suggested objectives of the action plan would be to:

- (i) rapidly improve the efficiency of PWA's master planning services in terms of strengthening its internal capacity and establishment of required information tools;
- (ii) define a priority capital investment programme based on identified gaps and needs;
- (iii) promote the necessary co-operation with other authorities and stakeholders;
- (iv) finalise the prepare a national water and wastewater master plan targeted at the year 2020 to remedy the current shortages and to meet the future needs in the sector; and
- (v) facilitate the hearing process and political endorsement of the NWMP.

#### The Water Master Planning Process

The preparation and approval of the water master plan involve several tasks, many of them partially overlapping. It is therefore suggested to structure the tasks of the master plan process by dividing them in three blocks according to their nature, as indicated in the Overall Activity Schedule (Table 5). Block 1 includes projects and studies closely related to the master planning process, Block 2 is associated

with the preparation of the master plan, whereas Block 3 is related to the process of public hearing and formal approval. The activities are proposed to partly take place in parallel.

**Table 5. The National Water Master Plan Process - Overall Activity Schedule**

(C: Completed)

	1998	1999	2000-2003
<b>Block 1: Basic Studies and TA Activities</b>			
❖ Initial Water Resources Assessment	*****C		
❖ Master Planning Framework Studies	**C		
❖ Water Tariff Study	*****		
❖ New Water Law	*****		
❖ Water Sector Organisational Assessment	*****		
❖ Wastewater Sub-sector Strategy	*****	****	
❖ Master Planning Information Tools	*****	*****	
❖ World Bank/UNDP/DANIDA Water Sector Strategic Planning Study	*****	*****	
❖ Norwegian Master Planning Co-operation missions	** **	** **	
<b>Block 2: Master Planning Process</b>			
❖ Master Planning Support Missions	** **	**	
❖ Resource Mobilisation - PWA	****		
❖ Internal Workshop - PWA		*	
❖ Inter-ministerial Round Table Meeting & Planning Forum		* * * *	
❖ National Water Council Meeting		*	
❖ Wastewater Sub-sector Strategy		*****	
❖ Draft Water and Wastewater Master Plan		*****	
❖ Final National Water Master Plan			****
<b>Block 3: Hearing and Approval</b>			
❖ Procedures for Hearing and Public Participation and Approval		* *****	
❖ Hearing and Approval Process			*****
❖ Donor Conferences	* *	* *	*
<b>Block 4: Periodic Updating</b>			Every 3-5 years

#### Block 1: Basic Studies and Activities

Initial Water Resources Assessment. Various reports present aggregated water resources information and analysis of the Palestinian water resource situation, such as the Water Resources Program (PWA-USAID), the Regional Water Study (PWA-GTZ) and others. In a transition period, until the water rights issue with Israel has been resolved, the master planning process will be based on commonly perceived availability of water resources according to Palestinian Authorities and water specialists. Ongoing and completed groundwater studies led by PWA, provide updated assessments of the Eastern, Western and North-Eastern Aquifers in the West Bank, and the Gaza water resources.

Master Planning Framework Studies. Completed (CDM).

Water Tariff Study. In progress (Norconsult International).

New Water Law. In progress.

Water Sector Organisational Assessment. Proposal prepared and followed up by PWA.

Wastewater Sub-sector Strategy. Mentioned in chapter 3.4.

Master Planning Information Tool. A major issue in this mission report.

### Block 2: Master Planning Process

Master Planning Support Missions. These missions will be undertaken upon requests from PWA and will be focused on identified issues.

Internal Workshop – PWA. The purpose of this proposed workshop would be to develop a common understanding of PWA's responsibilities and necessary resource mobilisation to fulfil its objectives in this field. This workshop should be organised by PWA as a joint action between the Water Sector Strategic Planning Study, and the National Water Master Planning support for maximum synergies between these two closely related initiatives. The objective and scope of the NWMP workshop should take into account the issues raised in the TOR for the strategic study and the recommendations to activate PWA's master planning function raised in section 0 of this mission report,

Draft Master Plan. If PWA decides to prepare a master plan document, the first step will be a draft document. The master plan structure suggested in this report will be subject to revisions during the course of the planning process. It is envisaged that some of the following elements ought to be addressed as the planning activities evolve:

- (i) placement of the Water Master Plan in the context of the national planning framework;
- (ii) setting of objectives and goals;
- (iii) identification and prioritisation of key issues;
- (iv) definition of planning approach;
- (v) establishment of planning criteria and assumptions;
- (vi) identification of information demand and required tools;
- (vii) gathering of data and information;
- (viii) analysis of existing situation; and
- (ix) forecasting and evaluation of planning scenarios.

### Block 3: Hearing and Approval

Procedures for Hearing, Public Participation and Approval. The applicable procedures for public hearing will have to follow these laid down by the planning authorities. It is suggested that these procedures should be a theme for the proposed Round-table meeting.

Donor Conferences. During the first years after PNA had assumed self-rule in Gaza and West Bank, donor funded water development projects were channelled through different Palestinian authorities. Donors, without real influence often decided project objectives and scope. This lack of overall prioritisation and co-ordination resulted in a fragmented project situation on the water sector. PWA has, however, gradually developed its position as the major water authority in Palestine, and an increasing number of donors channel their support through the PWA. To secure financing of future investment programs identified under the National Water master Plan it is important to keep the existing and potential donors regularly informed about the progress of this master plan. The proposed donor conferences would represent important opportunities in attracting donor attention to the water sector. It is suggested that the first donor conference should be held in conjunction with the launching of the WMP process.

Block 4: Periodic Updating

Since the national water and wastewater master planning process is taking place under rapidly changing political and socio-economic conditions, the plan should be a dynamic tool subject to periodic updating (3-5 years) in response to the actual water sector development and changing basis for planning.

## **4. APPENDICES**



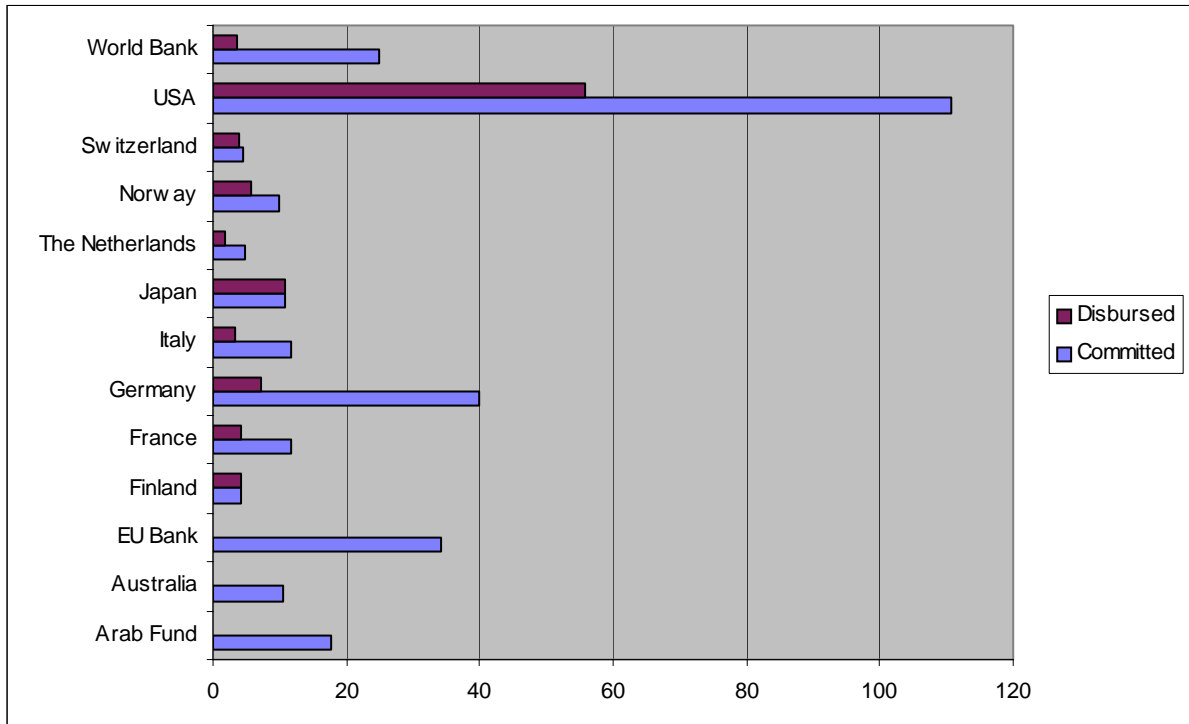
## Appendix A. Briefs about Projects Relevant to Water Sector Master Planning

<b>Project</b>	<b>Status</b>	<b>Master planning issues in brief</b>
West Bank Water and Sanitation Project. PWA.	Received annex 1&2 of the report.	The two annexes present current and projected (2020) water production and consumption by user categories in different administrative areas of Palestine. The projections should be carefully examined on their suitability to serve as a basis for the National Water Master Plan
Water Sector Strategic Planning Study. PECDAR. World Bank, DANIDA.	Contract for services signed April 1998. The project report will be submitted after 1 year	The study will prepare a medium-term plan (10 years) to expand the essential water and wastewater services to all Palestinians, including a 3-5 years sector investment program to meet high priority needs. Will also longer-term projections (20 years). PWA will manage the project with the assistance of on seconded international expert. Strong linkages to the water sector master plan framework.
Southern Water Utility Development Project. PWA. World Bank, EIB and various donors	Ongoing	Appears to be a good example of concerted efforts between PWA and international funding agencies in planning and execution of large infrastructure investment programs. The wastewater component to be stronger emphasised.
Master Plan for Water Distribution in the Bethlehem Area. French Govt.	Consultancy services to be finished by September 1998	Limited to water supply within the city. The MP is complementary to the Southern Water Utility project (World Bank/EIB/USAID). Co-ordination is established, headed by PWA.
Master Plan for Hebron Water Supply and Distribution. UNDP	Interim Report June 1998. Final report due by the end of September 1998	A staged investment plan for water supply up to 2020. The plan will be complementary to the Southern Utility project. PWA plays a key role in giving the general directions, reviewing reports and promoting co-ordination with related projects in the area funded by various donors.
Comprehensive Planning Framework for Palestinian Water Resources Development Task 4, USAID.	Final Report submitted July 1997	Does not include wastewater. Provides a general master-planning framework with indicative water resources capacities and future sector demands. Planning assumptions to be updated against recent development within the sector.
Water Supply Facility Master Plan for the Jenin Service Area. Task 34, USAID	Final Report February 1997 A village water supply component under implementation	An example of a phased comprehensive investment plan (2000-2010-2020) for water utilities. No wastewater component. Accumulated investment need of US\$165 mill. Planning assumptions should be updated as part of the national master plan initiative.

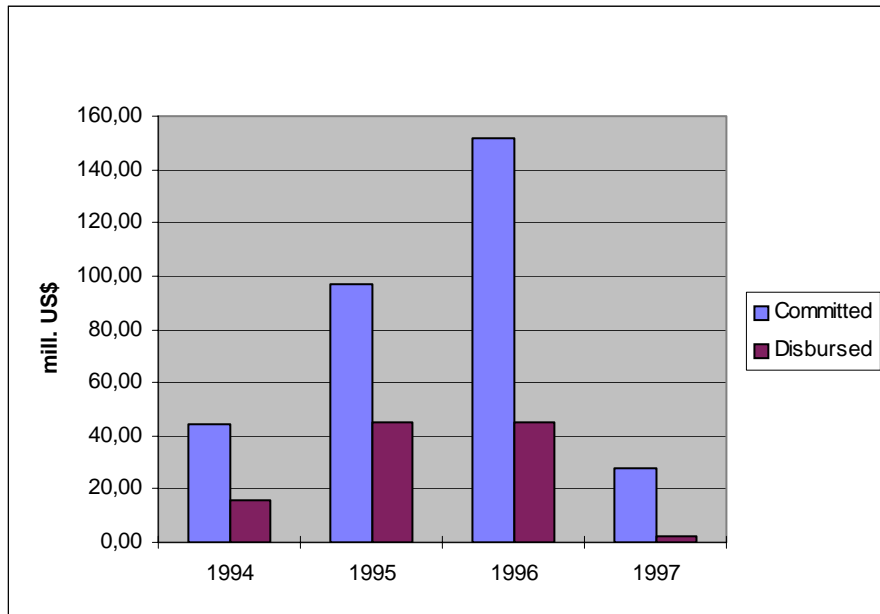
<p>Water Tariff Study, Palestine - Norconsult, May 1998</p>	<p>Working Document submitted.</p>	<p>Some six PC based tools for performance assessment, tariff design, asset management, irrigation charges, crop evaluation and accounting have been transferred. Provides some indicative water and wastewater costs and matching tariffs, but no specific tariff structures. A number of points regarding data reliability was raised. To be examined concerning water master planning implications and necessary actions.</p>
<p>Regional Planning for West Bank Governorates - Water and Wastewater. MOPIC GTZ</p>	<p>Inception report May 1998. Final report expected by the end of November 98</p>	<p>The objective of the study is relevant for water master plan. Substantial amount of data and information requested by the consultant from PWA. The project should have been designed jointly between PWA and MOPIC to ensure the study would benefit PWA's master plan preparations.</p>
<p>Middle East Regional Study on Water Supply and Demand. GTZ</p>	<p>Concluding report February 1998</p>	<p>Addressing a regional approach towards water resources, water demand management, development of additional water resources, and re-use of treated wastewater.</p>



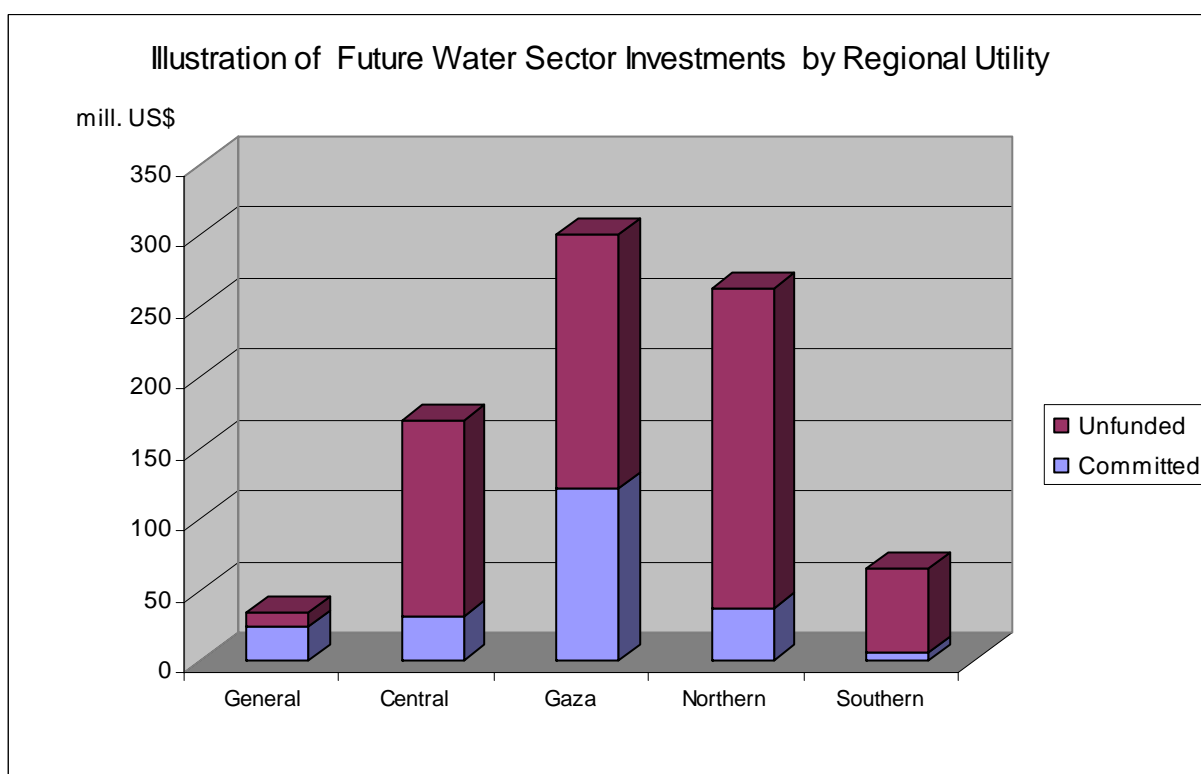
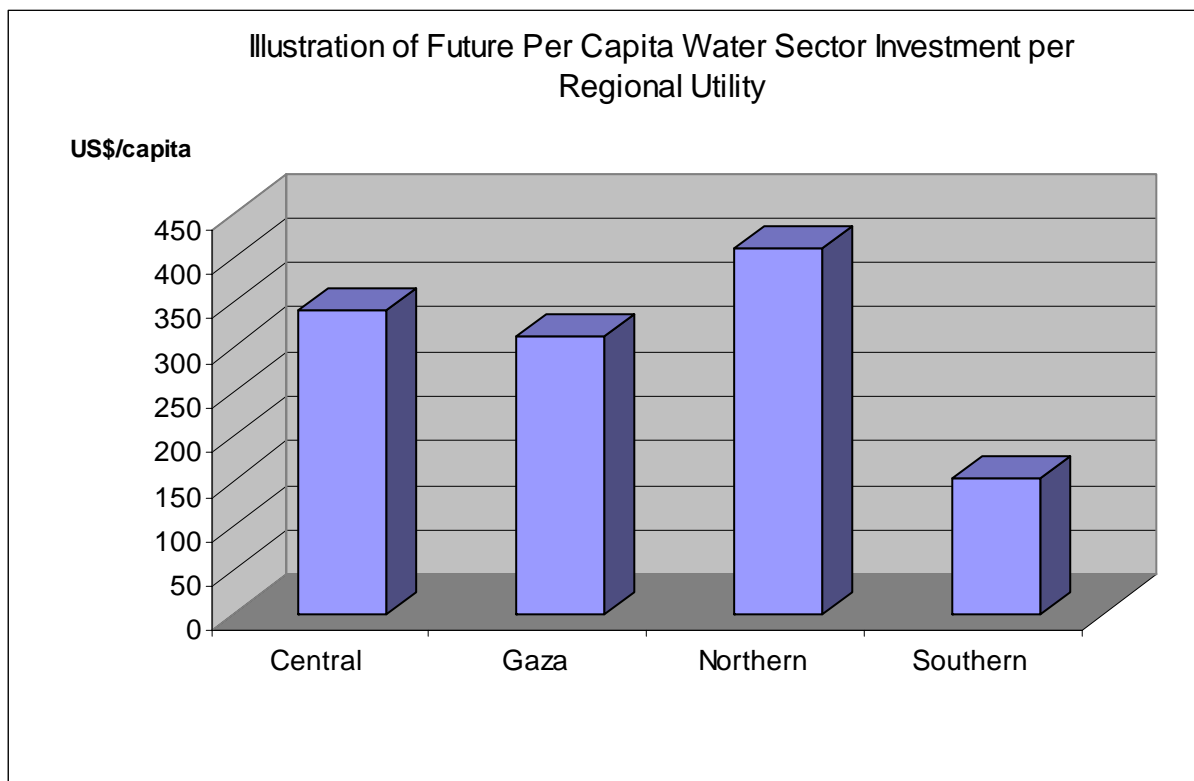
## Appendix C. Example 1 of Donor Funding Statistics from MOPIC's Project Databa



## Appendix D. Example 2 of Donor Funding Statistics from MOPIC's Project Database

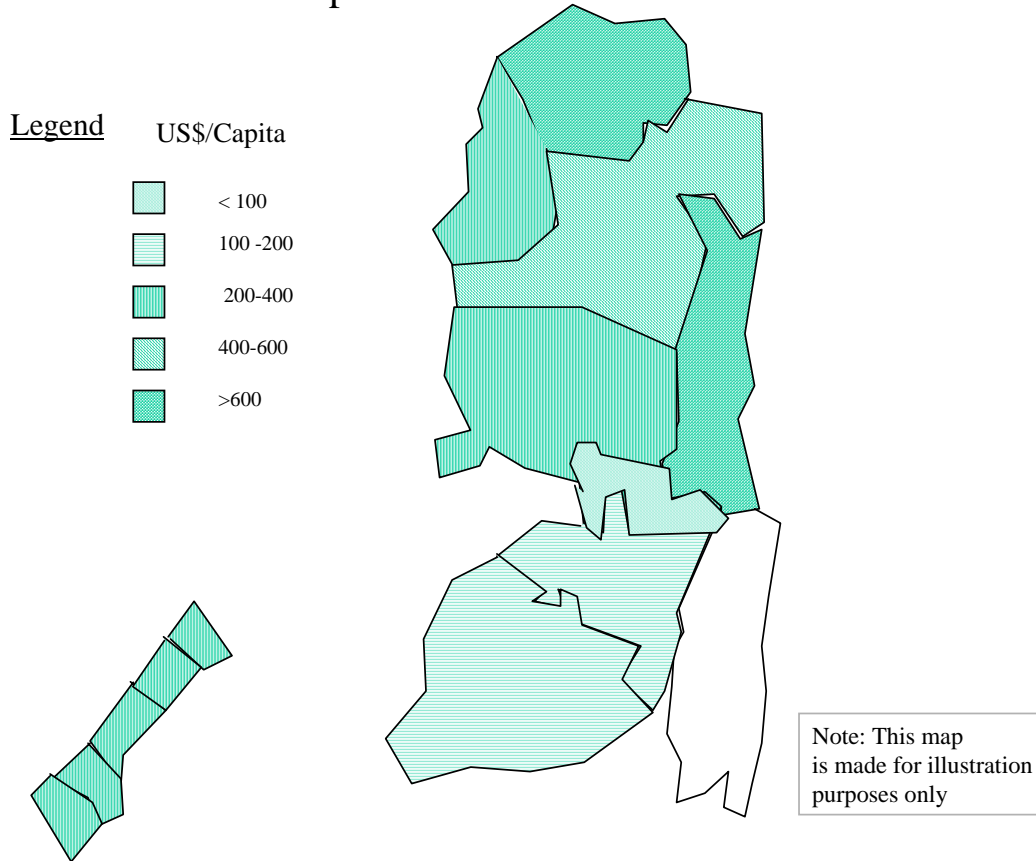


## Appendix E. Examples of Future Investment Information



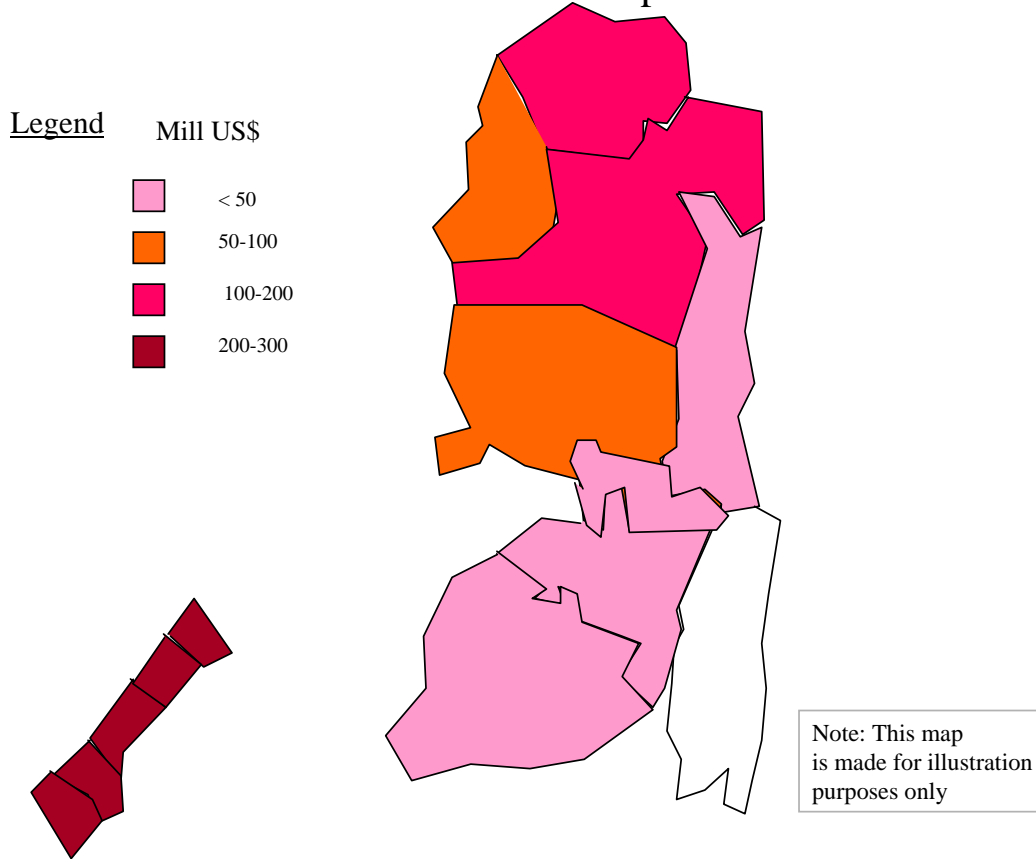
## Appendix F. Example of Future per Capita Water Sector Investments at Governorate Level

Illustration of Per Capita Water Sector Investment



## Appendix G. Example of Future Water Sector Investments at Governorate Level

Illustration of Water Sector Investment per Governorate





## Appendix H. Project Gaps and Overlaps (Update of the 1997 Mission Report)

### H.1 Overview of Potential Gaps - General

(Gaps are shaded)

Issue	Funding Agency
<b><i>Overall Studies and Support</i></b>	
Regional Water Resources	Germany, USA
Palestine-Israel Water Resources	USA
Demand and Supply Study phase III	Germany
Water Sector Review	World Bank
Legislative, Water Law & Regulation	Norway
Water Sector Strategic Study (and investment priorities)	World B. UNDP, Denmark
Comprehensive Water Resources Master Plan WB & GS	USA
Interim Water Tariff Structure	Norway, World Bank
Comprehensive Sewage/Sanitation Strategy WB & GS	
Donor Co-ordination	USA, Germany, World Bank
Hydrometry	USA, The Netherlands
<b><i>Institutional Strengthening PWA:</i></b>	
• Adm. Budgeting and accounting	Norway
• Institutional development, TA and training	Norway, USA, UNDP,
• Project Monitoring and Auditing Support	Norway
• Water Licensing Systems and Procedures	Norway
• Water Quality Laboratories	Noeway, USA, Canada
• Water Data Bank and GIS based information systems	Norway, USA
• GIS based Project Information services	USA, World Bank
• CADD-based design drawings	USA
• Global Positioning System	USA
• Manuals & Guidelines Water Supply and Sewerage	USA, Norway
• Hydraulic and WS&S cost analysis	USA
<b><i>Support to other Water and Sanitation related Institutions:</i></b>	
West Bank Water Department Support	Norway, USA
Support to Joint Water Committee	Norway
Support to National Water Council	
<b><i>Institutional Strengthening MOPIC:</i></b>	
• Cap. Building and Institutional Development	Norway, The Netherlands Dutch
• GIS Based Information System	Norway
• Environmental Action Plans	The Netherlands
• Water Pollution control Action Plan	The Netherlands
• Environmental assessment	The Netherlands

**H.2 Overview of Potential Gaps - West Bank**

(Gaps are shaded, Green (dark) areas are planned future investments 1998-2000)

**H.2a) Studies and Technical Assistance**

Issue	District							
	Jenin	Tulkarm	Nablu	Ramallah	Jericho	Jerusalem	Bethlehem	Hebron
TA, Institutional Support, Training, Utility Dev. O&M	USAID		GTZ USAID	GTZ USAID			USAID GTZ Italy	USAID France GTZ Italy
Monitoring and Modelling Aquifers & WRM	USAID*		USAID*	USAID*	USAID	USAID	USAID*	USAID*
Beneficiaries Assessment & Public Awareness								
Water Supply Master Plan	USAID				USAID		USAID	USAID UNDP
Water Source/Prod. Feasibility, Design Bidding Documents	USAID Netherlands		GTZ USAID	GTZ UDAID	USAID		USAID	USAID KFW
Water Distribution. Feasibility, Design Bidding Documents	USAID Netherlands	Japan	USAID GTZ	USAID	USAID	Netherlands	USAID Netherlands France	USAID France UNDP GTZ Italy
Wastewater Master Plans			GTZ	FINNIDA UNDP				FINNIDA
Sewerage & Drainage Feasib. Design, Bid. Docs.		Japan		USAID			GTZ Italy	FINNIDA GTZ Italy
Wastew. Treatm. & Reuse. Feasibility Design., Bid. Docs.				GTZ			GTZ	
Water and Wastewater laboratory services								
Wastewater Utility Development O&M			GTZ					

**H.2b) Construction**

Issue	District							
	Jenin	Tulkarm	Nablu	Ramallah	Jericho	Jerusalem	Bethlehem	Hebron
Water Source Development and Production	USAID	Japan	GTZ USAID	GTZ USAID	USAID		USAID	USAID KFW EU
Water Distribution Systems Development	USAID Netherlands	Japan	GTZ USAID	USAID GTZ	USAID Italy	Netherlands	USAID France World B.	USAID GTZ Italy UNDP, World B. France
Wastewater and Drainage Systems							GTZ Italy	FINNIDA GTZ Italy, GB
Wastewater Treatment and Re-use Systems			GTZ	GTZ				

\* limited to one or two areas

\*\* Eastern Aquifer

**H.3 Overview of Potential Gaps - Gaza Strip**

(Gaps are shaded, Green (dark) areas are planned future investments 1998-2000)

**H.3a) Studies and Technical Assistance**

Issue	Area					
	Rafah	Khannyounis + Eastern	Middle Area	Northern Area	Gaza City	General in all areas
TA, Institutional Support, Training, Utility Development O&M						World Bank EU France USAID
Monitoring and Modelling Aquifers and WRM						USAID UNDP
Beneficiaries Assessment & Public Awareness						UNDP
Water Supply Master Plan					France UNDP	France
Water Source Development Feasibility, Design, Bidding Documents	World Bank	World Bank Italy Japan France UNDP	World Bank Switzerland Spain	SIDA	WB CIDA UNDP Netherl. France	
Water Distribution. Feasibility, Design Bidding Documents	USAID World Bank UNDP USA NORAD	EU France World Bank Japan, Italy	World Bank Switzerland	SIDA	France CIDA Japan	France DANIDA World Bank
Wastewater Master Plans						Japan France
Sewerage & Drainage Feasibility Design, Bidding Documents	EU	Japan World Bank	UNRWA World Bank	Japan SIDA	Japan USAID	Japan
Wastewater Treatment & Re-use, Feasibility Study, Design., Bidding Documents		Japan		SIDA	SIDA World Bank France	EU JICA SIDA CFD Canada
Water and Wastewater Laboratory Services						World Bank NORAD
Wastewater Utility Development O&M						

**H.3b) Construction**

Issue	Area					
	Rafah	Khannyounis + Eastern	Middle Area	Northern Area	Gaza City	GENERAL
Water Supply: Resource Development Treatment and Production	World Bank France	World Bank Italy Japan France UNDP	World Bank Switzerland Spain		WB CIDA UNDP Dutch France	EU World Bank
Water Supply: Distribution Systems	World Bank UNDP USA NORAD	EC Japan World Bank MIDP France	World Bank Switzerland		France CIDA Japan	World Bank Belgium
Wastewater and Drainage Systems	EU	World Bank Japan	UNRWA World Bank Japan	Japan SIDA	Japan USAID	Japan CFD World B. USAID Canada
Wastewater Treatment Re-use Systems		Japan	Japan	SIDA	SIDA World Bank France	World B. USA Canada
Desalination		Australia				Italy