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Institutional feasibility of alternatives Technologies in West Bank

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Contents

ABBREVIATIONS AND ACRONYMS	3
Executive Summary	7
1. Introduction and Background:	8
2. Institutional arrangement in West Bank	15
2.1. Policy and Planning level	16
2.1.b. Ministry of Agriculture (MoA).....	17
2.1.c. Ministry of Local Government (MoLG).....	18
2.1.d. Ministry of Finance (MoF)	19
2.2. Service Delivery Level	21
2.3. Supporting and Advisory Level.....	21
3.1. Water sector strategy	23
3.2. Challenges Facing the Water Sector.....	27
3.3. Current Water Legislation and Policy Reform	29
3.4. The progress of governance reform.....	35
3.5. Constraints stemming from Palestinian institutional weaknesses	37
Proposed Structure.....	39
4.1. Governance Structure and Major Stakeholder setup	40
4.2. Short term	51
4.3. Medium and Long Term.....	53
4.4. Recommendation for water institutional reform	57

Table of figures

Figure 1.Potentially exploited ground water resources.....	13
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Figure 2.Potentially exploited surface water resources in West Bank.....	14
Figure 3,Proposed institutional Structure (hydro-consult).....	39
Figure 4.main stakeholders in the study area.....	44
Figure 5. Jericho municipality water unit structure	47
Figure 6. extended and proposed water institution structure for the Jericho area	49
Figure 7.overall municipality proposed structure	52
Figure 8.proposed water and drinking unit	54
Figure 9..alternative 2. structure	55

ABBREVIATIONS AND ACRONYMS

CAS	Country Assistance Strategy
CMWU	Coastal Municipal Water Utility
EIA	Environmental Impact Assessment
EQA	Environmental Quality Authority
EC	European Commission
EU	European Union
GC	Gaza City
GEWP	Gaza Emergency Water Project
GOI	Government of Israel
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (German Society for Technical Cooperation)
GVC	Gruppo di Volontariato Civile

IBRD	International Bank for Reconstruction and Development (World Bank)
ICA	Israeli Civil Administration
ICB	International Competitive Bidding
ICRC	International Committee of the Red Cross
IFMIS	Integrated Financial Management Information System
IMF	International Monetary Fund
IWRM	Integrated Water Resources Management
IWSR	Institutional Water Sector Review
JSC	Joint Service Council
JWC	Joint Water Committee
JWU	Jerusalem Water Undertaking
KfW	Kreitanstalt für Wiederaufbau
LGCBP	Local Government Capacity Building Project
MDLF	Municipal Development and Lending Fund
MENA	Middle East and North Africa
MOA	Ministry of Agriculture
MOF	Ministry of Finance
MOH	Ministry of Health
MOJ	Ministry of Justice
MOLG	Ministry of Local Government
NGEST	Northern Gaza Emergency Sewage Treatment Project
NGO	Non-Governmental Organization
NORAD	Norwegian Agency for Development Cooperation
NRW	Non Revenue Water
NWC	National Water Council
OPT	Occupied Palestinian Territory
PA	Palestinian Authority
PCBS	Palestinian Central Bureau of Statistics
PDAHA	Paris Declaration on Aid Harmonisation and Alignment
PHG	Palestinian Hydrology Group
PLO	Palestine Liberation Organization

PMU	Project Management Unit
PNA	Palestinian National Authority
PPP	Private Public Partnership
PWA	Palestinian Water Authority
RFP	Request for Proposal
SIDA	Swedish International Development Agency
TFGWB	Trust Fund for Gaza and West Bank
TOR	Terms of Reference
TRG	Tariff Regulation and Guidelines
UFW	Unaccounted for Water
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNICEF	United Nations International Children's Emergency Fund
UNRWA	United Nations Relief and Works Agency (for Palestinian Refugees in the Near East)
USAID	United States Agency for International Development
VAT	Value Added Tax
WBG	West Bank and Gaza
WBWD	West Bank Water Department
WHO	World Health Organisation
WRM	Water Resources Management
WSSA	Water Supply and Sewerage Authority
WSWG	Water Sector Working Group
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

Executive Summary

The current Institutional architecture of the Palestinian Water and Wastewater Sector in the West Bank as seen consists of four functional levels, namely:

- a) Policy r level
- b) legal and regulatory level
- c) Service providing level

The Policy approval role was allocated to an inter-ministerial entity, namely, the National Water Council (NWC); Policy preparation, Sector Planning and Regulation roles are the responsibility of the Palestinian Water Authority (PWA) through the Ministry of Agriculture and other line Ministries. Service providers are very diverse and scattered (numerous Municipalities, Joint Service Councils, Village Councils and Water User Associations have the responsibility of distributing water supply to the beneficiaries – the domestic, industrial/commercial and agricultural customers).The fragmentation is the major problem for the creation of integrated water resources management strategy The report highlighted the main constrains of the development of the sector and the efforts are being in progress to reform the sector , the Israeli control on water resources is one of the major barrier to create efficient institutions and plans

1. Introduction and Background:

1.1. Context

This report has been prepared under sustainable integrated water resources management project in the lower Jordan (**SMART**). The socioeconomic work package of the project includes the investigation of current and envisaged water institutions in Palestine in general and in the study area in particular,

The Water-Wastewater Institutional report presents the PHG findings, conclusions and recommendations as they relate to the organizations and institutions referenced in the SMART project's original proposal. The report has examined all the key actors within the various levels of the water and wastewater sector framework. In reviewing the sector stakeholders at the policy level, the focus was on their relationship and communication conduits with the PWA. With all remaining actors, the focus has been on their functionality, structure, processes and overall capacity associated with:

- Governance aspects of the entity;
- Operational, Financial and Technical Managerial practices;

- Strategic Plans and Directions;
- Technical Operations;
- Designated beneficiaries; and
- Institutional and Organizational results.

Also the report highlighted the institutional arrangement in the study area Jericho and the proposal for reform and improvement of the current system.

1.2 .Information Sources

The reports prepared by using different sources of data

1. Literature review

A. official reports (official report such as institutional review report prepared by hydro consult 2011), institutional review prepared by FCG (2009), PWA strategy document and PWA reform plan and other report

b. PHG internal and published reports

2. Meetings with stakeholders in particular in the study area

3. Focus groups and consultative sessions were done during the field work

1.3 .Background

Palestine is located in a semi-arid region with limited water resources that are already under strain due to the overall demand in the region exceeding the available water supply and the deterioration of the quality of the natural water resources (Barghouthi, 2004). The current gap between water supply and demand in West Bank (WB) is around 45 Million Cubic Meter (MCM)/year (Tamimi *et al*, 2005). “It is expected to increase considerably by the high population growth (3.9%) supplied by constant or even decreasing resources” (Tamimi *et al*, 2005). In addition to the natural constraints, the political constraints have resulted in the lack of accessibility to these resources. Tightened “Israeli” measures to fully control Palestinian water resources since 1967 (Tamimi *et al*, 2005) ... In 1967, “Israel” declared all water resources in the region as state property. Moreover, 42 wells were drilled in West Bank by the “Israeli” Water Company “Muskroot” (Tamimi *et al*,

2005). Most of them were drilled in the eastern aquifer with an overall abstraction of 45 MCM/year supplied to the "Israeli" settlements inside the West Bank with an average consumption of 400L/capita/day (Tamimi *et al*, 2005).

In the last decade, water quality and accessibility have grown far worse. "And now "Israel" uses approximately 85% of the Palestinian groundwater resources generated from four aquifers located in West Bank and Gaza Strip (GS), to meet 40% of its total water needs. This leaves 15% of Palestinian water for Palestinian use" (Bashir and Winkelstein, 2004.)

The advantage of the peace process "Oslo II" in 1995, as perceived by many Palestinians, was an opportunity for greater use of water inside Palestinian territory (Rabi *et al*, 2002). However, this has adversely affected the overall performance of the water sector and resulted in creating a large gap between the services provided and the ones demanded (Rabi *et al*, 2002). The lack of investments in improving the infrastructure, the scattered nature of water supply and management utilities, and the absence of adequate rules and regulations have resulted in the deterioration of the entire water system (Rabi *et al*, 2002). In reality, the advent of the peace process was a challenge to form new, responsive public institutions to govern water usage (Rabi *et al*, 2002). It is for that, that the Palestinian Water Authority (PWA) was established in 1995 and was assigned the task of formulating and implementing a comprehensive Water Law, which entails setting up adequate rules and regulations including proper water pricing system both in WB and GS (Rabi *et al*, 2002). However, as the Palestinians do not yet have full control over their water resources, they are facing many constraints to develop and implement a Water Law, and no final uniform water pricing policy has been formulated (Rabi *et al*, 2002).

1.4. Water Resources Management in West Bank

Due to the historical and political problems in Palestine, very limited efforts have been attempted towards water resources management. Until the establishment of the

Palestinian Authority (PA), all water supply and resource management was under Israeli control.

The Palestinian Water Authority (PWA), since its establishment in 1995 under Presidential Resolution Number 5, was given the mandate as the main regulatory and policymaking body for water resource management and development in both the West Bank and Gaza. The deteriorating condition of the water sector infrastructure and the increasing need for water are driving infrastructural, legislative, and institutional development in the water sector. The main elements of the Palestinian Water Policy have been established in Water Law No 3 (2002) and are the basis for decisions on the structure and tasks of water sector institutions and water sector legislation. This Law is based on 15 principles and 8 strategic priorities, including securing Palestinian water rights and regulating and coordinating integrated water and wastewater investments and operations.

Due to the PWA being established as a project organization seven years before the Water Law was passed, the heritage from this period is still strongly affecting PWA's work. New infrastructure projects and studies from a variety of donors on water supply and sanitation have taken precedence since the creating of the PWA, leading to a dilution of the regulatory focus, loss of identity as a regulator, and reduced capacity for regulatory work.

The Water Law is still only five years old and it may take some time before the regulatory functions become embedded in the "culture" of the water sector, in regards to the PA, PWA, the utilities, and the end users. A regulator needs utilities in place and in operation in order to execute meaningful regulatory functions. Such utilities are in short supply in the West Bank at present. A final obstacle facing the PWA as a sector regulator is the tremendous difficulty of law enforcement in severe conflict areas where frustrated users whose desperate short term concern is access to water, regardless of whether this is done in a sustainable manner. In sum, there is an immediate need to create a more favorable environment for PWA as a regulator to gain the trust and confidence of the

water users of the West Bank, and thereby also to benefit from capacity building to this effect.

The characterization of current water resources in the West Bank as listed in this section is based on review of data and baseline studies produced by the Water Resources and Strategic Planning Directorate (WRD) of the PWA and specific water resources studies developed by USAID under the Water Resources Program (West Bank, from 1996 to 2004) .The WRD project identified the maximum potential resources, regardless of technical, political, or socio-economic constraints. It is important to emphasize that these resources are classified only as potentially exploitable. In most cases, significant technical and political obstacles must be overcome, and development of the water resources will be relatively expensive. Specific feasibility issues associated with development of these resources categories will be examined in future phases of Integrated Water Resources Management plans. The following is a summary of the conclusions of the baseline analysis carried out under the WRP study.

Groundwater Resources: Three groundwater basins underlie the West Bank: the Eastern Basin, the Western Basin, and the Northern Basin. Groundwater resources in each basin are presently shared by Palestinians and Israelis. Analysis of all currently available data on the groundwater in the basins (including spring flow) summarizes the potentially exploitable groundwater resources for Palestinian use as follows (Figure 8).

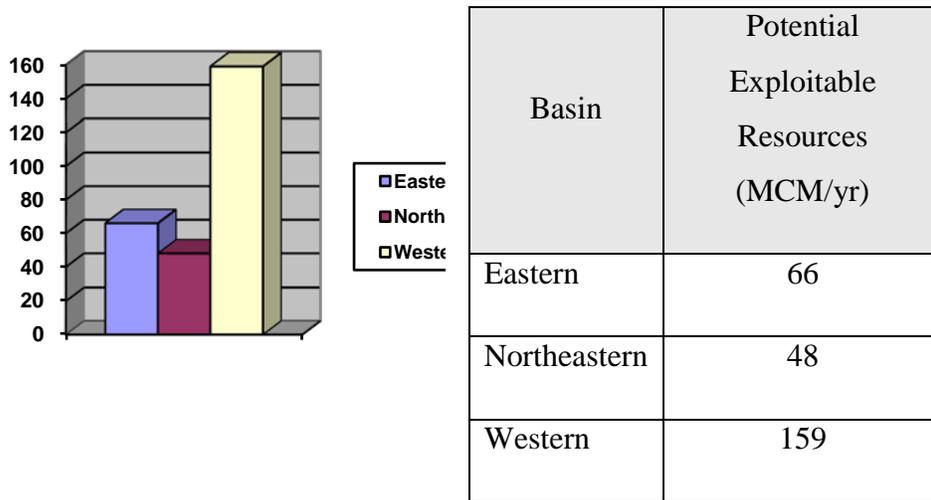


Figure 1. Potentially exploited ground water resources

The baseline groundwater analysis indicates that the Eastern and Northeastern Basins are currently developed to their approximate sustainable yield, while the Western Basin is being exploited beyond its sustainable yield. The identified potentially exploitable groundwater resources for Palestinian use (approximately 273 MCM/year) consist exclusively of groundwater that is currently being utilized by the Israelis. In other words, further Palestinian development of groundwater resources must be balanced by a decline in Israeli use.

Surface Water Resources: Surface water resources considered by the Water resources national plan WRP) include wadi flow, the Jordan River, and rainwater for harvesting. The potentially exploitable surface water resources are summarized as follows in Figure 9.

Resource	Potential Exploitable

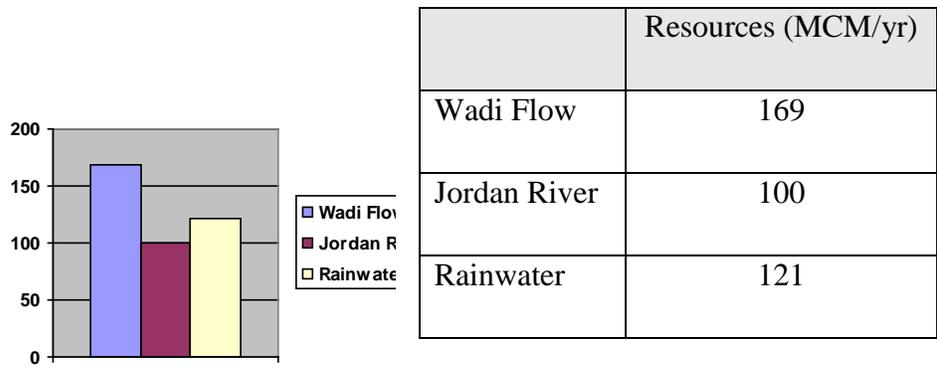


Figure 2. Potentially exploited surface water resources in West Bank

The baseline surface water analysis indicates that there is a maximum potential of approximately 400 MCM/year which could be exploited from these various surface water resources. Of the three surface water resource categories, the Jordan River is currently fully utilized by the Israelis, while wadi flow and rainwater harvesting represent largely resources. These latter two may be technically difficult to develop and remotely located in relation to demand centers.

Wastewater Resources: Wastewater resources consist of wastewater that can be put to use for domestic, industrial, or other beneficial uses. Available wastewater resources are dependent on the available water supply, and consequently will vary over time. The estimated potentially exploitable wastewater resources, based on the projected domestic supply within the West Bank,

To develop wastewater as a resource, a collection system and a treatment plant are required. Presently, only limited quantities of treated wastewater are produced in the West Bank and there are no significant, active reuse projects.

Chapter two

2. Institutional arrangement in West Bank

The Institutional Review presents the report findings, conclusions and recommendations as they relate to:

- Policy making and planning institutions who are also stakeholders in the water and wastewater sector;
- A regulatory institution – the PWA, that has deviated from its original mandate and evolved into a multifaceted organization that has become overwhelmed by external expectations;

- A series of Service Providers in all governorates and regions of the Palestinian territory.

In reviewing the sector stakeholders at the policy level, the focus was on their relationship and communication conduits with the PWA. With the PWA the review has examined the organizational strategies, structures and results; the people in term of the institutional climate and practices, performance requirements, motivation and feedback; and the work level environment, resources, processes, products and services. With selected service providers, the focus was on their conditions, processes and outcomes as it related to functionality, strategies, processes and overall capacity.

2.1. Policy and planning level

Policy making is a complex undertaking in the best of times; however in the turbulent political context currently in place in Palestine, it has become a multifaceted challenge. Due to the political turmoil, there are long periods in Palestine when there is no functional legislative council. Without a parliamentary body, updating current legislation and proposing new legislation and approving new policy, it becomes difficult for an apex authority like PWA to mount any directional strategy. To this end, the consultants were able to conduct a series of interviews with key stakeholders and build a more pragmatic picture of the water and wastewater sector. The following policy level institutions were visited by the consultant and key personnel (those listed in Annex B) were interviewed. It is through the interview responses and the views expressed that the consultant has been able to better come to terms with the task of institutional reform.

2.1. a. National Water Council (NWC)

On the subject of the operations of a NWC, the consultant was introduced to numerous publications, and listened to various opinions on the subject. In short, the NWC was born out of the Water Law and was meant to be a high level cross ministerial and stakeholder forum with decision making powers. Those powers were to be directed at approving general water and tariff policy, ratifying water plans and programs, quantifying funds for

water sector investment, promoting regional and international co-operation, and overseeing Palestine Water Authority activities and budget.

The NWC met once in March 2006, and has not met since; nor has it functioned as intended.

Looking at why the NWC has not operationally materialized suggests that it did not have a full legal mandate to do so and it was and is extremely difficult to mobilize that many high level decision makers at the same time, whilst interest in the NWC at the working level in the relevant Ministries was and is rather modest. Furthermore, in the absence of a functional NWC, the sector is lacking strategic guidance in the form of a politically sanctioned policy or strategy. (Hydrocosult, 2011)

2.1.b. Ministry of Agriculture (MoA)

The MoA is responsible for guiding and overseeing the agricultural sector, which represents a major Palestinian water user. Agriculture accounts for approximately 70% of total water used in the Palestinian territories.

The intervention of the MoA in the water sector does not involve the direct management of water resources; however, the MoA provides planning for agricultural development and extension services influencing irrigation water use and protection of water quality. These activities have direct impact on water demand. The MoA is also responsible for reviewing and issuing permits (pending PWA approval) for new irrigation water wells.

In addition to regulating the new wells, the MoA also recognizes the need to place farmers and water users at the centre of the decision process, to win farmers the right to manage irrigation water resource by them through Water User Associations (WUA). As the final beneficiaries, they are consequently the most aware of their own needs and can create the most effective solutions.

In terms of its day to day relationship with the PWA, the MoA indicated that they would like to see a better and more frequent communication exchange programme and to have more strategic dialogue on water rights and water resource management issues. The

MoA currently have a water department that has water resource expertise. The Ministry demonstrated that it is willing to work with the PWA to strengthen and promote an integrated water resource management programme; and that there is a need for quality data and information accessible on an electronic platform. (hydrocosult,2011)

2.1.c. Ministry of Local Government (MoLG)

The MOLG is the key link between the national government and the municipalities. The MoLG represents the municipalities and also joint service councils (JSC) in national decision making and is aware of their specific development requirements. In the water sector, the MoLG is involved in the coordination of municipal water and in some cases wastewater operations. It is also involved in processing operator license applications. The role of MOLG as local government coordinator and its experience with municipal planning makes it a strategic stakeholder in the development of a water management programme. In particular, the very high percentages of unaccounted for water and the low cost recovery situation are two areas that need to be highlighted and improved.

It is noted that the MoLG has, as part of the thirteenth Government's Programme, as one of its four tasks to: Promote Public Private Partnerships (PPPs) at the LGU level in order to support local development and enable the LGUs to achieve fiscal autonomy. This appears to open the door somewhat for the water and wastewater operations to be considered in a PPP light and as a possible avenue to improving the cost recovery issue.

Historically, the MoLG and the PWA have had a strained relationship primarily around the grey area that falls between the date and content of the Water Law and the Local Government Law as it pertains to municipalities and joint service council's domestic/industrial water distribution operations.

The communication situation between the PWA and the MoLG has improved greatly of late; to the point where it was suggested by an MOLG representative that they would be willing to nominate a decision making representative to a day to day working

management group that would oversee the management of the water and wastewater sector. That working management group would include equal level status between MoLG, MoA and PWA personnel and as a group they would make strategic decision involving the overall management of water and wastewater sector service providers including WUAs. (Hydroconsult, 2011)

2.1.d. Ministry of Finance (MoF)

The **Finance Minister of the Palestinian Authority** is the head of the Palestinian National Authority (PNA) that is in charge of finance.

2.1.e. Ministry of Planning and Administrative Development (MoPAD)

There is one particular directorate within MoPAD, namely the Infrastructure Planning Directorate (IPD) that interfaces with the Water and Wastewater sector more frequently. The directorate monitors the infrastructure sector policies and programs in coordination with relevant ministries and authorities. It has four departments, one of which is natural resources and environment in which a water section is housed.

The directorate in question received the Water Sector Strategy come Plan for 2011-2013 and assessed the content. The plan contained over \$600 million worth of projects which was considered way beyond the sectors absorptive and implementation capacity. In addition, there is no overall water or wastewater master plan to which the strategic plan could be linked. It was also felt that the sizing of projects, budget planning and a wish list approach to projects made for a degree of uncertainty. It was also felt that there were too many capacity building projects and too many consultancies. Donor incentives cannot be matched by the PNA.(hydroconsult,2011)

2.1.f. Ministry of Health (MoH)

As the MoH is the regulator, they are responsible for establishing and regulating health standards and guidelines in the West Bank (WB). This includes standards for drinking water and guidelines for other uses of water. The experience and guidance that the MoH has accumulated, directly impacts upon the design and implementation of water development projects and resource management actions.

It was clearly pointed out that the MoH has the facilities to regulate the quality of domestic water supply, and that it recognizes PWA has the task of monitoring and regulating water quality at the source (bulk supply, wells, springs, surface water etc.).

The MOH indicated that it would welcome a much better communication platform with the PWA and would look to having a more accessible data and information database established in the near future. Working in a better organized PWA regulatory forum where functions are defined and recognized should be a priority. In addition various units need to have a more defined set of objectives and roles. This would significantly improve the information and outcomes that would be available and consequently it would result in the public beneficiaries being better informed of the quality and safety of the water supply, which is not always the case.

2.1.g. Environmental Quality Authority (EQA)

The EQA (formerly the Ministry of Environmental Affairs) is the regulator of the Palestinian Environmental sub-sector.

Although the EQA are not responsible for water resource management they do generate relevant environmental regulation in the form of policy, standards or laws which are drafted and implemented by EQA. The regulations place limits, constraints and requirements on the water resources management actions. The influence of the EQA on the water sector as a whole concerns both the water quality and water quantity issues.

The EQA at the present time have little if any projects and are in a situation where resources are not being actively engaged in environmental activities that could benefit the progress of the water and wastewater sector. (EMWIS,2007)

2.2. Service Delivery Level

The main element of the water and the wastewater sector policy are based upon the principles of sustainable development. The Service Delivery Level is responsible for:

- Adoption and implementation of discreet national water policy endeavored to insure that domestic, industrial and agricultural capital investments are compatible with the availability, development, and conservation of the Nation's water resources.
- Operate water production facilities, purchase drinkable water from national and international suppliers, and convey the water to local Municipal and Industrial water distribution systems.
- Operate and maintain the water systems within their service areas.

2.3. Supporting and Advisory Level

2.3.a. Universities

The Palestinian universities provide support to the water sector research activities, training and experience to the Palestinians working in the water sector.

2.3.b. Non-Governmental Organizations (NGO's)

NGO's have played a unique role in the water sector before establishing the PWA, the role of NGO's was:

1. Building up a water professional team which has been involved in monitoring and developing the available water resources.
2. Developing the base of the water information system.
3. Highlighting the seriousness of the water problems locally and internationally.
4. Working with the national and international bodies for developing and protecting the water resources in the West Bank.
5. Public awareness: working with the public to teach them the importance of water and environment in order to maintain the water quantity and quality.
6. Develop methods to increase the water availability for the public (e.g. water harvesting, rehabilitation of wells and spring, etc.).
7. Provide financial and technical support to the public and local organizations.

Nowadays, the role of NGO's is very much similar to their role before the establishment of PWA but with full coordination between them and the governmental organizations.

2.3.C. External Funder:

Many international organizations (Governmental and non-Governmental) have played and still play a very important role on the sustainability of water resources. They introduced the financial support to many water projects as well as the expertise and training support.

Chapter Three

3, Institutional strategy and reform

3.1. Water sector strategy

The water situation in Palestine is considered as the most important component of the social, economical and political issues in the area. Water is one of the most important elements needed to guarantee actual independence and is a symbol of people's attachment to their land and an essential catalyst in all economical and social developmental aspects. The Palestinian Water Authority (PWA) in cooperation with various organizations working in the sector is seeking to improve the living standards of the citizens towards a more developmental, sustainable approach.

An estimated capacity of 785 to 825 million cubic meters of renewable groundwater and seasonal streams in valleys estimated at 215 million cubic meters is compose the main water resources in Palestine. In addition to the Jordan River whose annual discharge is around 1320 million cubic meters upon its entrance to the Tiberius Lake. The quantity of water decreases to 115 million cubic meters as it reaches the Dead Sea. Palestinians do not have access to their share from the Jordan River defined by previous agreements and according to International Law as a legal riparian.

It is important to know that in 2008, the total annual Palestinian consumption of domestic water was around 94 million cubic meters, 54 million cubic meters of it purchased from Israel, despite the fact that Palestinian consumption was quantified to be 101 million cubic meters in 2005, according to the Palestinian Authority and 118 million cubic meters in 1993 as determined in the Oslo Accords. An additional 123 million cubic meters of water was used for irrigation (this amount was 172 million cubic meters in 2005, according to studies conducted by the PA). Palestinian citizens currently require an annual 182 million cubic meters of water for domestic purposes.

Around 169 million cubic meters of water are consumed annually from the Coastal Basin in Gaza Strip for both agricultural and residential use. This exceeds by far the renewable groundwater which feeds into the Basin estimated to be around 55 million cubic meters annually. Overexploitation that has resulted in the deterioration of the water quality deeming it unfit for human consumption (according to current studies; only 10% of water extracted from the Basin is fit for human use).

In reference to water distribution in Palestine, PWA inherited (from the Israeli occupation) defective infrastructural system with 160 residential communities completely lacking water distribution networks and approximately 90% of these residents without sewage networks. As a result, PWA was forced to give top priority to supplying these deprived communities with water as well as rehabilitate water networks with an

annual water loss of approximately 50%. PWA aims to reduce the annual water loss by 20% within the next few years.

Poor water supply conditions have prompted several organizations to work on covering this extreme necessity. The size and scope of the problem have caused many Palestinian governmental and civilian institutions to take matters into their own hands in parallel with work being done by PWA. This has resulted in conflicts and overlaps of jurisdiction.

During the period of 1993 – 2009, PWA in cooperation with these organizations has reduced the number of non served residential communities to 121 communities. It hopes to further reduce this number to 50 within the next three years. Several water distribution networks in these communities have been rehabilitated, either partially or completely.

In reference to sewage networks, they have almost been absent from every agenda and have not been developed until recently. There is also a lack of operational plans linked with a clear strategic vision needed for development. The development of the water treatment system in Palestine has not surpassed the establishment of a few main projects, such as the water treatment plants in Northern Gaza, Gaza City and Al Bireh in addition to a few minor projects executed by civil organizations (even though they lack a strategic vision). Today, PWA in cooperation with the Ministry of Agriculture aspires to plan a strategy to develop the sanitation system, benefit from treated water and begin the implementation of this strategy.

Despite the fact that the Water Law No. 3 – 2002, issued on: 17/7/2002 is the legal framework governing water in Palestine there are still several institutions which work in the water sector one way or another alongside PWA. These institutions include: the Ministry of Agriculture (MoA), Environmental

Quality Authority (EQA), the Ministry of Local Government (MoLG), the Ministry of Health (MoH), the Ministry of Industry (MoI), Regional Water Institutions: West Bank Water Department, the Association of Water Service Providers, the Water Consumers Association including Coastal Water Authority and Jerusalem Water Undertaking, Non-Governmental Organizations (NGOs), academic institutions such as local universities and research centers. In addition to the private sector, whose role is restricted to executing infrastructure water sector projects. This is due to the fact that there is an unclear Palestinian vision of the importance of the role that this sector can play in water.

In addition to the issues listed above, the water sector suffers from a lack of development as a result of restrictions and obstacles set forth by the Israeli occupation. This situation was dealt with in the second Oslo Accord (Article 40). However, the negative impact is still noticeable as far as inequality in the sharing of joint water resources (between Palestine and Israel) as well as the lack of freedom to exploit, develop and manage these sources. The inability to rehabilitate and manage the necessary infrastructure needed for wastewater services is also another issue. These issues negatively effect economic and social development in Palestine.

It is expected that by the end of 2013, Palestinian citizens will require 200 million cubic meters of water annually. This is not taking into consideration an increase in the population as a result of the return of refugees currently living outside of Palestine. It is vital for Palestinians to be able to have full access to their water rights as well as be able to develop conventional and non-conventional methods to access more (desalination, water reuse, importing water from outside sources) in order to fulfill the increase in demand. For this, PWA, in cooperation with relevant parties, aspires to

completely restructure and develop new regulations/systems for the water sector thus guaranteeing its effectiveness and longevity. This will in turn provide better services to Palestinian citizens on the basis of sound principles.

3.2. Challenges Facing the Water Sector

Taking into consideration the history of the water sector in Palestine and the young experience of the relevant institutions, several challenges are facing the sector, including:

1. Lack of integrated vision

The water sector is managed today under a joint governance system, with asymmetric power and capacity, that doesn't facilitate rational planning and development of Palestinian water resources and infrastructure.

2. Decreasing supply - demand ratio

Due to the high population growth rate (%3.2) and the consequent increase in the need of food, both domestic and agricultural water demands are growing rapidly. Approximately 30% of Palestinian communities in the West Bank, 700,000 people, 25% of which are under 16 years old, are not served by water networks and about 15% of the population is provided with water less than one day a week (National Water Council Report, 2007). Thus the current water demands cannot be used to predict future demand, (PWA, 2005)¹. A recent

¹ Due to the limited predefined water quota Palestinians consume whatever available and not their actual need.

study carried out by PWA in cooperation with the German Technical Assistance Unit (GTZ) indicated that the gap between supply and demand will increase dramatically in the coming years (PWA, 2007); therefore, the PA should develop new water resources and formulate new policies and management options to fill the gap.

3. Lack of proper institutional structure

The unique historical water situation in Palestine has resulted in suppressed water demand and water supplies are generally constrained due to technical, political, and institutional limitations. The roles and responsibilities in the water sector are scattered and fragmented due to the lack of national coordination and the multiplicity of providers: municipalities, water utilities, private vendors. For the last 40 years of occupation, the mixing of roles and responsibilities in the water sector has led to inefficient management and uncoordinated investment and policies. There is an urgent need to restructure the water sector in order to regulate, monitor, and control the managerial, technical and financial performance of the national water suppliers². Socio-economic development in Palestine is to a large extent dependent on adequate water supply.

4. Inadequate development and management of the water resources in the West Bank

² Several local and international agencies attempt to formulate policy documents and reform plans; however the political willingness to do so is still low.

The governance system established by Article 40 requires the approval of Israeli Authorities of any proposed PA management measure or infrastructure project within the West Bank

5. Low investment in and weak management of the West Bank water services

Investment and the investment efficiency in the West Bank water supply infrastructure have dropped to very low levels. The current investment in the water sector is one tenth of that planned.

6. Uncertain socio-economic and political conditions

The establishment of any component of a water policy should always be sensitive to specific national conditions. However, when the specific conditions are as complicated and uncertain as in Palestine, with a wide range of political, socio-economic, institutional and environmental uncertainties (see Table 1), the key step in the policy formulation process is to develop an integrated analysis based on several clusters of indicators such as socio-economic, poverty, institutional performance, political interests etc..

3.3. Current Water Legislation and Policy Reform

In January 1996 the Palestinian Water Authority declared that the Palestinian water policy as set out in the following principles will be the basis for decisions on the structure and tasks of water sector institutions, and the water sector legislation (PAN1998). The Palestinian water policy is based on recognizing the principles of the ILC, and the Convention on the law of the Non-Navigational Uses of International Water Courses, and it contains the following:

“All sources of water are public property. In a situation of acute shortage of available water resources, just, equitable and sustainable allocation among all legitimate users

can be best ensured by the state. To this end, all well drilling, water production and supply should be allowed only by permit or a license.

1. *Water has a unique value for human survival and health, and all citizens have a right to water of good quality for personal consumption at costs they can afford.* The right to water survival is seen as a universal human right. However, individual water rights do not necessarily imply free access to water supply or disposal services. Standards for assuring a safe quality of drinking water, and for water supply, derive from policy. Such standards must comply with resource assessment based on scientific methods.

2. *Domestic, industrial and agricultural development and investments must be compatible with the water resource quantity available.* An important means to meet this goal is consisting between national economic planning and the national water policy. Economic development should not imply, even inadvertently, unsustainable water use, or irreversible environmental damage. The regard for resources and environment should lay the premises for the economic solutions. The role of agriculture is particularly important in the economy of the Palestinian territory, and the major share of the water resources are being used for agriculture purposes. Water consumption in the agricultural sector will have to be adjusted on a cost-efficiency basis, to issues such as choice of cultivars, use of marginal-quality water, and improved irrigation technology. Domestic uses occupy the first priority in the allocation of potable water resources.

3. *Water indeed is an economic good; therefore the damage resulting from destruction of its usefulness (pollution) should be paid by the party causing the damage.* As recognized, for instance, by the UNCED conference, sustainable management of water as a scarce resource is only possible when its full cost is acknowledged during the planning and the development of water projects. Pricing policy may, however, have to be formed so as to provide drinking water to poor parts of the population at an affordable price.

4. *Water supply must be based on sustainable development of all available water resources.* In this context, available resources include: sharing of regional water resources, recycling, reuse, use of marginal-quality water, and unconventional sources such as

desalination. Sustainability in the context of Palestinian water resources means, in particular, long-term maintenance of groundwater levels, and water pollution prevention.

Construction/Rehabilitation of Water Infrastructure Networks in the Northwest Villages of Jerusalem - Institutional Study Report *PMU – FCG 9*

5. *The development of the water resources of the Palestinian territory must be coordinated on the national level, and carried out on the appropriate local level.* The scarce and limited resources of catchments and aquifers must be managed in their entirety, preventing upstream overuse to the detriment of downstream users. This is best achieved through overall central coordination, complemented by local implementation, together with proper measurements, monitoring and recording of all water production and use.

6. *National water sector management should be carried out by one responsible body; with the separation of institutional responsibility from policy and regulatory functions and service delivery functions.* The water resources of the Palestinian territory are of such overriding importance for human welfare and national economy that water matters should be dealt with at the highest level within the government for effective coordination of sector interests. The Palestinian Water Authority should carry out its activities in close collaboration with relevant sector authorities.

7. Public participation in water sector management should be ensured. Local participation in planning, operation, and management is a key to ensuring proper management of water demand. Public awareness of the role of water in both the public and private domain, and its social environmental and economic value, is important for informed decision making.

8. *Water management at all levels should integrate water quality and quantity.* Usable water is always a function of both quality and quantity, and the two are strongly interconnected. Disregard of this fact is disastrous, and has led to e.g. saltwater intrusion. There should include monitoring and other data collection.

9. *Water supply and wastewater management should be integrated at all administrative levels.* Water consumption will inevitably lead to sewage. The economics and technology of managing both water supply and sewage can be optimized by an integrated approach.

Moreover, in some circumstances wastewater as well as storm water drainage is potential resources for raw water supply.

10. *The optional development of water supply must be complemented by a consistent water demand management.* Use of appropriate technology should be encouraged in water saving practices, both in households, industry and, above all, in agriculture. Pricing policies are important tools for managing water demand, and must be a part of the overall water policy. In this context, it is also essential to modernize surface and ground water monitoring systems.

11. *Protection and pollution control of water resources should be ensured.* In this context, all preventive measures against pollution should be ensured and legal action against offenders should be taken. For example, industrial waste should be treated on-site and taken discharged to the waste network. Areas of good water quality should be protected and safeguarded against pollution and major development projects.

12. *Conservation and optimum utilization of water resources should be prompted and enhanced.* Water resources should be developed and managed to optimize the efficiency of their utilization, recognizing their scarcity, the need for their conservation, and the importance of pricing to promote economic efficiency.

13. *The Palestinians will pursue their interests in connection with obtaining the right of water resources by other countries.* This means, firstly, that the Palestinians are committed to Article 40, agreed upon with the Israelis, secondly, that the Palestinians will negotiate with the Israelis, in the final stage, to reach a final agreement and, thirdly, that, accordingly, the Palestinians will seek other agreements with other countries.

14. *The government will cooperate with regional and extra regional parties to promote the optimum utilization of water resources, to identify and develop new additional supplies, and to collect and share relevant information and data.* Regional cooperation will include sharing of information and data on water resources and promotion of regional initiatives to identify likely sources of new and additional supplies and agreeing on the development of such resources

3.4. The progress of governance reform

After a request from the Head of the PWA in 2008, the Norwegian Government funded a study to review the Palestinian water sector. This report was entitled “An Audit of the Operations and Projects in the Water Sector in Palestine: The Strategic Refocusing of

Water Sector Infrastructure in Palestine” (commonly referred to as the PWA Audit) and made a recommendation that the administrative and developmental situation of

The water sector in Palestine needs to be re-evaluated and reformed. This report was considered a turning point in the Palestinian water sector

The PWA submitted a request to the Council of Ministers for approval of a comprehensive reform plan for the water sector. This plan coincided with the government’s plan to reform all of their institutions in accordance with the 13th Government’s strategic vision, whereby the PWA would play a crucial role in. The government’s plan aims to develop the institutional situation of the water sector in a way that will ensure suitable water services for Palestinians residing in the West Bank and Gaza Strip. It will also work

Towards achieving Palestinian water rights, preserve and improve the management of water resources, ensure the sector’s sustainability and its readiness to sustain the burden during the building of the nation.

The PWA’s reform plan was adopted by the Council of Ministers by means of Legislation No. 13/13/04 in December 2009. As a result of the Legislation, a Reform Steering Committee (RSC) was formed to monitor its implementation. The RSC included Ministries that are related to the water sector (i.e. Ministry of Finance, Ministry of Local Government, Ministry of Health, Ministry of Planning and Administrative Development and the Ministry of Agriculture). It also included the Palestinian Environment Quality Authority (PEQA) and representatives from the PWA, service providers and the civil society (Refer to Annex 18). The Council of Ministers decided to implement this strategic water sector reform plan between 2011 -2013 It should be noted here that the aforementioned legislation came in response to the dire need to rectify the current situation on the basis of independent third party evaluations and recommendations given by numerous credible organizations and water experts. The legislation also relied on both the monitoring and good water governance reports, which were included in the integrated program to reform the water and wastewater sectors due to the existing inefficiencies. The reform covers elements: institutional, legal, legislative and administrative performance.:

The PWA realized that the reform plan would not provide a radical solution for the water crisis due to the Israeli occupation. Despite this fact, the plan seeks to accomplish better management of the water sector by concentrating on the development of institutions in order to build a sector that can run with optimal efficiency under the status quo and contribute to the establishment of a Palestinian state.

The reform plan consists of several fundamental elements (programmes) which are closely interrelated. These elements depend on each other's outcomes, as the results and timeframe for implementation are intertwined

In the short term, the program aims to rectify utility service procedures in a way that will ensure equitability in the provision of high quality services. It will also improve capabilities, recover operating costs of water facilities and organize them more effectively. In addition to that, the program seeks to achieve more sustainable management of strategic water resources by means of enhancing: institutional knowledge, policies, monitoring capabilities, following up and the application of the water law. It will also increase awareness of managing water demand, by means of applying policies that will help to preserve the water resources. The long term goals of the program are to establish strong/capable institutions within the framework of sustainable development and a legal framework that shall clearly define the roles, responsibilities and interrelationship between institutions in the water and wastewater sector, as well as those institutions that share responsibility on the periphery of the sector. In addition to emphasizing infrastructure requirements, the reform program will also focus on improving the strategies and investment policies regarding the supply of water and sewage provision and project design and implementation. This will be done to expedite the growth of the infrastructure in a way that will fulfill the country's requirements.

3.5. Constraints stemming from Palestinian institutional weaknesses

The institutional architecture proposed for the sector has not been fully implemented. The Water Law provides for sector governance, including separation of resource management and regulation from resource use. However, this vision is not reflected in the present organizational

Arrangements. The National Water Council has never functioned as intended, PWA operates both as regulator and implementer, and water supply service remains in the hands of several hundred separate municipal water departments and local councils. After a promising start, PWA lost momentum, which needs to be restored. PWA is not performing up to expectations, and has lost capacity because of a range of governance and management problems. One yardstick of institutional capability is PWA's weak ability to negotiate effectively in the JWC. Priorities are to: (1) revise and update the water strategy and investment program; (2) re-launch implementation of major investments; (3) rebuild internal capacity for key functions, particularly planning, strategy and investment programming; (4) strengthen relationships and planning at the decentralized level, with the municipalities and the Joint Service Councils (JSC); (5) work to integrate donors and NGOs better within planning and investment programming; (6) revise by-laws and policies to attract and reward qualified staff; and (7) adopt a more participatory approach with stakeholders and staff. In considering reform of the PWA, there is a need to be realistic about the huge challenges. There are already signs that reform is afoot, and an immediate reform program is emerging, but prioritization and integration will be key. Fragmented water resource access makes water management difficult and may result in inequitable access. Water resource access in the West Bank is fragmented, and largely not in PWA hands. As a result, there is inequity in water availability (PWA/IWRS Study, 2010)

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Proposed Structure

Water Sector Structural Framework

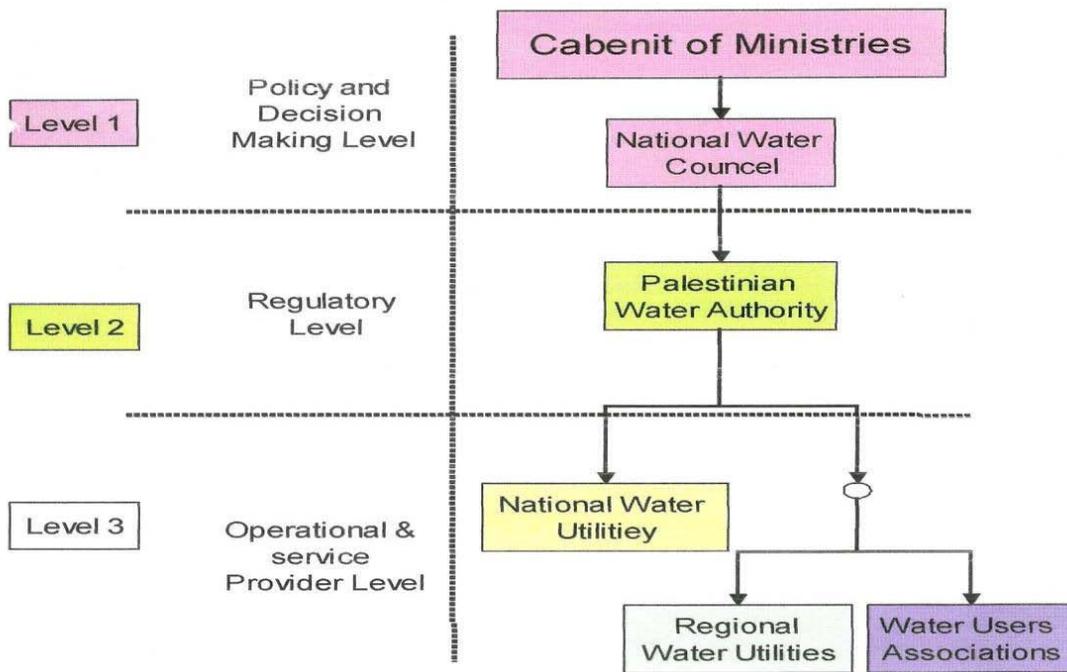


Figure 3, proposed institutional Structure (hydro-consult)

4. Institutional arrangement in study area

4.1. Governance Structure and Major Stakeholder setup

4.1. a. Introduction

The current water governance structure in Jericho city is somehow not clear. Historically, the water of Ein Sultan Spring was flowing through open channels and supplying water for all purposes including the household water use. After the construction of drinking water supply network, part of the spring's water started to be pumped into such system under the direct control and management of Jericho Municipality. With the urban expansion and population growth, part of the water that used to irrigate agricultural land under the Basateen category has moved into drinking water and therefore, domestic water use quantities have been increasing ever since in association with the development and urban expansion of the city.

In the early - mid nineties (1994), a decision has been taken to convert the open canals that convey the spring's water to agricultural land into pressurized pipe system in order to improve irrigation efficiency and reduce the losses (evaporation and canal leakage) which was reaching nearly 40%. For this purpose, the Palestinian Authority has signed an agreement with IFAD to finance this project. This changing reality has necessitates the change in the current water management setting. Therefore, a Presidential Decree No. 38 for the year 1998 has been issued to establish a new entity called Ein El-Sultan Water Institution – Jericho. The decree has authorized the Palestinian Water Authority by the virtue of article 4, to develop the By Laws and to supervise the financial and administrative issues of the institution.

To realize this Decree several meetings were held among the relevant stakeholders to develop a new form of governance that ensures the proper management of the spring's water for both domestic as well as irrigation purposes. A higher steering committee was

formed to supervise the implementation of the Decree and to organize the water Management. The first meeting among key stakeholders took place on 25 May 1999 to address the new situation and to propose some mechanisms to help in reaching acceptable form for water management. The participants in the meeting agreed that in order to ensure the sustainable management of the new irrigation project, it is imperative to organize the irrigation water users of Ein EL Sultan under a formal body. It was also agreed that such body to be registered as a cooperative in the Ministry of Labour under the cooperative law and to be called “**Ein Sultan Irrigation Water Users Association (ESIWUA)**”. The Association was then registered in December 1999 officially as recommended in the meeting.

Following to that, real project implementation started and in 26 March 2002 a meeting took place among concerned stakeholders to define stakeholders’ roles in managing and allocations of water for both domestic and agricultural uses in accordance with the new system. The main stakeholders that were present at the meeting were: the Municipality of Jericho, Ein Sultan Irrigation Water User Association (ESIWUA), IFAD and ANERA. The participants agreed to allocate 58% of the spring’s water for agriculture and 42% for domestic use. They also agreed that this arrangement is valid for two years from the actual start of operation of the project, after the two years, both the Municipality and ESIWUA should re-evaluate the needs of each sector and agree on new arrangements in accordance with such needs. Furthermore, they agreed that the Municipality is not allowed to sell water for agricultural purposes and the ESIWUA is not allowed to sell water for domestic purposes.

Since then many meetings have taken place at various levels with various stakeholders and many committees were created to help in developing a proper mechanism for managing the water in the city, but none of these initiatives were successful so far and currently both domestic as well as irrigation water is being managed by Jericho Municipality.

Moreover, although the ESIWUA is registered as a legal entity according to the Palestinian Law, it has no institutional capacity as of yet to be able to manage the irrigation component. Therefore, it is important to build the institutional capacity of the

ESIWUA and develop a new form for their involvement in managing the agricultural water in the city.

4.1. b. Major Stakeholders Involved in Water Management

In order to better understand the water management situation and to assess what stakeholders are involved in the water management issues in Jericho, we organized a two days workshop whereby we identified the main stakeholders that are directly or indirectly involved in water management in Jericho and their roles are summarized in Table 25

Table 25: Stakeholders involved in water management

Stakeholder	Primary	Secondary	Role
Ministry of Health	x		Ministry of Health responsible of monitoring water for health concerns and quality measures in addition to observing and evaluating the Municipality's performance in the process of water chlorination.
Ministry of Agriculture	x		MOA work as a regulator (<u>or</u> Supervisor) of agricultural water Demand and Supply management
Jericho Municipality	x		The current body Managing Ein Sultan and the delivery of water to Jericho farmers and residents
UNRWA	x		Responsible for supplying water to refugee camps as well as monitoring water quality, however they are not involved in servicing its delivery.
PWA	x		The main regulatory body on the national level concerning water issues. They are also

			responsible for water resources management in a sustainable way and developing plans and strategies to ensure this issue.
Donors		X	Funding water projects, donor's involvement is strictly transitional and is limited to a specific period of time.
Well owners	x		Control the abstraction and distribution of a large groundwater supply.
Civil Society Groups		X	Raising the awareness of the people and empowering them, securing some funds for water projects,
Ein Sultan Association	x		Representative of water share owners in Ein Sultan Spring. The Association demands to take charge of 58% of Ein Sultan's supply (mainly for agriculture).
Israeli Authorities		X	Imposing restrictions and obstacles on Palestinians
Ministry of Local Governments		X	Regulate the work of the Municipal and local councils, they approve the water tariff structures
Jericho Governorate		X	Coordination between all the parties, and responds to emergencies. In charge of enforcing laws and orders
Mekorot (Israeli Company)		X	Controls partially the supplied water for Aqbat Jaber refugee camp.

After that we focused on the stakeholders who have main role and analyzed it further. It was agreed by all the participants that some stakeholders are playing their role correctly and there is no need from them to increase their involvement in the future, such as Ministry of Health – Environmental Health Department. In the mean time, it was agreed

that ESIWUA is not playing its anticipated role and proposed to be more involved in the future. Figure 1 shows the main stakeholders' current and expected future role.

Figure 1: Current and expected future role for the main stakeholders

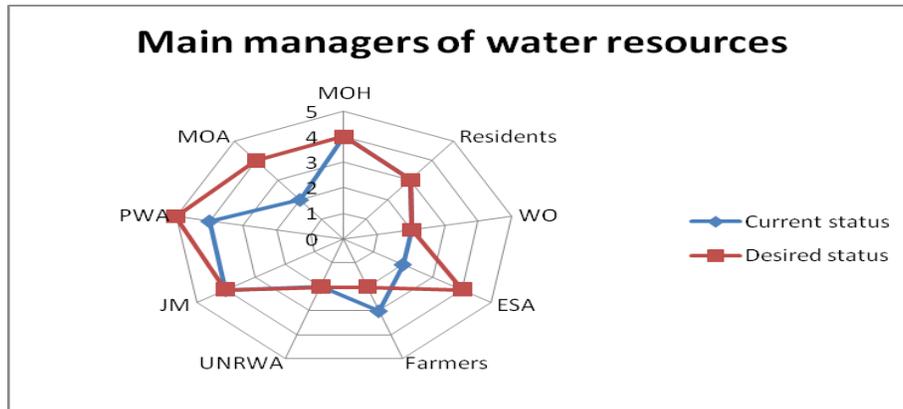


Figure 4. main stakeholders in the study area

Furthermore, to understand the importance of the current relation and coordination among the different stakeholders we developed a stakeholder relation matrix. It is well known that limited or rather absent coordination creates conflicts in most cases, while strong stakeholder coordination leads to good management. According to the analysis performed in the workshop which is also presented in Table 26, it was realized that, the coordination is absent between Jericho municipality and Ein Sultan Irrigation water Users Association, this in turn reflects the conflicting relationship of the two parties and complicating water management issues further.

Table 26: Stakeholder's level of coordination

Stakeholder Name	MOH	MOA	PWA	JM	UNRWA	Far.	WO	Res.	ESWUA
Ministry of Health (MOH)		-1	+1	+2	+1	-1	-1	+2	-2
Ministry of Agriculture (MOA)			+2	+1	-2	+2	+2	-2	+2

Palestinian Water Authority (PWA)	+2	+2	-1	+2	-1	+2
Jericho Municipality (JM)		+1	+1	-2	+2	-2
UNRWA (Aqbat Jaber Refugee Camp)			-2	-2	+1	-2
Farmers				+1	-2	+1
Well owners (WO)					-2	-2
Residents						-2
Ein Sultan Water User Association (ESWUA)						

It is good to mention that the symbol (+) refers to having a relation, (-) refers to an absence of a relation, 1 refers to not important relation and the symbol 2 refers to having an important relation and coordination. In another word the indicators score (-1): means weak coordination or its limited to occasional issues, -2: un-existing coordination, +1: There is coordination but it is limited to some issues, + 2: strong coordination in most cases. For example the relation between JM and UNRWA +1, this means that there is a coordination but it is limited only to the quantity that supplied by JM to the UNRWA for the benefit of Aqbat Jaber camp. The same thing the relation between farmers and well owners where the coordination mainly limited to the supplied quantity, the other case is between the farmers and ESWUA, the coordination is limited to some managerial and allocation issues, while other issues are mainly tied by JM which manages the water supply from Ain Sultan spring.

It is clear that all stakeholders acknowledging the role of key actors to be engaged in water management, especially the two main actors in Jericho City which are Jericho

Municipality and Ein El-Sultan Irrigation Water User Association (ESIWUA). They also realize the consequence of the lack of coordination between both stakeholders and recommended to foster such coordination in the future in order to ensure the sustainable management of the precious resources in Jericho City.

In order to understand the current water management better and to be able to recommend appropriate structure, it is important to study the existing structure and to propose the development needed.

The overall structure of Jericho Municipality is shown in Figure 2. The figure shows that water is being managed by one of the divisions of the Municipality under the Service Department which includes health and environment as well.

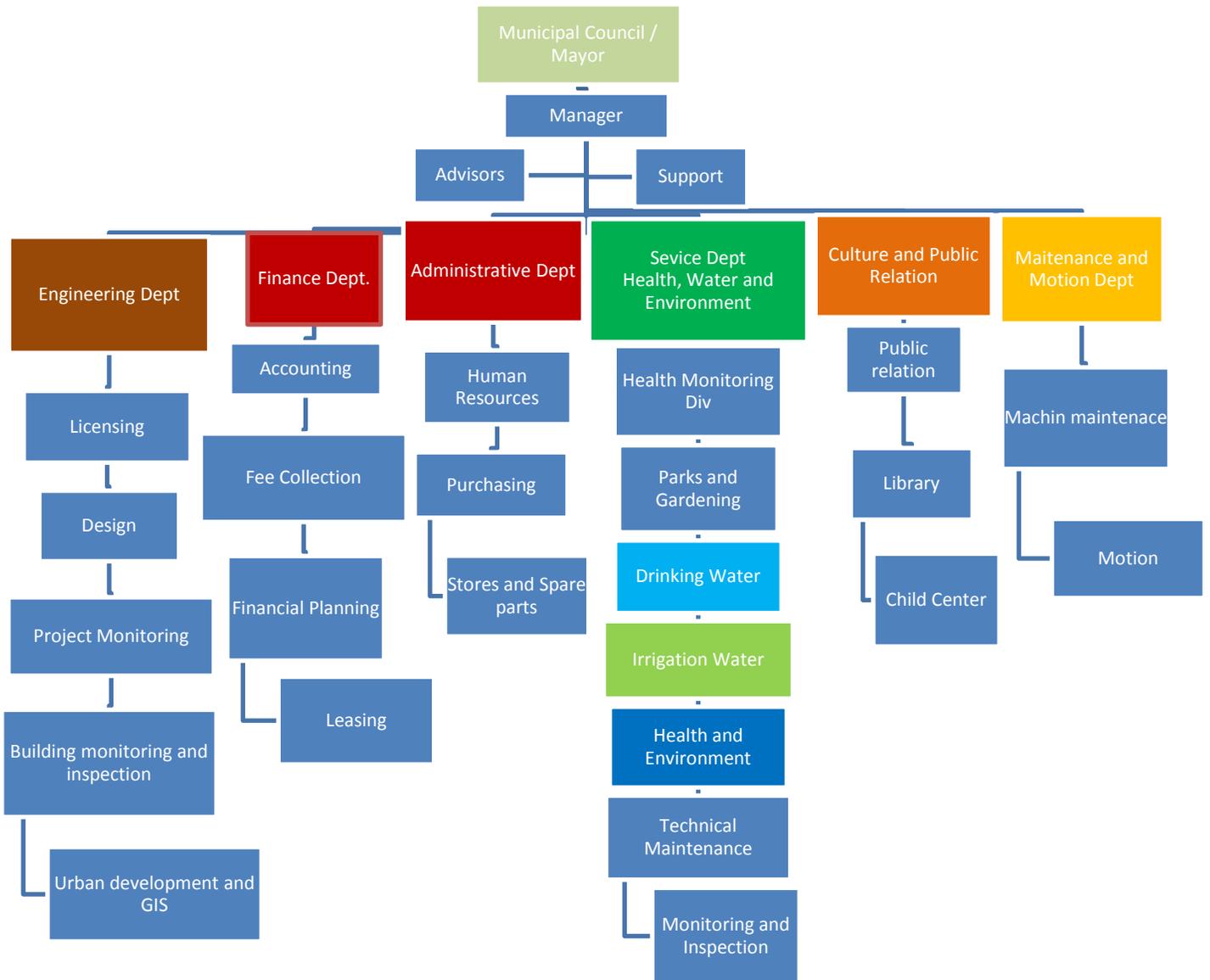
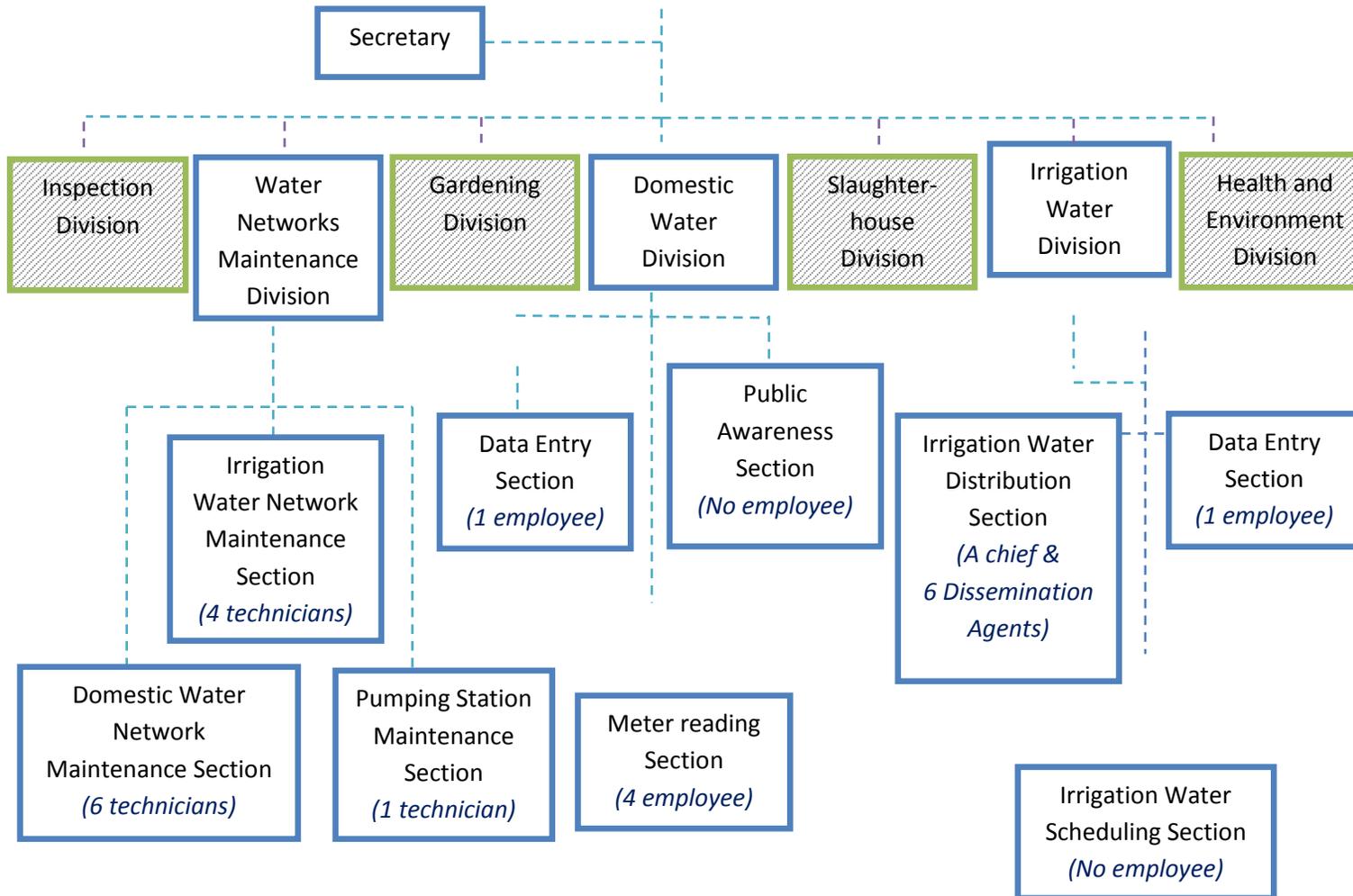


Figure 5. Jericho municipality water unit structure

As can also be noticed from Figure 2, both drinking water and irrigation divisions are separate and perform their activities in parallel with other divisions within the same department. Furthermore, it is also noticed that there is a third division that can be of relevance to both divisions which is the Technical Maintenance division. In order to better understand the size and functionality of these divisions and their interrelations, we further expanded the structure of the Service department and focused more on the three

divisions that concern our work for this master plan. The expanded structure is depicted in Figure 3.

Figure 6. extended and proposed water institution structure for the Jericho area



From the above organizational chart in figure 3, the following main observations can be highlighted:

- Total number of employees in the three divisions is 24 employees.
- Although the public awareness is very important issue in rationing the water consumption and minimize unnecessary use, there are no employees in the public awareness division.
- Despite the fact that there is an irrigation water scheduling division, there is no employee in this division. The chief of the irrigation water dissemination division is doing this work. One should keep in mind the big problem in scheduling the irrigation water due to the technical and operation problems in the irrigation water network.
- There is only one technician who is responsible for operating and maintaining 4 pumping stations which contains 12 pumps.
- There is no clear relation between the consumption data collection and the financial department.
- It is not clear how the three divisions coordinate their needs and how maintenance is performed on behalf of water or irrigation divisions and how this coordinated with the finance department.
- There are 4 employees for meter reading, this means each employee reads nearly 1200 meter per cycle (2 months). It is not clear how this is organized and how billing is then issued. The frequency of meter reading is also not clear.
- The maintenance employees are also not sufficient. The total length of the distribution network is 85 km including house connections. In addition there is nearly 15 km of main transmission pipelines. This means that each maintenance employee is responsible for supervising nearly 16km of mains and distribution

network (16km/employee). It is a bit high as well. It is expected that the maintenance efficiency is low. The same applies for irrigation water network.

- For the data entry and handling there are one employee for irrigation and one for drinking. It is also not clear how data analysis is done and how monitoring is done and how often the divisions produce reports on their performance, etc.

It is clear that water supply management under this institutional setup is somewhat difficult. Moreover, it is not clear how the current structure can accommodate any possible development or change in water supply management setup, especially irrigation water management and the role of the ESIWUA, as recommended by the stakeholders. Therefore, some modification is needed in order to ensure the efficient management of the water supply for both drinking and irrigation. The following recommendations are proposed:

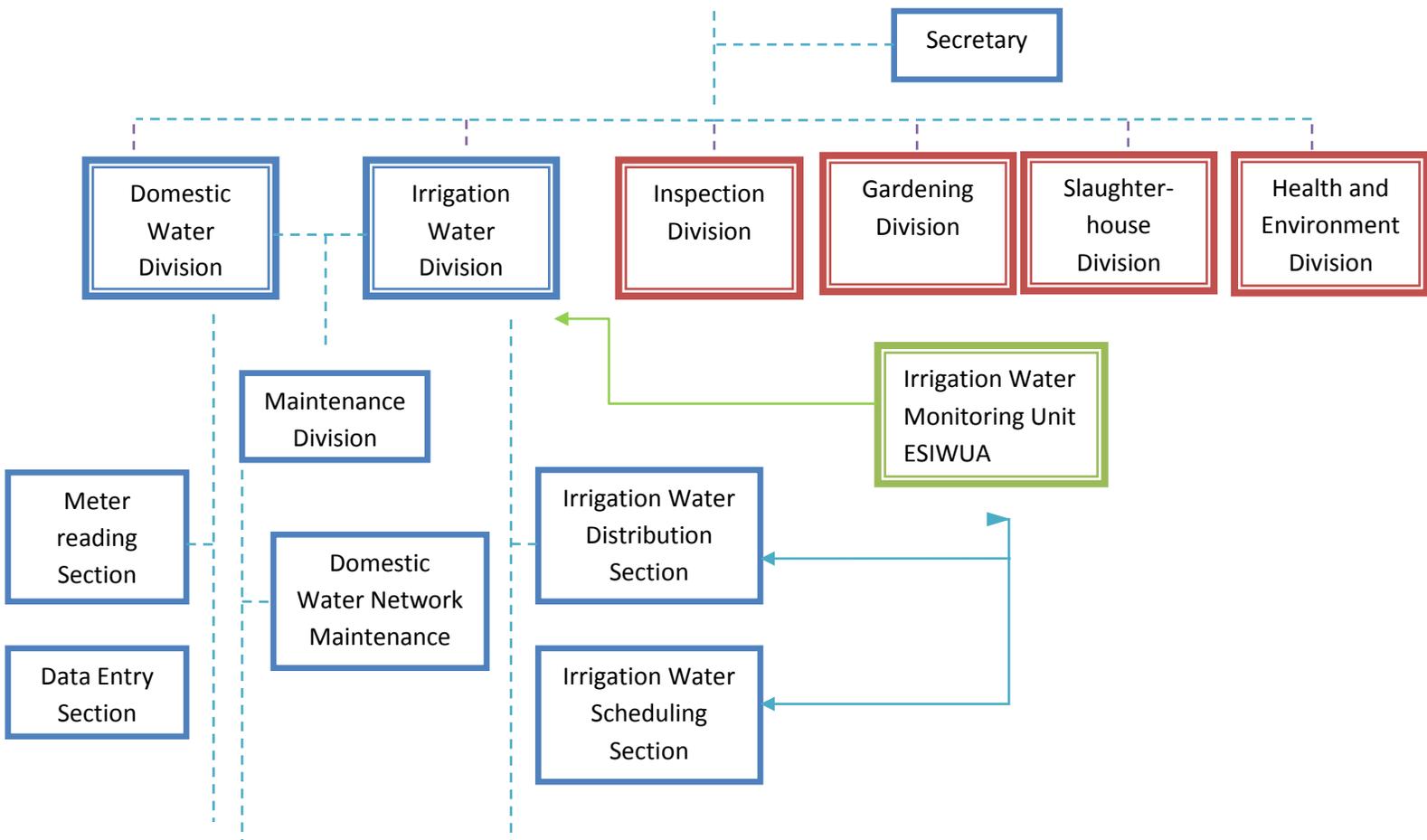
4.2. Short term

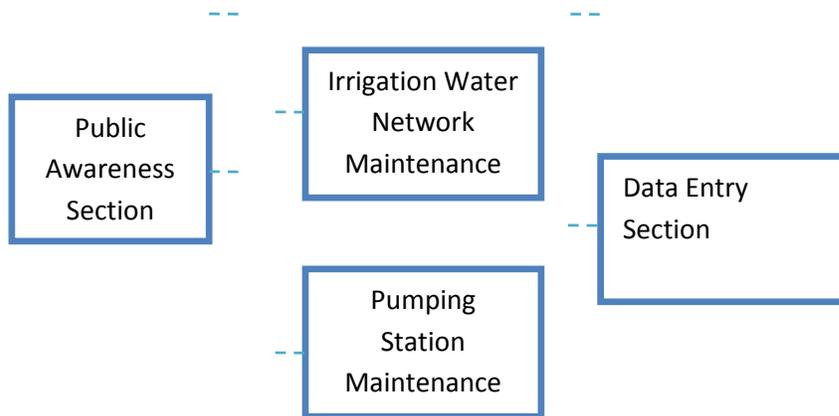
4.2.a. Current arrangement with the involvement of ESIWUA as observer

It is recommended to find a space for the ESIWUA to monitor the irrigation water component and cooperate with the Municipality to address critical management issues and to make sure that farmers are receiving their quotas in the designated quantities and on time.

Accordingly, some modifications in the current structure is needed in order to ensure more efficient water supply management and ensure more coordination among the divisions. It is important to clarify the responsibility of each division and how the new mechanism of monitoring irrigation water can be accommodated within the proposed new arrangement. To reflect this proposal the following chart, figure 4, is suggested:

Figure 7. overall municipality proposed structure





Based on this structure, ESIWUA will be involved in observing the irrigation water supply and scheduling. They will have better access to information and they will contribute toward improving the satisfaction of the farmers in terms of quantity and timing of water supply for irrigation. Moreover, number of employees can be employed and supported to build the capacity of ESIWUA and to enable them from participating more actively in improving the water management in Jericho. As can be seen, they will have direct coordination access with the Division manager to exchange information and to report any demand or complaints or modify some practices to improve the situation.

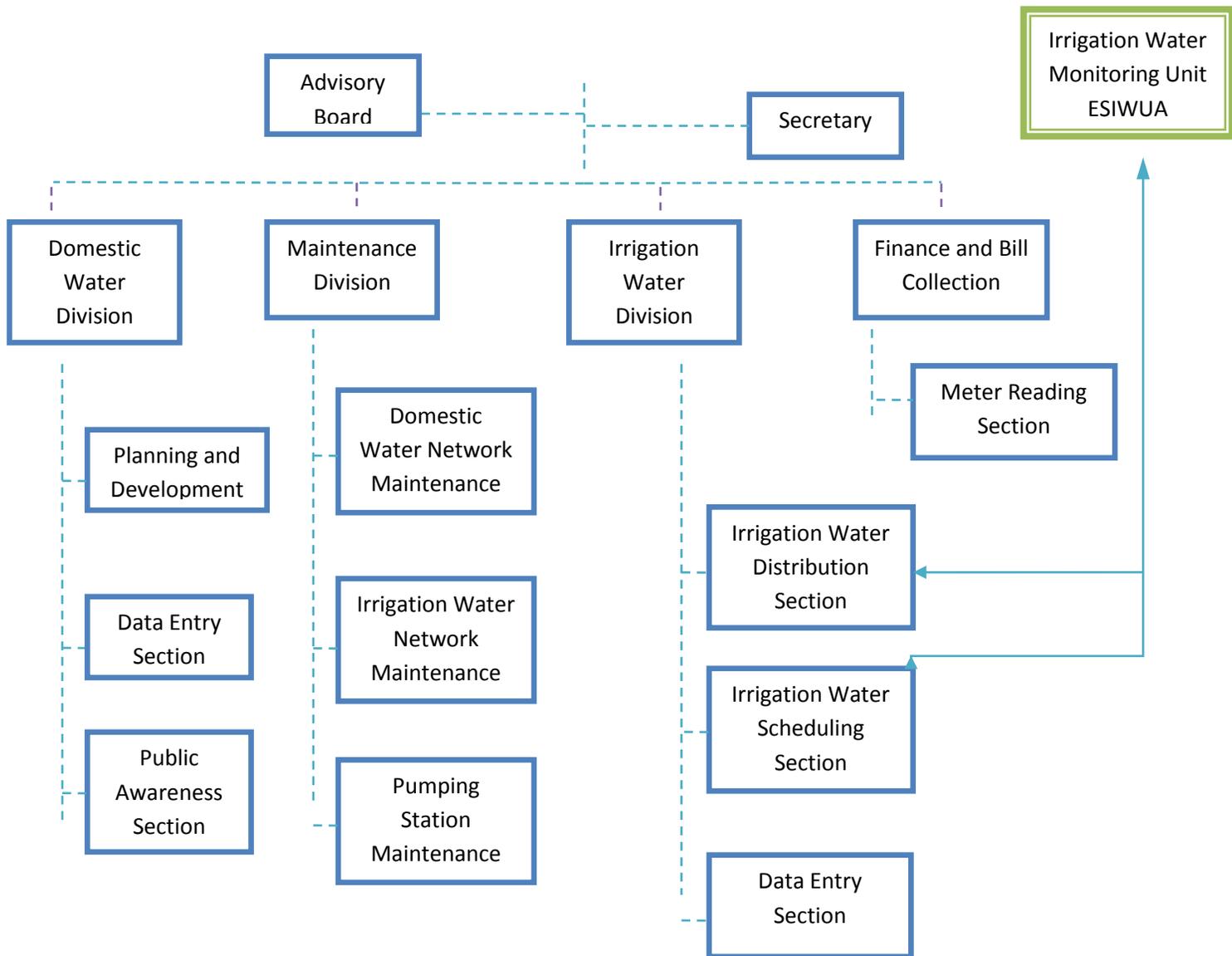
4.3. Medium and Long Term

Alternative 1

Autonomous Water Department within the Municipality of Jericho

To have the same structure proposed earlier but the water department to be independent with separate administration under the overall management of the Municipality. It is possible to have an advisory board that consists of the Municipality, the ESIWUA, PWA and MoA. The chart can look like the following:

Figure 8. proposed water and drinking unit



Despite the fact that ESIWUA is represented in the advisory board, it is important to keep their monitoring status at the operational level to make sure that they have access to information and they can contribute toward improving the irrigation water management.

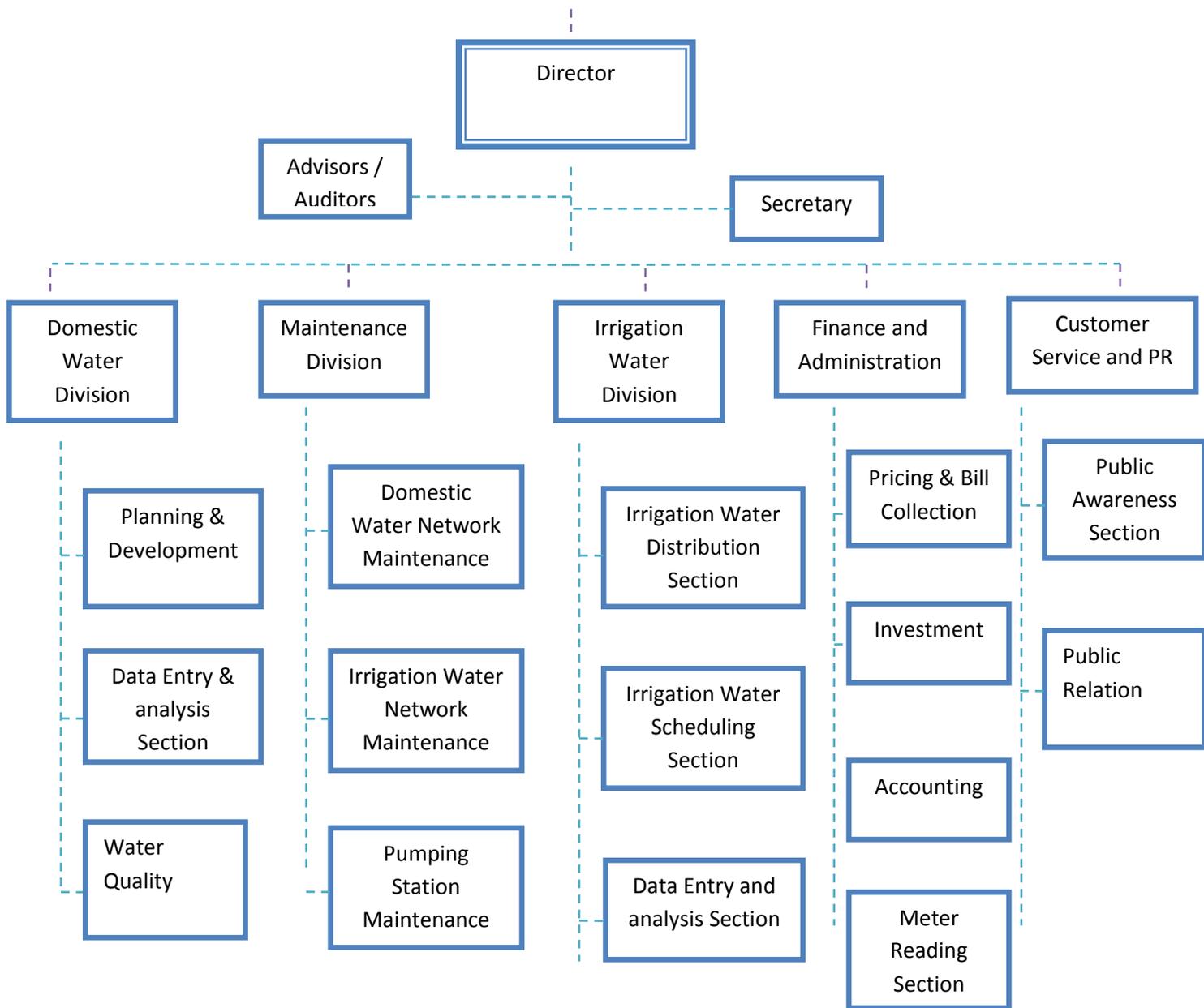
Alternative 2

Independent Water Institution for Water (Realizing the Presidential Decree)

A water institution to be created to manage drinking and irrigation water in Jericho in accordance with the Presidential Decree no. 38 for the year 1998. Such institution will be managed by a management board that comprises of Jericho Municipality, ESIWUA, PWA and MoA. The institution will manage both drinking and irrigation water. The board will set the policies and agree on the roles of the members and ensures the coherent running of the institution.

Figure 9..alternative 2. structure





Both Jericho Municipality and ESIWUA will be represented in the Board and will have equal voting power. Of course this will be on the ground that the latter’s institutional capacity will be build and will be empowered to participate in decision making. Furthermore, it is important to make sure that ESIWUA is fully representative of the farmers and that it is a democratic institution and accountable to its members. The representative of ESIWUA in the Management Board will be elected by the GA of

ESIWUA. It will also demonstrate financial and administrative capacity that enable it from participating in the management of the Water Institution properly.

It is good to mention that the structure proposed above for the water institution can be expanded to accommodate other departments or divisions as needed. Moreover, detailed description of the responsibilities of each department or division needs also to be developed in order to make sure that the institution is functioning properly.

4.4. Recommendation for water institutional reform

During the sector review study the national consensus have been focused on the following recommendations

The following recommendations are presented for discussion. It is the intent to present only feasible, pragmatic and/or implementable actions that can be adopted, or cultivated with focused capacity development and implemented in the next three years.

- R1 By means of a executive order, create a Palestinian Ministry of Water and Environment; and transfer the appropriate policy, legislative, planning, data bank and resource management functionality from the PWA and the EQA.
- R2 Amend the Water Law and the Local Government Law to accommodate the creation, operation, management and regulatory functions associated with water and wastewater utilities or municipal corporations and water source owners.
- R3 Initially, re-organize the Palestinian Water Authority into a Palestinian Water and Wastewater Regulatory Authority responsible for regulating all water sources and all service providers and eventually all environmental matters associated with regulating air pollution, water pollution, solid and hazardous waste disposal, pesticides and toxic substances.
- R4 Create a public Water and Wastewater Management Company to oversee the management of the sector, investments, utility and/or corporation performance (operational and financial), sector capacity development, donor project management, private sector involvement.

R5 Initially limit the involvement of the private sector in the water and wastewater sector to management contracts and outsourcing, BOT and BOO projects, particularly in desalination plant operations over the next three years.

R6 Prepare the following:

- An Integrated Water Resource Management Strategy and Strategic Plan;
- A Groundwater Master Plan by basin and aquifer;
- A Groundwater Protection Zone designation and enforcement strategy;
- A strategy to reduce technical water losses by 30% over the next five years;
- A strategy to reduce administrative water losses by 30% over the next five years;
- A plan to develop the capacity to update and sustain a strategy development and master planning function in the Ministry of Water and Environment. (see hydro-consult –sector review report

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