

**An-Najah National University**

**Faculty of Graduate Studies**

# **Optimization of Private Sector Involvement in the Palestinian Water Sector Governance**

**By**

**Tariq Ghassan Suleiman Judeh**

**Supervisor**

**Prof.Dr. Marwan Haddad**

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**This Thesis was defended successfully on 25/7/2017 and approved by:**

**Defense Committee Member**

**Signature**

– **Prof. Dr. Marwan Haddad (Supervisor)** .....

– **Dr. Jawad Hassan Shoqeir (External Examiner)** .....

– **Dr. Abdelhaleem Khader (Internal Examiner)** .....

### III

## **Dedication**

To my parents, brother and sisters, without whom none of my success  
would be possible.

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## الإقرار

أنا الموقع أدناه مقدم الرسالة التي تحمل عنوان:

### **Optimization of Private Sector Involvement in the Palestinian Water Sector Governance**

أقر بأن ما اشتملت عليه هذه الرسالة إنما هي نتاج جهدي الخاص، باستثناء ما تم الإشارة إليه حيثما ورد ، وأن هذه الرسالة ككل، أو أي جزء منها لم يقدم لنيل أي درجة أو لقب علمي أو بحثي لدى أي مؤسسة تعليمية أو بحثية أخرى.

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The work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification

**Student's Name:**

اسم الطالب:

**Signature:**

التوقيع :

**Date:**

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## List of Abbreviations

Abbreviation	Meaning
BOT	Build-Operate-Transfer
MCDA	Multi Criteria Decision Analysis
MCM/y	Million cubic meter per year
mm/y	mm per year
MOA	Ministry of Agriculture
MOF	Ministry of Finance
MONE	Ministry of National Economy
MOP	Ministry of Planning
MOT	Ministry of Transportation
MPWH	Ministry of Public Works and Housing
NIS	New Israeli Shekel
OECD	Organization for Economic Co-operation and Development
PENRA	Palestinian Energy and Natural Resources Authority
PEQA	Palestinian Environment Quality Authority
PIF	Palestine Investment Fund
PMA	Palestinian Monetary Authority
PPP	Public Private Partnership
PSC	Private Sector Committee
PSI	Private Sector Involvement
PWA	Palestinian Water Authority
R&R	Rules and Regulations
SS	Sample Size for Targeted Population
SSIP	Sample Size for Infinite Population
WSRC	Water Sector Regulatory Council

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Sector Governance**

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**Supervisor**  
**Prof. Dr. Marwan Haddad**

**Abstract**

Private sector involvement (PSI) in water sector is a sensitive issue that may be affected by several factors such as: investment determinants, economic situation of the country, legal aspects, social aspects and political aspects, these factors make PSI success level varies from state to another.

Palestinian water sector suffers from various problems including: variability in water quantities from one governorate to another, dependency on donor countries, weak relationships between the different institutions in the Palestinian water sector, and failings in the management and development of water resources. All of these shortcomings, especially the economic ones, need to be taken into consideration. However, there are limited studies on the governance of PSI in the Palestinian water sector.

This research was conducted in order to achieve the following objectives: the first one: conduct SWOT analysis for PSI in the Palestinian water sector, the second: identify the key types, areas, framework, and legal framework for PSI in the Palestinian water sector, and finally: optimize the best PSI techniques in the Palestinian water sector through qualitative analysis of collected data.

The main research question is: what are the effects/impacts and possibilities of PSI realization in Palestinian water sector governance?

Research methodology was designed in two main parts: First part, Water governance assessment for the Palestinian water sector. Second part, optimization of PSI in the Palestinian water sector.

Water governance assessment for the Palestinian water sector should be achieved before starting any future trends and plans. This research applies an existing water governance assessment matrix, which was tailored to the local context of Palestine. The tailored matrix includes 13 dimensions that were assessed through questions on four quality criteria. Empirical data was collected through interviews with 60 respondents that represent the major actors of the Palestinian water sector. Findings indicate that the two most supportive dimensions or the least in need of improvement were: water quality and institutions and institutional capacity, and the two most restrictive dimensions or the most in need of improvement were: political issues and social issues.

A detailed questionnaire was designed in order to collect administrative, structural, technical, legal, financial, political and social information about all the aspects concerning PPP. Each questionnaire was divided into 11 main parts. Empirical data was collected through 90 questionnaires filled by respondents that represent the major actors of the Palestinian water sector. Analysis of the obtained data shows that PPP is more preferable choice to lead the Palestinian water sector rather than public or private sector alone, BOT contracts are the most suitable contracts to involve and make a

partnership with private sector. It also shows that PPP unit should be established under the Palestinian government supervision and play the role of coordinator between public sector and private sector, and it should be funded by 2 sources which are: government budget and from the fees imposed on projects budget.

It is recommended that the strengths and weaknesses of the water governance system are comprehensively addressed, and water governance assessment should be reviewed and improved in a timely manner. The results of this research will be shared with the main actors of the Palestinian water sector.

## **1. Introduction**

### **1.1. Water governance and PSI**

As local demand from the agricultural, industrial, domestic and environmental sectors increased above the available and or renewable supply, the governance of water resources including the private sector involvement became one of the most important tools to enhance the sector management (UNDP, 2013). There is a trend for governments to involve the private sector in planning, managing, designing, building, financing and operating infrastructure facilities owned by the public sector. All of these aspects grant policy makers the chance to enhance the delivery of services and the management of facilities (UNDP, 2013). Bringing the private capital is one of the benefits of private sector involvement because the estimated demand for investment in public services show that the governments and even donor resources fall under the amount required (The international bank for reconstruction and development, 2009).

This study focuses on water governance in Palestine, which deserves a contextualized approach to reflect the political and economic realities of the country. Palestine is under Israeli occupation since 1967 and it was exposed to many abuses. For instance, through West Bank, Palestinian Authority has limited control over the areas that are classified as areas A and areas B, and has no control over the areas that are classified as areas C. On the other side, Gaza Strip is under Israeli blockade that significantly restricts mobility of



people and goods (HRW,2010). According to article 40 of Oslo Agreement, most of Palestinian water resources are also under Israeli control (PWA, n.d.; The Government of the State of Israel and the Palestine Liberation Organization, 1995). Additionally, Palestinian economy is highly dependent on donor countries and driven by independent organizations (Ministry of Planning and Administrative Development, 2012).

## **1.2. Importance of this research in Palestine**

The Palestinian water sector suffers from various problems (Global Water Partnership Mediterranean & PWA, 2015), which are:

- Variability in water availability and water services between the various governorates.
- Dependency on donor countries in order to cover the financial deficiencies.
- Create new water projects, week relationships between the different institutions in the Palestinian water sector.
- Limited accessibility to the Palestinian water resources because of the abusive practices done by the Israeli occupation.
- Failings in the management and development of water resources and declining investment rates which led to low per capita water resource availability.

All of these reasons and shortcomings, especially the economic ones need to be taken into consideration and if possible solved (The World Bank,

2009). However, there are limited studies on the governance of private sector involvement in the Palestinian water sector.

### **1.3. Research objectives**

The main objectives of this research are listed in the following points:

- 1) Conduct SWOT analysis for PSI in the Palestinian water sector.
- 2) Identify the key types, areas, framework, and legal framework for private sector involvement in the Palestinian water sector.
- 3) Optimize the best private sector involvement techniques in the Palestinian water sector through qualitative analysis of collected data.

### **1.4. Research questions**

In order to achieve the research objectives, this research will try to answer the following key question:

- What are the effects/impacts and possibilities of PSI realization in Palestinian water sector governance?

## **2. Literature Review**

### **2.1. Background**

Water plays a fundamental role in sustainable development, which fights poverty. The abuse of water resources was strongly increased over the past decades, reaching a point where water quantities and quality are adversely affecting economic and social development, political stability and ecosystem integrity. Given the importance to poverty reduction and human and ecosystem health, the governance of water resources becomes vital. (UNDP, 2007a).

The term “governance” covers various topics that together constitute a unified system. There are different definitions of water governance. For instance, Global Water Partnership defines water governance as “the range of political, social, economic and administrative systems that are in place to develop and manage water resources, and delivery of water services at different levels of society” (Rogers and Hall, 2003). Through water governance, communities articulate their interest, decisions are made and implemented and decision-makers are accountable in the development and management of water resources and delivery of water services. Water governance is a dynamic process that varies in time, so governance system changes from past to present and it will need to improve to be effective in the future. Water governance assessment should be held as a base for any future trends in the sector, in order to have a clear sight on the strengths and weaknesses of the water sector (Michalski et al, 2001). One of the most

important issues in water governance is stakeholder engagement and private sector involvement in terms of investment, consulting, managing etc. (Michalski et al, 2001)

Private sector involvement is an agreement between governmental bodies and private entities in a contractual manner. It includes the bringing of creative skills and good management practices leading to reduce the governmental risk. PSI can provide cost-effective services or infrastructure by using the strength of both public and private sectors at the same time. One of the most important aspects in this involvement are the incentives and the limitations that manage and protect the right of citizens, states and private sector and make a balance between them. PSI can be applied in two main forms which are: public private partnership (PPP) and privatization (Cui & Lindly, 2010).

## **2.2. Origin of PPP**

The beginnings of PPP returns to the Roman Empire two thousand years ago. Postal stations network was developed to be in line with life evolution. The postal stations were constructed and managed by a private partner for a five year period concession contract (The World Bank, 2015).

PPP's in water sector might be found in the concession contracts. In 1438, Rhine River was granted in concession contract to charge the fees for goods transported on it by the French nobleman Luis de Bernam. Another example of the PPP concession contract was the contract that had been signed in 1792 in France between the government and the brothers Perrier for water

distribution in Paris. The real evolution in private sector participation in public investments has been found in the period since the turn of the seventeenth and eighteenth centuries to the end of the nineteenth century, when construction of infrastructure facilities (water channels, roads, railways) in Europe and later in America, China and Japan were funded by private sources under concession contracts (Cui & Lindly, 2010).

In the 1950s and 1960s, US government applies PPP as a tool to increase private investment. Private providers were assumed capable of providing higher quality and service with a lower cost. It was also assumed or taken for granted that they were reducing government's responsibilities and tasks. The US was not the only place in which PPP grew in importance in the second half of the twentieth century. For instance, in the 1960s, toll roads were developed in Spain. (Cui & Lindly, 2010).

Private sector involvement in the provision of water services was considered a controversial trend that has three different schools of thought (Prasad, 2006). The first group was international financial institutions like the World Bank arguing that since the governments have failed to provide access to water of good quality for everyone, it is worth turning to the private sector. The second group argues that access to water is a human right and it is the government's obligation to provide such a vital resource to everyone. The third group believes that PPP is the best choice that considers water as an economic good and a human right at the same time. (Prasad, 2006).

### **2.3. PPP experiences in water sector**

PPP Experiences in water sector affect various aspects through the sector such as: accessibility of water, service quality, affordability of water, water losses, bill collection, labor productivity and governance of PPP.

#### **2.3.1. Accessibility of water**

Water services accessibility is measured by the coverage of piped water, which reduces the distance covered by consumers to collect water. Many countries have used various forms of public private partnerships and it is not easy to have a comprehensive assessment of the performances. It is estimated that more than 24 million people in developing countries are connected to piped water through PPP water projects since 1990 (Marin,2009).

In Senegal and Côte d'Ivoire, 3 million people have gained access to piped water after they were connected to household connections since 1990 (Marin, 2009).

In Argentina, water and sewerage network in Buenos Aires was operated by the government until 1993, after that it was privatized for a 30-year period through concession contract. Potable water production through the privatization increased by 26%. (Obosi, 2013)

In Zambia, the accessibility to potable water rate decreased from 73% in 1990 to 53% in 2005 after the privatization of water services due to the failings in water sector management. It is noted that the access to piped water remained a concession of the urban consumers. (Dagdeviren, 2008)

### **2.3.2. Service quality**

Service quality refers to reliable and continued supply of clean and safe water in the required quantity and at the right time. It has been argued that service quality considerations are more important than the cost of water in the eyes of the low income people. Those people are willing to pay up to 10 percent of their income compared with the general norm of 3 per cent for a formal connection to water supply that usually guarantees safe water and better service (Zaki et al, 2009). However, not all PPPs have succeeded in the development and improvement of service quality. For instance, in Manila (the Philippines) the concessionaire in the Western zone failed while that in the Eastern zone succeeded (Marin, 2009).

### **2.3.3. Affordability of water**

It is found that water utilities owned by the government in the United States had higher costs than the privately owned counterparts, despite that the government and private sectors had the same operational costs for water utilities (Obosi, 2013). On the other side, in France it is noted that the private firms charge higher prices than public ones (Obosi, 2013). A study of water prices in France in May 2001 that covered 68% of the French population found that, water delivered by private companies is 27% more expensive than that delivered by public operators (Obosi, 2013).

#### **2.3.4. Water losses**

Controlling water losses is a vital issue for any country. Several multi-countries studies conducted in developing countries conclude that PPP were effective technique in reducing water losses. For instance, PPP succeeded in reducing water losses in Western Africa, Brazil, Colombia, Morocco, and Philippines (Marin, 2009).

#### **2.3.5. Bill collection**

In developing countries, it is common that people won't pay for poor services. In general, public utilities have a weak to moderate performance, so they have low bill-collection rates. In contrast, PPP is an efficient technique in bill collection (Marin, 2009).

#### **2.3.6. Labor productivity**

In developing countries, there is indicators that PPP leads to higher labor productivity (measured as the number of employees per thousand customers). This increase in labor productivity is achieved through 2 main factors: employees' reductions and increases in the customer base (Marin, 2009).

#### **2.3.7. Governance of PPP**

In Mauritania, the government delegated the water management in small towns to private providers called concessionaires in 1993. These concessionaires were expected to supply water to the consumers. The



concessionaires were only responsible for operation and maintenance costs, while the government covers the capital cost (Cardone and Fonseca, 2003). In Egypt, the government delegated the design, finance, construction, operation, and maintenance of a new wastewater treatment plant with a capacity of 250,000 m<sup>3</sup>/day in New Cairo City to the private sector under a PPP program and contracts. This was the first successful transaction under the government's PPP program and a model for future PPPs. The new plant was completed in March 2012 and it is currently under operation (World Bank Group, 2014).

#### **2.4. PSI in Palestine**

In Gaza Strip, small and large scale PPP projects that extend across the entire spectrum of the project cycle was established. These partnership was under management contracts. In 1996, a company known as LEKA consisting of France's Lyonnaise des Eaux alongside with Khatib & Alami company were awarded a four-year contract to manage the water and wastewater system in the Gaza Strip. In 1999, Khatib and Alami also partnered with Vivendi, as the GEKA consortium to manage the water and waste water systems in Bethlehem and Hebron through management contract. In fact, these contracts are essentially private sector intervention schemes and considered as short term contracts to assist the local government service providers and the Palestinian Water Authority (PWA) in order to improve water services. These contracts offer the advantages of access to operational funds (Global Water Partnership Mediterranean & PWA, 2015).

## **2.5. Summary**

From the literature review it is noted that there are variations worldwide between the techniques used to involve private sector in water sector governance, and the effects of this involvement on the water sector. Sometimes, this involvement succeeds and positively affects the water and financial dimension of the sectors. Other times, it fails and negatively affects the water and financial dimension of the sector. These variations resulted from many factors that make the involvement more complex including: investment determinants, economic situation of the country, legal aspects, social aspects and political aspects. Accordingly, there is a need to conduct this study about the private sector involvement in the Palestinian water sector.

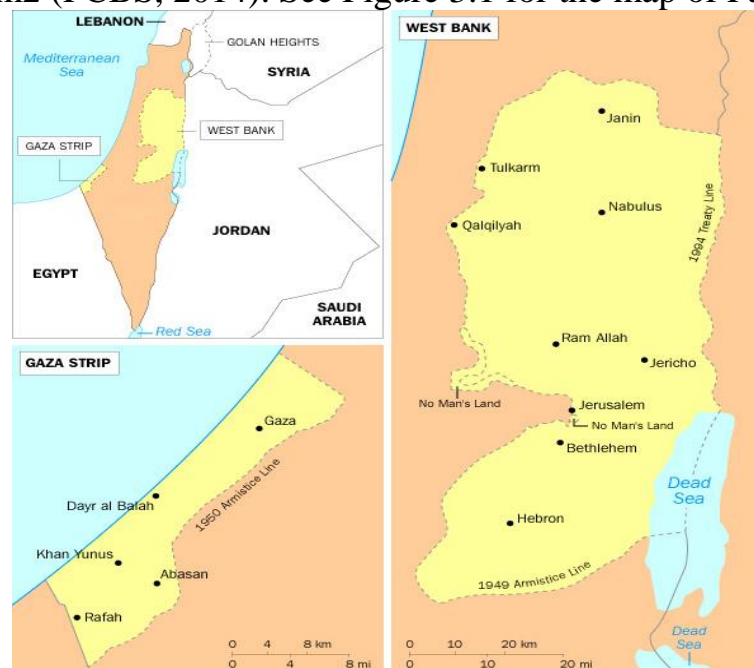
### 3. Methodology

#### 3.1. Study Area

This section shows some facts that describe the area, population and water sector in Palestine.

##### 3.1.1. Overview

Palestine including West Bank, East Jerusalem and Gaza Strip is the land area occupied by Israel since 1967. In 2014, West Bank including East Jerusalem has a population of approximately 2.8 million and an area of 5860 km<sup>2</sup>, and Gaza Strip has a population of approximately 1.76 million and an area of 360 km<sup>2</sup> (PCBS, 2014). See Figure 3.1 for the map of Palestine.



**Figure 3.1** Map of Palestine

(Source:

[http://www.globalsecurity.org/military/world/palestine-images/palestine-map.gif](http://www.globalsecurity.org/military/world/palestine/images/palestine-map.gif))

Water in Palestine comes from 3 main resources which are Rainfall, Surface water and Groundwater (PWA, 2012). Rainfall shows large spatial and temporal variation, with long-term annual average rainfall of 450 mm/y in West Bank and 327 mm/y in Gaza Strip, which is equivalent to rainfall volume of 2542 MCM/y and 120 MCM/y, respectively. Surface water is mainly in the Jordan River and ephemeral wadis. Jordan River discharges 30 MCM/y into the Dead Sea, and the long-term average annual flow through wadis in the West Bank is estimated at about 165 MCM/y. However, Palestinians do not have access to surface water. Groundwater from the main aquifer, wells and springs is considered the main source of water for the Palestinians and provides more than 90% of all water supplies. The main aquifer can be divided into four distinct units: Western Aquifer Basin, North-eastern Aquifer Basin and Eastern Aquifer Basin for the West Bank, and Coastal Aquifer for Gaza, with long-term total annual average recharge of 578-814 MCM/y and 55-60 MCM/y in the West Bank and Gaza Strip respectively. There are about 383 wells in the West Bank, of which 119 wells are not pumping or abandoned and in need for rehabilitation, the total abstractions from these wells are 64.3 MCM/y. There are about 300 main springs in the West Bank, with a long-term annual discharge of 54 MCM (PWA, 2012).

The Palestinian water sector institutions and institutional framework have been established since 1995 to manage water resources and water uses, including the provision of water and the wastewater services (PWA, 2013). Recently, various projects have been implemented in order to serve the

performance of Palestinian water sector. Most of these projects are related to water services and provision, such as wells, water distribution networks, pumping stations and reservoirs. Due to increasing needs, several wastewater treatment plants have also been constructed in the West Bank (PWA, 2013). Additionally, water sector reform plans and water laws were conducted by PWA, through the assistance of and coordination with other water organizations and governmental institutions (PWA, 2013, 2014). However, most of the solutions and suggestions in these plans and laws cannot be implemented due to the lack of Israeli approval in the Joint Water Committee.

Due to the difficulty in coordination and accessibility to Gaza Strip, this research was made only in the West Bank, with the knowledge that there is a significant difference between the situations of the water sector in West Bank and in Gaza Strip.

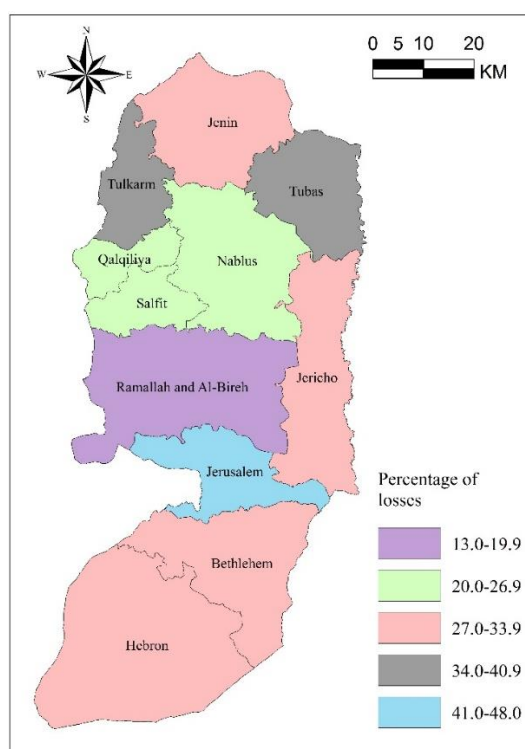
### **3.1.2. Water sources and supply in Palestine**

In this section, seven main groups of raw data including: (percent of losses through water networks, per capita consumption rate, un-served population with a water network, un-served population with sewage network, bill collection percentage, unit price of m<sup>3</sup> of water and employees' productivity through water providers' institutions) are collected from PWA reports and from personal visiting to PWA. After that, these groups of data are processed and represented by spatial GIS maps.

### **3.1.2.1. Percent of losses through water networks**

This section includes 2 figures, Figure 3.2 shows percent of losses through water networks in West Bank governorates through the year 2014, and Figure 3.3 shows the difference in percent of losses in each governorate between the years 2011 and 2014. (PWA, 2011)

Percent of losses has its highest value in Jerusalem which equal 48%. On the other hand, Ramallah and Al-Bireh has the lowest percent of losses which equal 13%. As figure 3.2 shows, Nablus, Qalqiliya and Salfit have a very good percent of losses with respect to the other governorates in the West Bank, these losses ranged from 20.0 to 26.9 percent. Jenin, Jericho, Bethlehem and Hebron have a moderate percent of losses ranged from 27 to 33.9 percent. Tulkarm and Tubas have a high percent of losses with respect to the other governorates in the West Bank, these losses ranged from 34.0 to 40.9 percent.

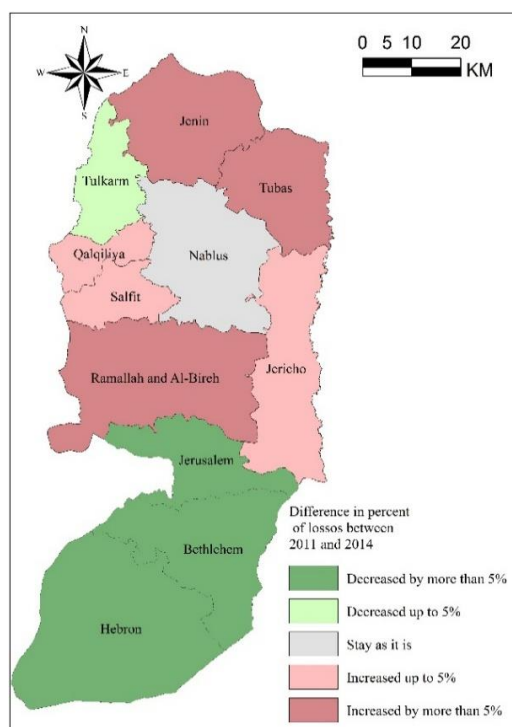


**Figure 3.2** Percent of losses through water networks in West Bank governorates through the year 2014

(Data Source: Eng. Ashraf Dwaikat, PWA)

Figure 3.3 shows the difference in percent of losses in each governorate between the years 2011 and 2014. Jerusalem, Bethlehem and Hebron improved their networks and reduced the percent of losses by more than 5% from the year 2011 to the year 2014. For example, this percent decreased by 14% in Hebron and by 11% in Bethlehem. Tulkarm also developed through these years and reduces their water losses but with a smaller percent that doesn't exceed 5%. Nablus is the only one that has approximately the same percent of losses between the years 2011 and 2014. Qalqiliya, Salfit and Jericho networks are adversely affected, so their percent of losses increased but with a small percent that doesn't exceed 5%. Ramallah and Al-Bireh, Jenin and Tubas have the worst cases in these years because of the large

increase in percent of losses that exceed 5% in the period between 2011 and 2014. For example, this percent increased by 17% in Jenin and by 9% in Tubas.



**Figure 3.3** Difference in percent of losses in each governorate between the years 2011 and 2014.

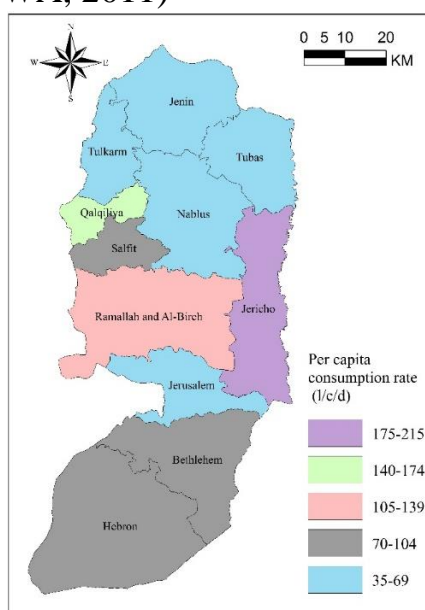
(Data Source: PWA, 2011. Annual Status Report on water resources, Water Supply, and Wastewater in the Occupied State of Palestine.)

### 3.1.2.2. Per capita consumption rate

This section includes 2 figures, Figure 3.4 shows per capita consumption rate in West Bank governorates through the year 2014, and Figure 3.5 shows the difference in per capita consumption rate in each governorate between the years 2011 and 2014. As figure 3.4 Shows, Jericho has the highest per capita consumption rates and followed by Qalqiliya with a very good rate.



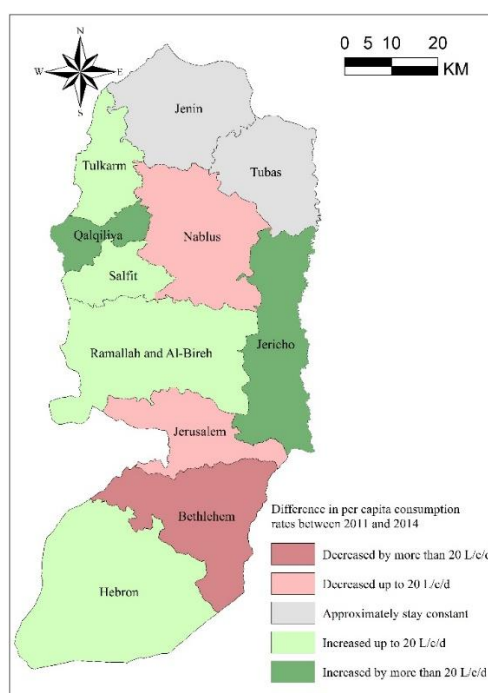
Ramallah and al-Bireh has a moderate rate. The deficiencies start to appear in Salfit, Bethlehem and Hebron but the real risk exists in Jenin, Tulkarm, Nablus, Tubas and Jerusalem that have a per capita consumption rates ranged from 35 to 69 L/c/d. (PWA, 2011)



**Figure 3.4** Per capita consumption rate in West Bank governorates through the year 2014

(Data Source: Eng. Ashraf Dwaikat, PWA)

Figure 3.5 shows that per capita consumption rates increased in Jericho and Qalqiliya through the period from 2011 to 2014 by a more than 20 L/c/d. Ramallah and al-Bireh, Salfit, Tulkarm and Hebron are positively developed but with small rates that don't exceed 20 L/c/d. Rates in Jenin and Tubas approximately stay as they are in 2011. Rates in Nablus and Jerusalem are adversely affected through this period, but with rates less than 20L/c/d. The largest drop in per capita consumption rates occurred in Bethlehem with a drop equals to 31.7 L/c/d.



**Figure 3.5** Difference in per capita consumption rate in each governorate between the years 2011 and 2014.

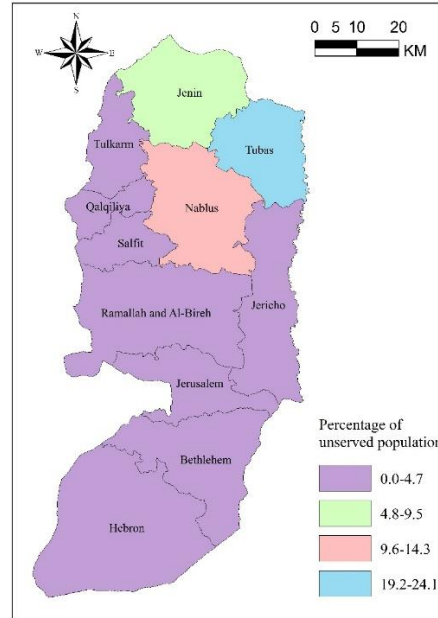
(Data Source: PWA, 2011. Annual Status Report on water resources, Water Supply, and Wastewater in the Occupied State of Palestine.)

### 3.1.2.3. Un-served population with a water networks

This section shows and discusses the percentage of un-served population with a water networks through the year 2011, because more recent data are not available through published reports, nor through visiting PWA. (PWA, 2011)

Figure 3.6 shows that most of the governorates in the West Bank are approximately totally served (more than 95% of their population) with a water networks. Just three governorates have an un-served population with water networks that don't exceed 5%. They are Jenin, Nablus and Tubas. The

worst case was occurred in Tubas with un-served population of approximately 24%.



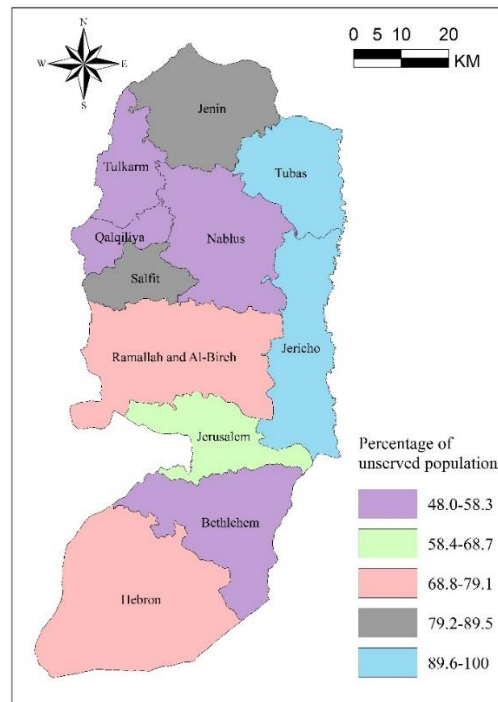
**Figure 3.6** Percentage of un-served population with a water networks through the year 2011

(Data Source: PWA, 2011. Annual Status Report on water resources, Water Supply, and Wastewater in the Occupied State of Palestine.)

#### 3.1.2.4. Un-served population with sewage network

This section shows and discusses the percentage of un-served population with a sewage networks through the year 2011, because more recent data are not available through published reports, nor through visiting PWA. (PWA, 2011)

Figure 3.7 shows that in general all the governorates in the West Bank are un-served with more than 50% of their population, and in some cases this percent exceeds 90% like the situation in Jericho. This is a risk indicator that PPP should take into consideration in the Future.



**Figure 3.7** Percentage of un-served population with a sewage networks through the year 2011

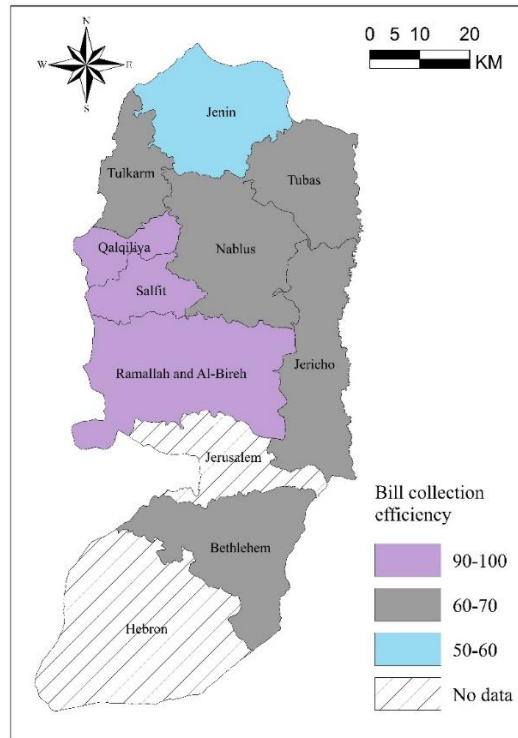
(Data Source: PWA, 2011. Annual Status Report on water resources, Water Supply, and Wastewater in the Occupied State of Palestine.)

### 3.1.2.5. Bill collection percentage

Bill collection percentage is an indicator of the governance and management techniques that applied in each governorate. This section discusses the bill collection efficiency in each governorate through the West Bank except Hebron and Jerusalem in 2011, because more recent data are not available through published reports, nor through visiting PWA. (PWA, 2011)

Figure 3.8 shows that Ramallah and Al-Bireh, Salfit and Qalqiliya have a bill collection percentage which exceeds 90%, and reaches 92.5% in Qalqiliya as the highest percent through the West Bank. Tulkarm, Tubas, Nablus, Bethlehem and Jericho have a moderate bill collection percentage

that ranged from 60 to 70%. Jenin has the lowest bill collection percentage in the West Bank that equals to 51.2%. So it is considered a weak percentage that should be taken into consideration when applying PPP.



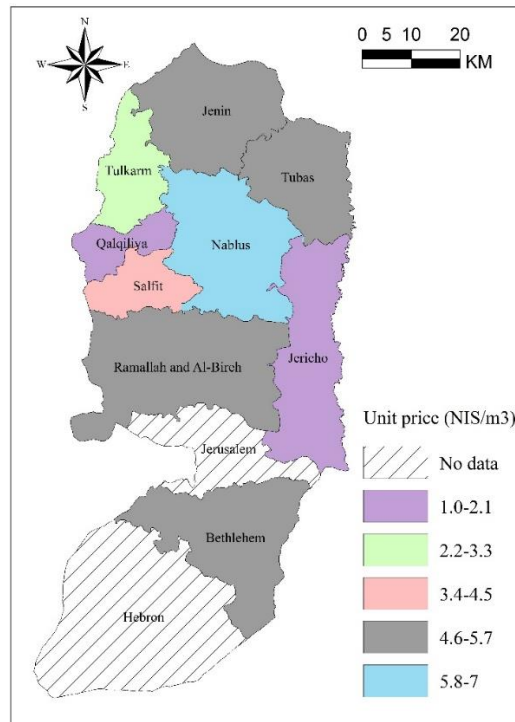
**Figure 3.8** Bill collection efficiency in each governorate through the West Bank for the year 2011

(Data Source: PWA, 2011. Annual Status Report on water resources, Water Supply, and Wastewater in the Occupied State of Palestine.)

### 3.1.2.6. Unit price of m<sup>3</sup> of water

Water unit price resulted from many factors, such as availability of water, easiness of transport and water quality (Ronald, 2001). This section discusses the unit price of water in each governorate through the West Bank except Hebron and Jerusalem in 2011, because more recent data are not available through published reports, nor through visiting PWA. (PWA, 2011)

Figure 3.9 shows that Nablus has the highest unit price of water that equals 6.21 NIS/m<sup>3</sup>. Ramallah and Al-Bireh, Bethlehem, Jenin and Tubas also have a high unit price compared with the other governorates in the West Bank that ranged from 4.6 to 5.7 NIS/m<sup>3</sup>. Salfit has a moderate unit price of water that equals to 4.13 NIS/m<sup>3</sup>. Tulkarm has a good unit price of water compared with the other governorates in the West Bank that equals to 2.79 NIS/m<sup>3</sup>. The lowest unit price of water occurred in Jericho and Qalqiliya and ranged from 1 to 2.1 NIS/m<sup>3</sup>.



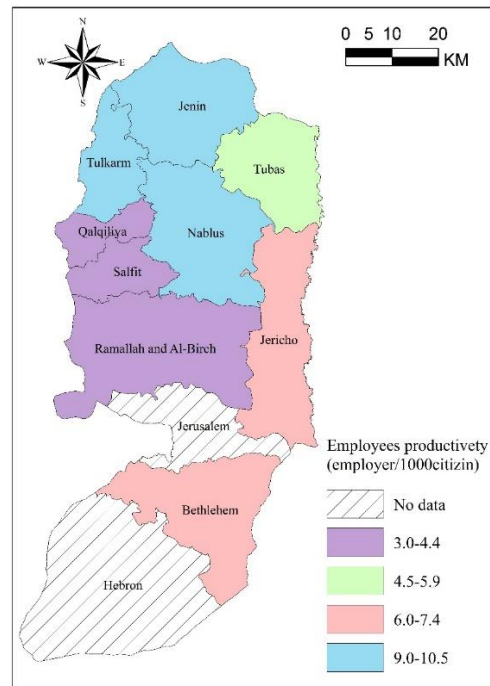
**Figure 3.9** Unit price of water in each governorate through the West Bank for the year 2011

(Data Source: PWA, 2011. Annual Status Report on water resources, Water Supply, and Wastewater in the Occupied State of Palestine.)

### **3.1.2.7. Employees productivity through water providers' institution**

Employees' productivity is an indicator of the integrity and also the management practices and techniques that applied in the institution. This section shows the employees productivity through water providers' institution in each governorate through the West Bank except Hebron and Jerusalem in 2011, because more recent data are not available through published reports, nor through visiting PWA. (PWA, 2011)

Figure 3.10 shows that Ramallah and Al-Bireh, Salfit and Qalqiliya have the highest employees' productivity that ranged from 3 to 4.4 employees/1000 citizens and this reflects the good management in their water providers' institutions and the activity for their employees. In contrast, Tulkarm, Jenin and Nablus suffer from the mismanagement in the number and distribution of employees through their water institutions, so the productivity rates in these governorates ranged from 9 to 10.5 employees/1000 citizens. Tubas, Jericho and Bethlehem have a moderate productivity rates compared with the other governorates in the West Bank.



**Figure 3.10** Employees productivity through water providers' institution in each governorate through the West Bank for the year 2011

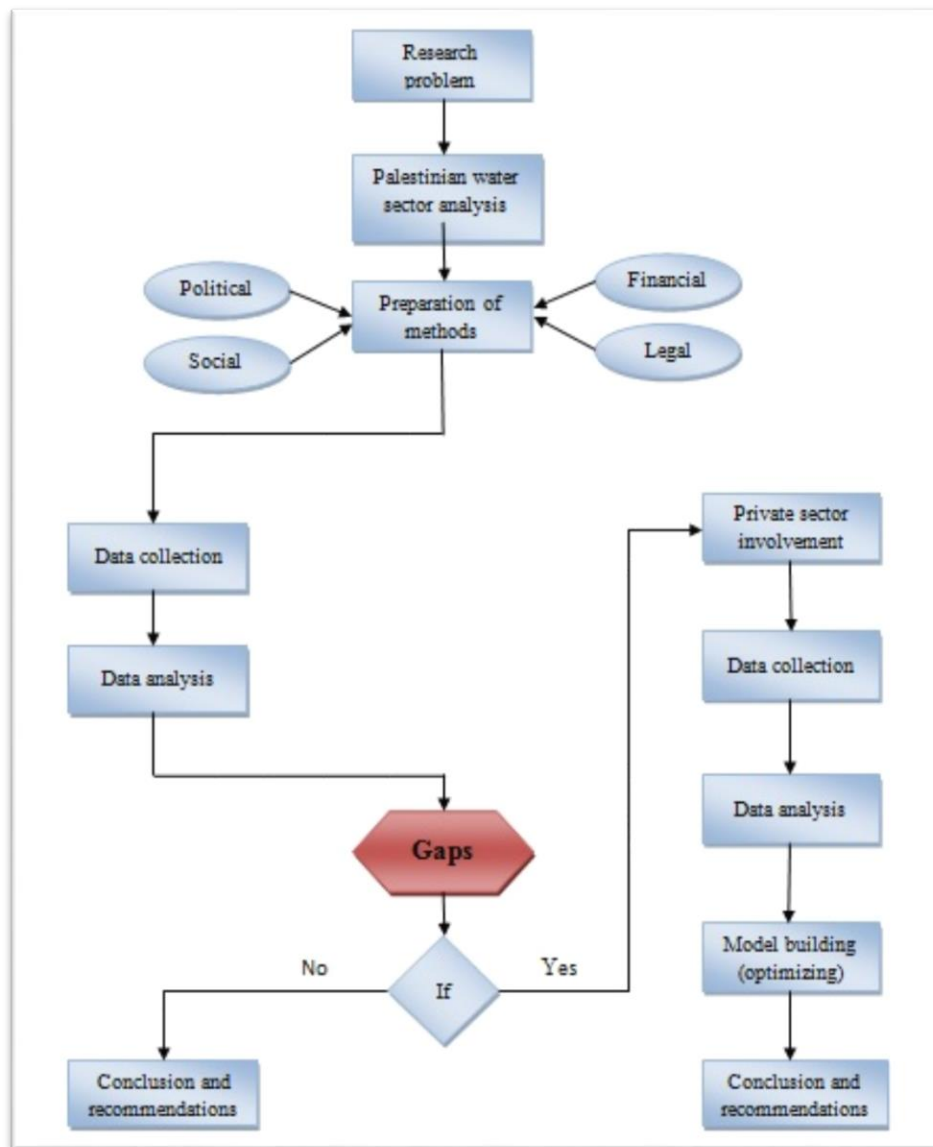
(Data Source: PWA, 2011. Annual Status Report on water resources, Water Supply, and Wastewater in the Occupied State of Palestine.)

### 3.2. Methodology

In order to fulfil the objectives of this research, research activities were planned, designed, and conducted. This study was performed mainly by survey works. Research methodology was designed in two main parts: First part, water governance assessment/analysis for the Palestinian water sector using water governance assessment matrix to end by the main gaps in the sector. Second part, optimization of PSI in the Palestinian water sector by using detailed questionnaires.

The overall research methodology is illustrated in Figure 3.11.





**Figure 3.11** General Methodology Flowchart

### 3.2.1. Governance assessment matrix

As recently overviewed by the OECD Water Governance Initiative, there are various approaches used in assessing water governance systems all over the world (OECD, 2015). The approach that has been adopted in this thesis for assessing water governance in Palestine is a governance assessment matrix,

which was effectively applied in several studies (de Boer et al, 2013, Bressers et al., 2013a, 2013b, 2015).

### **3.2.1.1. Governance matrix design**

The matrix consists of several dimensions (located in the rows) that are evaluated based on specific criteria (located in the columns). Every cell of the matrix has a set of questions to assess the performance of each dimension on each criterion (Judeh et al, 2017).

Detailed analysis of the Palestinian water sector was conducted with water experts from An-Najah National University and PWA, and from reviewing several reports (PWA, n.d., 2012, 2013, 2014). It was noticed that the matrix should be tailored in order to incorporate the political, economic and social factors that are specific to the Palestinian governance context. Therefore, eight new dimensions were included in addition to the first main five dimensions, increasing the total number of dimensions to 13. The main five dimensions and the additional eight dimensions are listed in Table 3.1 and Table 3.2, respectively.

**Table 3.1 The main dimensions in the governance assessment matrix**

Number	Governance Dimension
1	Levels and scales
2	Actors and networks
3	Problems perceptions and goals ambitions
4	Strategies and instruments
5	Responsibilities and resources

**Table 3.2 The additional dimensions used to assess water governance in the Palestinian context**

Number	Governance Dimension
1	Water quality
2	Rules enforcement
3	Institutions and institutional capacity
4	Technology systems
5	Funding
6	Infrastructure
7	Political issues
8	Social issues

The assessment was made based on four quality criteria, which were developed from studying success factors in complex and dynamic implementation situations. The four criteria are defined by the questions in Table 3.3 (Bressers et al., 2013a):

**Table 3.3 The questions on each water governance criterion**

Criteria	Questions
Extent	Are all elements in the each dimension that are relevant for the sector or project that is focused on taken into account?
Coherence	Are the elements in the dimensions of governance reinforcing rather than contradicting each other?
Flexibility	Are multiple roads to the goals, depending on opportunities and threats as they arise, permitted and supported?
Intensity	How strongly do the elements in the dimensions of governance urge changes in the status quo or in current developments?

The questions related to the water governance practices were set for every dimension and criteria. These questions are listed in Table 3.4.

### 3.2.1.2. Interviews

A sample of 60 representatives of the major water sector actors have been interviewed and each of them answered the questions located in each cell of the governance assessment matrix (See Tables A1-A4 in Appendix A). Those respondents were selected in order to include approximately all the main actors in the Palestinian water sector considering the ability (time, cost and money) of the interviewer. The interviewed actors were distributed among West Bank's three geographical parts:

1. Northern part (Tulkarm, Nablus, Tubas, Qalqilyah, Salfeet and Jenin)
2. Central part (Ramallah, Al-Bireh and Jericho)
3. Southern part (Hebron and Bethlehem)

**Table 3.4 The questions on each water governance dimension**

Governance dimension	Questions
Levels and scales	Are all administrative levels involved? Are all hydrological scales considered? Do these levels trust each other and work together without conflict between them? Have any of these changed over time or are likely to change in the foreseeable future?
Actors and networks	Are all actors involved? To what extent do they have network relationships? Do these actors trust each other and work together without conflict between them? Is it possible for new actors to be included when there are reasons for this? Have any of these changed over time or are likely to change in the foreseeable future?

Institutions and institutional capacity	Are all water related institutions involved? Do the institutions trust each other and work together without conflict between them? Is it possible to add or remove loads to/from the institution's human and technical capacity? Is this institutional capacity sufficient, appropriate and applicable to the water sector? (1)
Problem perceptions and goals ambitions	To what extent are the different problems taken into account? To what extent do the realities and goals support each other? Are there different solutions to deal with any problem? Are there opportunities to reassess goals? How different are the goal ambitions from the status quo?
Water quality	Are all water quality parameters (physical, chemical and biological) taken into account? Is it possible to exceed the water quality requirement (up and down)? How different are the accepted water quality standards from the practice?
Strategies and instruments	Are all strategy components implemented? Are all needed instrument used? Are there any overlaps or conflicts between strategy elements and instrument used? Do these strategies sufficient, appropriate and applicable to the water sector? (2)
Rules enforcement	Are all legal aspects in water sector taken into account? Is there a punishment for each law that exceeded these rules? Is it possible to use other accredited laws (environmental, agricultural) in solving water sector's legal needs? Are the current laws sufficient for the water sector?
Responsibilities and resources	Are all responsibilities for water institutions (for example: ministries, utilities and water departments) clearly assigned, facilitated and harmonized with available resources? To what extent are these responsibilities in competence with other institutions? To what extent is it possible to accomplish the assigned responsibilities as long as accountability and transparency are not compromised? Do these assigned responsibilities and resources sufficient, appropriate and applicable to the situation? Have any of these changed over time or are likely to change in the foreseeable future? (3)

Technology systems	To what extent are technology systems available in water sector? To what extent this technology is used by staff? Are there any duplications or deficiencies in the available technologies? Do the current technology sufficient, appropriate and applicable to the water sector?
Funding	Are there different sources of funding? Are the conditions on funding by funders affect funding availability and use? If one source stops funding or runs out, are there alternative funding sources to cover the deficit? Is it possible to involve the main actors in sector funding? Are the current funding and funding sources sufficient to the water sector? Is there a need to look for other sources of funding?
Infrastructure	Do existing infrastructure elements represent all needs? Are all infrastructure elements in use? Do the current infrastructure sufficient to the situation of water sector? Is there a need to develop other infrastructures?
Political issues	Are all water related political agreements and articles taken into account? Do these related political agreement articles support water sector goals? Is there a strong impact of these water related political agreements on the water sector development?
Social issues	Is water available to all people? Is the water delivered to all consumers with the same quantity, quality and cost? Is there a preference in service provision to any level in water service? Is there a flexible dealing with the water supply problems to citizens? Do water services achieve justice among the various levels of society?

Full copy of governance assessment matrix is shown through Tables A1-A4 in Appendix A.

Table 3.5 lists the organizations included in the interviews, the five groups that they are categorized in, and the number of respondent from each group.

**Table 3.5 Organizations included in the interviews**

Group No.	Group Name	Organizations	Number of respondents
1	Water policy-makers	Palestinian Water Authority (PWA) Water Sector Regulatory Council	10
2	Other governmental organizations	Ministry of Agriculture Ministry of Local Government Palestinian Energy Authority Palestinian Environmental Quality Authority Ministry of Finance Ministry of National Economy Palestinian Standards Institution	9
3	Utilities and municipalities	Nablus Municipality Hebron Municipality Ramallah Municipality Tulkarm Municipality Jenin Municipality Tubas Municipality Salfeet Municipality Qalqilyah Municipality Bireh Municipality Jericho Municipality Qabatya Municipality Attil Municipality Jerusalem water undertaking (Ramallah & Bireh) Bethlehem Water and Wastewater Undertaking	15
4	Experts	An-Najah National University Palestine Technical University-Khadoorie Al-Quds University	11

5	Research centers and NGOs	International Center for Agricultural Research in the Dry Areas National Agriculture Research Center Palestinian Hydrology Group Palestinian Agricultural Relief Committees The Applied Research Institute Jerusalem	7
6	Private sector	Brothers Contracting Company Consolidated Contractors Company Dar Al-Bina' for Contracting Engineers Interior and Landscaping Black and Veatch Al-Saleh for Building & Construction Maalem Company Al-Nawaya Company	8

### 3.2.1.3. Governance matrix analysis

Likert scale was adopted for the analysis and evaluation of interview results (Bertram, 2007). Using a three-point Likert scale, weights were given for each question and criteria as listed in Table 3.6.

**Table 3.6 5-points Likert scales and their descriptions**

1	3	5
Highly supportive (the least in need of improvement )	Not decided	Highly restrictive (the most in need of improvement)



### **3.2.1.4. Focus group meeting**

After the individual interviews were completed, a focus group meeting with representatives from the Palestinian water sector actors (public and private sectors) was conducted. Those representatives were invited by sending the invitations to their institutions which in turn nominate them to attend the meeting. Main purpose of the focus group meeting was consolidating the water sector governance assessment as well as verifying and testing the interview results. Discussions were tape-recorded and then text was typed, sorted and summed by the meeting facilitator.

### **3.2.2. Spatial GIS maps**

In this phase, row data was collected by 2 methods and then transformed into spatial GIS maps to represent the water sector details of each governorate in the West Bank. The two methods used in data collection are:

- From visiting PWA and meeting (Ashraf Dwaikat) who gives me some data for the year 2014, that didn't officially published by PWA in any report.
- From Published reports by PWA for the year 2011 (PWA, 2011).

The main aspects that represented in maps and related to the year 2014 are listed in table 3.7:

**Table 3.7 Aspects represented by maps for the year 2014**

Number	Aspect
1	Percent of losses through water networks
2	Per capita consumption rate

The main aspects that represented in maps and related to the year 2011 are listed in table 3.8:

**Table 3.8 Aspects represented by maps for the year 2011**

Number	Aspect
1	Percent of losses through water networks
2	Per capita consumption rate
3	Un-served population with a water network
4	Un-served population with sewage network
5	Bill collection percentage
6	Unit price of m <sup>3</sup> of water
7	Employees productivity through water providers institutions

### **3.2.3. PPP questionnaire**

A detailed questionnaire was designed in order to collect administrative, structural, technical, legal financial, political and social information.

#### **3.2.3.1. Questionnaire design**

Each questionnaire was divided into 11 main parts, these 11 parts are listed in Table 3.9:

**Table 3.9 Main parts of PPP questionnaire**

Part number	Title
1	Private sector, public sector and PPP comparison
2	Readiness of the country to PPP
3	Readiness of private sector to PPP
4	Areas for PPP
5	Responsibilities and resources
6	Factors affecting the success of PPP
7	Incentives and limitations by the government to the work of PPP
8	Effects/impacts of PPP on the Palestinian water sector
9	Main activities/involvements of PPP unit
10	Place\housing of a PPP unit
11	Funding for PPP unit

Some of these parts were divided into subdivisions, these parts and there subdivisions are listed in Table 3.10:

**Table 3.10 Questionnaire subdivisions**

Part Number	Part Title	Subdivision Title
7	Incentives and limitations by the government to the work of PPP	Incentives by the government to the work of PPP
		Limitations by the government to the work of PPP
8	Effects/impacts of PPP on the Palestinian water sector	Incentives expressed by the public sector
		Fears expressed by the public sector
		Incentives expressed by the private sector
		Fears expressed by the private sector
		Incentives expressed by the users (citizens)
		Fears expressed by the users (citizens)

Full copy of PPP questionnaire is shown in Appendix B.

Questions in the questionnaire are divided into two parts based on the type of answer, the first type of questions is measuring questions that should be answered by a scale from 1 to 7 for each question using 7-points Likert scale that shown in Table 3.11 below. The second type is objective questions to select the most suitable answer from the listed alternatives.

**Table 3.11 7-points Likert scales and their descriptions**

1	2	3	4	5	6	7
Extremely weak (unsatisfactory)	Very weak (unsatisfactory)	Partially weak (unsatisfactory)	Not decided	Partially strong (satisfactory)	Very strong (satisfactory)	Extremely strong

### 3.2.3.2. Data collection and management

This questionnaire was directed somehow to all the related and active entities and stakeholders in the Palestinian water sector, so the population for this questionnaire cover the entities shown in Table 3.12.

**Table 3.12 Target population**

Group Name	Group Size
Municipalities	111
Water Studies Institute	2
Related Ministries	5
Related Authorities	4
NGO's (Water and environmental sector)	4
Experts	10
Water undertaking	2
Private sector	10
Interested banks	4
Sum	152

Sample size determines the appropriate number of individual samples or observations used in a survey (Bartlett et al, 2001). Sample size determination is a very important task that should be achieved before starting the distribution of any questionnaire. Inadequate or Inappropriate sample size will adversely affect the quality and accuracy of research results. (Bartlett et al, 2001)

Sample size is calculated in this thesis according to Cochran formula that has the following steps (Cochran, 1963):

**Step one:** calculate the sample size for infinite populations according to the following formula:

$$SSIP = \frac{Z^2 pq}{e^2}$$

Where,

SSIP: Sample Size for infinite population

Z: Z value (e.g. 1.96 for 95% confidence level)

P: population proportion (assumed to be 0.5)

e :Margin of Error at (0.05)

q: equal to (1-p)

So,

$$SSIP = \frac{1.96^2 * 0.5 * (1-0.5)}{0.05^2} = 384.16$$

**Step Two:** Adjust SSIP to have a sample size based on the targeted population.

$$SS = \frac{SSIP}{1 + \left(\frac{SSIP-1}{Pop}\right)}$$

Where,

SS: Sample Size for targeted population

Pop: Targeted population (which equal 152)

So,

$$SS = \frac{384.16}{1 + \left(\frac{384.16-1}{152}\right)} = 109.1$$

≈109 respondent

Due to time and cost limitations, the theoretical calculated sample size was hard to be achieved. So, the total achieved sample size reached up to 90 instead of 109 respondent distributed through the various groups in the targeted population, with taking into consideration the inclusiveness of all West Bank governorates through data collection. Those 90 respondent are shown through table C1 in Appendix C.

Table 3.13 below shows the theoretical calculated and actually achieved sample size for each group in the targeted population.

**Table 3.13 Sample size for each group in the targeted population**

Group Name	Group Size	Theoretical calculated sample size	Actually achieved sample size
Municipalities	111	79	61
Water Studies Institute	2	1	1
Related Ministries	5	4	4
Water policy makers	4	3	3
NGO's (Water and environmental sector)	4	3	3
Experts	10	7	7
Water undertaking	2	2	1
Private sector	10	7	7
Interested banks	4	3	3
Sum	152	109	90

Self-administered questionnaires require respondents to carefully read and answer the questions themselves, this self-administrated method has advantages and although has disadvantages. The main advantage is that the respondent not having an interviewer effect on his answers. However, there are two possible disadvantages in this method, the first one is having incomplete responses for all questions, and the second one is the risk of frivolous responses (Bryman, 2004).

The survey took approximately 4 to 5 months through a discontinuous work during the years 2016 and 2017. The questionnaire was either handed

directly to the respondents or the institutions or sent by email. The collection of the questionnaire was also arranged directly or later via email.

#### **3.2.4. Difficulties in distributing PPP questionnaire and governance matrix**

During the distribution of PPP questionnaires and governance assessment matrices, it was observed that some respondents were hesitant to talk about data and facts; some respondents had limited knowledge of various dimensions, which required explanations. Some potential respondents were not available at the time of the interviews and/or they declined participating, such as Asira Al-Shamaliya Municipality representative.



## **4. Results and Discussion**

The following sections list, assess and discuss the results of the governance assessment matrix, focus group meeting, and finally PPP questionnaire to test the possibility of applying PSI in the Palestinian water sector and how it will be optimized.

### **4.1. Governance matrix assessment**

Results obtained from the interviews are detailed in this section and summarized in Tables 4.1-4.12. Governance matrix discussions in the following sections are discussed in three parts: per criteria, per actors and an overall governance assessment.

#### **4.1.1. Assessment by governance criteria**

This section includes the discussion of the most supportive and most restrictive dimension for the four criteria and the thirteen dimensions and the five actors interviewed.

##### **4.1.1.1. Supportive dimensions**

Extent: Table 4.1 shows that the most supportive dimension with respect to the extent is water quality. This refers to the coverage of all the physical, chemical and biological parameters related to the water quality in the governance system. The utilities and municipalities choose the institutions and institutional capacity as the most supportive dimension, which refers to the presence and the inclusion of all water related institutions in the

Palestinian water governance. It was observed that most respondents emphasized non-controversial issues such as water quality, and got aside from technology systems and problem perceptions and goals ambitions.

**Table 14 Most supportive governance dimensions according to extent**

Group	Most supportive dimension
Water policy-makers	Water quality
Other governmental organizations	Water quality
Utilities and municipalities	Institutions and institutional capacity
Experts	Water quality
Research centers and NGOs	Water quality
Private sector	Water quality
Overall	Water quality

**Coherence:** Table 4.2 shows the most supportive dimension with respect to coherence is also water quality, since there is no conflict between the ways that are used to deal with the different water quality parameters. The other governmental organizations choose the social issues as the most supportive dimension, because from their opinion there is no preference to specific communities or governorates over the others within the available sources in each governorate. None of the respondents choose any dimension related directly to the water entities as the most supportive dimension such as levels or organizations, which reflects the lack of coherence of these dimensions. This was also confirmed at the focus group meetings, since issue related to actors and levels issues was poorly valued due to poor responsibility distribution among water sector actors including governmental organizations.

**Table 15 Most supportive governance dimensions according to coherence**

Group	Most supportive dimension
Water policy-makers	Water quality
Other governmental organizations	Social issues
Utilities and municipalities	Water quality
Experts	Water quality
Research centers and NGOs	Water quality
Private sector	Water quality
Overall	Water quality

**Flexibility:** Table 4.3 shows that the most supportive dimension related to the flexibility is the water quality and this indicates the presence of multiple ways that are used to deal with the different water quality parameters.

**Table 16 Most supportive governance dimensions according to flexibility**

Group	Most supportive dimension
Water policy-makers	Actors and networks
Other governmental organizations	Rules enforcement
Utilities and municipalities	Water quality
Experts	Technology systems
Research centers and NGOs	Water quality
Private sector	Institutions and institutional capacity
Overall	Water quality

**Intensity:** Table 4.4 shows that the most supportive dimension related to the intensity is water quality, which forms a strong impact on the water sector improvement and development, and is seen as sufficient and appropriate for the water sector. Water policy-makers choose actors and networks as the most supportive dimension.

**Table 17 Most supportive governance dimensions according to intensity**

Group	Most supportive dimension
Water policy-makers	Actors and networks
Other governmental organizations	Water quality
Utilities and municipalities	Water quality
Experts	Water quality
Research centers and NGOs	Water quality
Private sector	Water quality
Overall	Water quality

#### **4.1.1.2. Restrictive dimensions**

**Extent:** Table 4.5 shows that the social issues is the most restrictive dimension related to the extent, and this is expected because of the variation in water availability, cost and quality between the different governorates in the West Bank. Private sector chooses the strategies and instruments as the most restrictive dimension, because from their view there is a gap in the water related strategies and instruments. This issue was raised during the focus group meeting, where the participants indicated that there is high potential for private sector participation and involvement in the sector, which also requires clear responsibilities and regulation.

**Table 18 Most restrictive governance dimensions according to extent**

Group	Most restrictive dimension
Water policy-makers	Social issues
Other governmental organizations	Social issues
Utilities and municipalities	Social issues
Experts	Social issues
Research centers and NGOs	Social issues
Private sector	Strategies and instruments
Overall	Social issues

**Coherence:** Table 4.6 shows that the most restrictive dimension related to the coherence is the political dimension, this refers to the conflicts between the elements of the signed political agreements with the Israeli side, so that the agreements indicate specific items in terms of water rights, but these items are incompatible with its presence on the ground, where the water rights on the ground is much less than what exists in the agreements. Just the experts choose problem perceptions and goals ambitions as the most restrictive dimension.

**Table 19 Most restrictive governance dimensions according to coherence**

Group	Most restrictive dimension
Water policy-makers	Political issues
Other governmental organizations	Political issues
Utilities and municipalities	Political issues
Experts	Problem perceptions and goals ambitions
Research centers and NGOs	Political issues
Private sector	Political issues
Overall	Political issues

**Flexibility:** Table 4.7 shows that the most restrictive dimension related to the flexibility is the political dimension with high weights, this refers to the poor flexibility in term of being able to bring back the Palestinian water rights or to make an alternative plans to deal with the sector political obstacles.

**Table 20 Most restrictive governance dimensions according to flexibility**

Group	Most restrictive dimension
Water policy-makers	Political issues
Other governmental organizations	Political issues
Utilities and municipalities	Political issues
Experts	Political issues
Research centers and NGOs	Political issues
Private sector	Political issues
Overall	Political issues

**Intensity:** Table 4.8 shows that the political issues is the most restrictive dimension with respect to the intensity, this is because there is no strong impact of the water-related political agreements on water sector improvement and development. Private sector chooses technology systems as the most restrictive dimension with respect to the intensity because they think that the current technology used are not sufficient, appropriate and applicable to the Palestinian water sector.

**Table 21 Most restrictive governance dimensions according to intensity**

Group	Most restrictive dimension
Water policy-makers	Political issues
Other governmental organizations	Problem perceptions and goals ambitions
Utilities and municipalities	Political issues
Experts	Political issues
Research centers and NGOs	Political issues
Private sector	Technology systems
Overall	Political issues

#### **4.1.2. Assessment of actors' views**

This section includes the discussion of most restrictive and supportive dimensions with respect to all criteria together, from the perspective of each actor.

##### **4.1.2.1. Most supportive views**

Table 4.9 shows that most of the respondents see the water quality as the most supportive dimension. The opinions differ regarding the second supportive dimension, utilities and municipalities, research centers and NGOs and the private sector choose Institutions and institutional capacity. The other respondents choose technological Systems and rules enforcement as their second supportive dimension.

**Table 22 Most supportive governance dimensions from the point of view of each stakeholder**

Group	Most supportive dimensions	
	First supportive dimensions	Second supportive dimensions
Water policy-makers	Water quality	Technology Systems
Other governmental organizations	Water quality	Rules enforcement
Utilities and municipalities	Water quality	Institutions and institutional capacity
Experts	Water quality	Technology Systems
Research centers and NGOs	Water quality	Institutions and institutional capacity
Private sector	Water quality	Institutions and institutional capacity

#### **4.1.2.2. Most restrictive views**

Table 4.10 shows that political status is the most restrictive aspect of the Palestinian water sector, because of the Israeli occupation, which prevents the Palestinians' free access to their water resources, and restricts obtaining water related licenses. But there are conflicts between the six groups in the selection of the second restrictive dimension. Most of them choose the social issues as the second restrictive dimension due to the huge difference in water quantities and quality between the different governorates in Palestine.

The other governmental organizations choose the problem perceptions and goals ambitions as their second restrictive dimension, this means they touch the huge gap between sector ambitions and its realities, and this includes the poor planning that used to improve the realities to be able to reach the goals. Utilities and municipalities choose the funding as their second restrictive



dimension because of the limited sources of funding from the government and the donor countries.

**Table 23 Most restrictive governance dimensions from the point of view of each stakeholder**

Group	Most supportive dimensions	
	First restrictive dimensions	Second restrictive dimensions
Water policy-makers	Political issues	Social issues
Other governmental organizations	Political issues	Problem perceptions and goals ambitions
Utilities and municipalities	Political issues	Funding
Experts	Political issues	Social issues
Research centers and NGOs	Political issues	Social issues
Private sector	Political issues	Social issues

#### **4.1.3. Overall assessment**

This section includes the discussion of the two most restrictive dimensions in the Palestinian water sector with respect to all the criteria together, from the overall perspective, which are political issues and social issues, as well as the two most supportive dimensions which are: water quality and institutions and institutional capacity,.

##### **4.1.3.1. Most supportive dimensions**

The most supportive dimension in the current Palestinian water governance system with respect to all the criteria together from the overall perspective is water quality, this refers to the good water quality in the West Bank due to appropriate examinations for the drinking, agricultural, industrial water, and

the good specifications that are applied in the water sector. The second supportive dimension is the institutions and institutional capacity, and this refers to the stakeholders' satisfaction with the number and distribution of these institutions alongside the various governorates in the West Bank and the satisfaction with the water institution's resources in terms of equipments, funding and labours. It was observed that the respondents combine between non-controversial and serious issues in their selections. So they selected water quality (non-controversial) as the most supportive dimension, and choose institutions and institutional capacity (serious) as their second supportive dimension.

#### **4.1.3.2. Most restrictive dimensions**

The most restrictive dimension in the current Palestinian water governance system with respect to all the criteria together from the overall perspective is political issues, this is because of the Israeli occupation controls most of the Palestinian water resources, prevents Palestinians from the free access to these resources, and restricts the licences for water projects such as wastewater treatment plants and desalination plants. The second restrictive dimension is the social issues, and this is expected because the Palestinian communities suffer from the variation in the water availability and services. For example, Tulkarm and Qalqilia have an abundance of water through the water networks and also have good water services with a reasonable cost. In contrast, Hebron suffers from the water scarcity and the water exists in the network a few hours during the day with a high cost. Water actors did

publicly emphasize agreed governance dimensions (political and social issues), and didn't choose to talk about organizational and administrative issues (responsibilities and resources, organizations, and levels and scales).

#### **4.2. Focus group meeting**

Results obtained from this meeting/workshop can be summarized in the following points:

- Rules strength doesn't fit the Palestinian water sector.
- Mechanisms used in rules enforcement are weak and insufficient.
- Public hearing approach should be applied more effectively in all future projects, plans and trends in the Palestinian water sector.
- Bill collection techniques should be developed in order to get high percentage of collection.
- A need for existence of a representative of the Palestinian water sector in the Council of Ministers.

All of the previous points should be taken into account to uplift the current Palestinian water sector.

#### **4.3. PPP questionnaire and related interviews**

Results obtained from the questionnaire and are detailed in this section and summarized in Tables 4.11-4.29. Results of discussions are shown in eleven parts: private sector, public sector and PPP comparison, readiness of the country to PPP, readiness of private sector to PPP, areas for PPP, responsibilities and resources, factors affecting the success of PPP,

incentives and limitations by the government to the work of PPP, effects/impacts of PPP on the Palestinian water sector, main activities/involvements of PPP unit, place\housing of a PPP unit and finally funding for PPP unit. Appendix D shows some statistical analysis that used to treat the collected data. Detailed results for the PPP questionnaire are shown in Appendix E.

#### **4.3.1. Private sector, public sector and PPP comparison**

This section shows the opinions of active stakeholders, experts and services providers in the Palestinian water sector about which is the most suitable party to lead and manage the Palestinian water sector.

Multi Criteria Decision Analysis technique was used to get the results in this section, as shown in Table 4.12, every alternative was evaluated by 13 attributes that have different weights according to its importance. Actually, these attributes are the governance assessment matrix dimensions in which the most critical dimension has the highest weight as the most important attribute, as same as the least critical dimension has the lowest weight as the least important attribute. Attributes' weights were calculated as shown in Table 4.11. After that scores from 1 to 7 as mentioned in Table 3.11 in Methodology Chapter are recorded for each alternative to know the final score for each one.

**Table 24 Attributes' weight determination**

Attribute No.	Attribute	Risk and importance score	Weight =Risk/Total Risk
1	level & scales	336	0.065
2	Actors and networks	294	0.056
3	Institutions and institutional capacity	350	0.067
4	Problems perceptions and goals ambitions	469	0.090
5	Water quality	105	0.020
6	Strategies	322	0.062
7	Rules enforcement	322	0.062
8	Responsibilities and resources	224	0.043
9	Technological systems	273	0.052
10	Funding	378	0.073
11	Infrastructures	469	0.090
12	political issues	1029	0.200
13	Social issues	651	0.120
Sum		5222	1

As table 4.12 shows, PPP is the most suitable trend that should be applied to improve and develop the Palestinian water sector. It's noted that privatization is located in the 2<sup>nd</sup> order and public sector located in the last order, this reflects the unsatisfaction on the current performance and services of public sector.

**Table 25 MCDA between public, private sector and PPP**

Attribute No.	Attribute	Weight	Public Sector	PPP	Private Sector
1	level & scales	0.065	3.94	5.13	4.14
2	Actors and networks	0.056	3.84	5.06	4.51
3	Institutions and institutional capacity	0.067	3.78	5.37	4.72
4	Problems perceptions and goals ambitions	0.090	3.62	5.32	4.77
5	Water quality	0.020	4.03	5.13	4.69
6	Strategies	0.062	4.44	5.44	5.00
7	Rules enforcement	0.062	3.84	5.80	4.40
8	Responsibilities and resources	0.043	3.77	5.30	5.01
9	Technological systems	0.052	3.87	5.29	5.43
10	Funding	0.073	4.21	5.08	5.93
11	Infrastructures	0.090	3.91	4.90	4.67
12	political issues	0.200	3.31	3.76	2.62
13	Social issues	0.120	3.96	4.91	3.72
Final score = $\sum(\text{Weight} \times \text{Score})$			3.80	4.91	4.27

#### 4.3.2. Readiness of the country to PPP

This section tests the readiness of Palestine to involve private sector on its water sector. Several factors are tested and evaluated from 1 to 7 by each respondent and then these data are analyzed using SPSS software. ANOVA test couldn't be used because the data are not normally distributed (See Table D1 in Appendix D). So, an alternative test called Kruskal-Wallis Test was used to test if there are difference between the means of the readiness factors or not (See Table D13 in Appendix D). After that, another test called Mann-Whitney Test was used to make pairwise comparison between each 2 factors

to end by ordering the factors based on their readiness (See Table D25 in Appendix D).

Before using Kruskal-Wallis Test, its assumptions should be checked<sup>(1)</sup>:

Assumption 1: dependent variable should be measured at the ordinal or continuous level. And this is achieved in this section because the dependent variable was measured at ordinal level using Likert scale from 1 to 7.

Assumption 2: independent variable should consist of two or more categorical, independent groups. And this is achieved in this section because the independent variable consists of 7 independent groups which are the readiness factors.

Assumption 3 independency of observations should be applied, which means that there is no relationship between the observations in each group or between the groups themselves. And this is achieved in this section because respondents have the freedom to evaluate any factor by any scale from 1 to 7 without being affected by the other factors, and the respondent can evaluate each factor freely from 1 to 7 regardless to what the other respondents evaluate this factor.

Table 4.13 shows that the institutional framework and capacity building are in excellent situation and this reflects the trust of respondents by the Palestinian water institutions and their staff including: PWA, WSRC, water undertakings and the various municipalities in the West Bank. Investment

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(1)<https://statistics.laerd.com/spss-tutorials/kruskal-wallis-h-test-using-spss-statistics.php> (Last viewed on Feb 5, 2017)

climate, risk management and legal and regulatory framework are ready somehow but they need to be improved in order to optimize the benefits from this PPP. Political status and financial facilities including: government payments and subsidies against risks are not ready according to respondents' opinions and need to be totally improved in order to establish a good PPP in the Palestinian water sector. Full and detailed results for this section attached in table E1 in Appendix E.

**Table 26 Readiness of the country to PPP**

Readiness factors	Status
Institutional framework	Excellent
Capacity building	Excellent
Investment climate	good
Risk management	good
Legal and regulatory framework	good
Financial facilities : Government payments and subsidies against risks	Poor
Political status	Poor

#### **4.3.3. Readiness of private sector to PPP**

This section tests the readiness of private sector to be involved in the Palestinian water sector. Several factors are tested and evaluated from 1 to 7 by each respondent and then these data are analyzed using SPSS software. ANOVA test couldn't be used because the data are not normally distributed (See Table D2 in Appendix D). So, an alternative test called Kruskal-Wallis Test was used to test if there are difference between the means of the readiness factors or not (See Table D14 in Appendix D). After that, another test called Mann-Whitney Test was used to make pairwise comparison



between each 2 factors to end by ordering the factors based on their readiness. Kruskal-Wallis Test assumptions were checked and applied.

Table 4.14 shows that Private sector are relatively ready according to respondents' opinions because the readiness factors are ranged from excellent to good and there are no poor factors. Staff experience and financial strength are excellent. The other readiness factors should be improved relatively especially the socio-economic one, because private sector should improve his reputation between the citizens to be more socially acceptable. Full and detailed results for this section attached in table E2 in Appendix E.

**Table 27 Readiness of private sector to PPP**

Readiness factors	Status
Staff experience	Excellent
Financial strength	Excellent
Technical and technological status	Good
Planning and development	Good
Institutional stability	Good
Risk handling	Good
Socio-economic	Good

#### **4.3.4. Areas for PPP**

This section evaluates the areas that private sector could be involved through, to end by the most suitable specialties and locations private sector can succeed through. Several areas are tested and evaluated from 1 to 7 by each respondent and then these data are analyzed using SPSS software. ANOVA test couldn't be used because the data are not normally distributed (See Table D3 in Appendix D). So, an alternative test called Kruskal-Wallis Test was used to test if there are difference between the means of the different areas or not (See Table D15 in Appendix D). After that, another test called Mann-

Whitney Test was used to make pairwise comparison between each 2 areas to end by ordering the areas based on its suitability to be held by private sector. Kruskal-Wallis Test assumptions were checked and applied.

Table 4.15 shows that private sector will totally succeed in the field of designing water related projects and networks and the field of investment; for example, as to pump and other water parts production because there are approximately no companies produce these pumps and parts in Palestine in good quality. Table 4.15 shows that private sector can be involved in projects implementation, operation and maintenance. It can also be involved in water and services supplying and in the planning field as a consultative company that advises public sector. Respondents expressed their unsatisfactory for involving private sector as the top party in managing the Palestinian water sector. Full and detailed results for this section attached in table E3 in Appendix E.

**Table 28 Areas for PPP**

Areas for PPP	Status
Design	Excellent
Investment (Pumps manufacturing company)	Excellent
Implementation	Good
Operation and maintenance	Good
Overall: design, implementation, operation and maintenance	Good
Supply	Good
Planning	Good
Management	Poor

#### **4.3.5. Responsibilities and resources**

This section defines which party; public sector, private sector or both of them (shared) is/are responsible of each criterion listed in Table 4.16.

Responsibilities and resources allocation is a very important issue that should be defined before starting PPP. Each respondent was asked to define the responsible side of each criterion, and then the highest selected side for each criterion was considered the responsible for this criterion.

**Table 29 Responsibilities and resources allocation**

Criteria	Responsible	Selection percent
Asset ownership	Public sector	86
O&M	Private sector	62
Capital investment	Private sector	59
Commercial risk	Shared	45
Obtaining net revenues or losses	Shared	51
Monitoring and follow up	Shared	47

These responsibilities and resources allocations are somewhat similar to the properties of BOT contracts that give asset ownership to the public sector, and oblige the private sector by paying the initial cost.

#### **4.3.6. Factors affecting the success of PPP**

This section includes group of factors affecting the success of PPP and testing how it should be optimized by defining the trend that should be used to treat each of them. Each factor was evaluated and described by one of the following measures: Extremely decrease/Totally retrogress, Partially decrease/Partially retrogress, Fixation, Partially increase/ Partially develop and Extremely increase/ Extremely develop. Each description was given a quantitative value as shown in Table 4.17.

**Table 30 Quantitative values for the various descriptions**

Description	Value
Extremely decrease/ Totally retrogress	1
Partially decrease/Partially retrogress	2
Fixation	3
Partially increase/ Partially develop	4
Extremely increase/ Extremely develop	5

Attitude intervals were defined by using an interval length calculated as follow:

$$\begin{aligned}
 \text{Interval length} &= \frac{\text{No.of descriptions}-1}{\text{No.of descriptions}} \\
 &= \frac{4}{5} \\
 &= 0.8
 \end{aligned}$$

So, the attitude intervals and their descriptions were defined and listed in Table 4.18.

**Table 4.318 Attitude intervals and their descriptions**

(Attitude intervals)	Description
From 1.0 to 1.79	Extremely decrease/ Totally retrogress
From 1.8 to 2.59	Partially decrease/ Partially retrogress
From 2.6 to 3.39	Fixation
From 3.4 to 4.19	Partially increase/ Partially develop
From 4.2 to 5.00	Extremely increase/ Extremely develop

From respondents' answers, weighted mean for every factor was calculated. After that, these means were compared with the attitude intervals to decide the most suitable trend that should be used to treat each factor.

Table 4.19 shows that taxation and interest rates should be totally decreased, foreign exchange and services' cost should be partially decreased. On the other side, environmental aspects, safety aspects, water sector performance, regime stability, capacity building and employees productivity should be partially improved. Regulatory framework, concession laws and services quality should be totally improved to end by a success of PPP.

**Table 32 Trends used to treat the factors affecting success of PPP**

Factors	Weighted mean	Trend
Taxation	1.4	Extremely decrease
Foreign exchange	2.17	Partially decrease
Interest rate	1.31	Extremely decrease
Environmental aspects	4.11	Partially develop
Safety aspects	4.18	Partially develop
Water sector performance	4.13	Partially develop
Regulatory framework	4.62	Extremely develop
Concession laws	4.58	Extremely develop
Regime stability	4.17	Partially develop
Capacity building	4.1	Partially develop
Employees productivity	4.13	Partially develop
Services' cost	1.88	Partially decrease
Services' quality	4.22	Extremely develop

#### **4.3.7. Incentives and limitations by the government to the work of PPP**

This section discusses a group of incentives and limitations given and imposed by the government to control and facilitate the work of PPP. This incentives and limitations are discussed through the following two sections:

#### **4.3.7.1. Incentives by the government to the work of PPP**

Several incentives were tested and evaluated from 1 to 7 by each respondent to know the most suitable incentives that should be given by government, and then these data are analyzed using SPSS software. ANOVA test couldn't be used because the data are not normally distributed (See Table D4 in Appendix D). So, an alternative test called Kruskal-Wallis Test was used to test if there are difference between the means of the different incentives or not (See Table D16 in Appendix D). After that, another test called Mann-Whitney Test was used to make pairwise comparison between each 2 incentives to end by ordering the incentives based on their importance. Kruskal-Wallis Test assumptions were checked and applied.

Table 4.20 shows that the most three desired incentives that should be given by the government are:

1. Government should give incentives for the special services that meet and exceed positively the imposed specifications. This will encourage private sector to work hard and improve its services.
2. Law should guarantee settlement of disputes between the investors and the government. This will make investors feel safe to start their investment.
3. Law guarantees the application of the incentive system without personal interference considerations. This transparency is very important to make the investors feel fair.

Table 4.20 also shows other good incentives that should be taken into account to optimize the involvement of private sector in the Palestinian water sector. Full and detailed results for this section attached in table E4 in Appendix E.

**Table 33 Incentives by the government to the work of PPP**

Incentives by the government to the work of PPP	Status
Setting specification for the quality of services, and gives incentives for the special services.	Excellent
Law guarantees the settlement of disputes between the investors and the government.	Excellent
Law guarantees the application of the incentive system without personal interference considerations.	Excellent
Law ensures information confidentiality of private investors.	Good
Establishment of a body called "Public private partnership unit (PPPU)" of certain responsibilities.	Good
Judiciary is the body that can reserve or confiscate investors' fund.	Good
Law provides tax breaks.	Good
Law offers customs exemptions.	Good
Law provides guarantees and insurance to investors against risks.	Good
Law offers customs exemptions on the operating cars.	Good
Law provides exemptions on the developer part of the projects.	Good
Law extends exemptions for investment projects.	Good
Palestinian National Authority allows converting all investors' financial resources outside Palestine, except if there are legal infractions prevent that.	Good
Law guarantees the right of residence for external investor in Palestine.	Good

#### **4.3.7.2. Limitations by the government to the work of PPP**

Several limitations are tested and evaluated from 1 to 7 by each respondent to know the most suitable limitations that should be imposed by government, and then these data are analyzed using SPSS software. ANOVA test couldn't be used because the data are not normally distributed (See Table D5 in Appendix D). So, an alternative test called Kruskal-Wallis Test was used to test if there are difference between the means of the different limitations or

not (See Table D17 in Appendix D). After that, another test called Mann-Whitney Test was used to make pairwise comparison between each 2 limitations to end by ordering the limitations based on their importance. Kruskal-Wallis Test assumptions were checked and applied.

Table 4.21 shows that the most two limitations that should be imposed by the government are:

1. Government should impose penalties for the poor services that don't meet the imposed specifications. This will worry the investors and make them work hard and improve their services.
2. Setting of ceiling price for the services that will be offered. This is a very important limitation to prevent sector monopoly and to protect citizens from investors' greediness.

Table 4.21 also shows other good limitations that should be taken into account to positively control and manage the involvement of private sector in the Palestinian water sector. Full and detailed results for this section attached in table E5 in Appendix E.

**Table 34 Limitations by the government to the work of PPP**

Limitations by the government to the work of PPP	Status
Setting specification for quality of services, and put penalties according to it.	Excellent
Setting of ceiling price for the services that will be offered.	Excellent
Palestinian National Authority can put restrictions on converting the investors' financial resources outside Palestine if there is infraction to Palestinian bankruptcy laws.	Good
Palestinian National Authority can put restrictions on converting the investors' financial resources outside	Good



Palestine if there is infraction to Palestinian criminal laws.	
Palestinian National Authority can put restrictions on converting the investors' financial resources outside Palestine if there is infraction to Palestinian tax laws.	Good
Canceling the privileges, exemptions if there is infraction done by the private sector.	Good
Setting limits on the quantities of natural resources (water) that are allowed to be consumed.	Good

#### **4.3.8. Effects/impacts of PPP on the Palestinian water sector**

This section discusses the potential incentives and fears expressed by public sector, private sector and citizens to start PPP. The results are discussed through the following six sections:

##### **4.3.8.1. Potential incentives expressed by public sector**

Several potential incentives are tested and evaluated from 1 to 7 by each respondent to know what are the motivations for public sector to be involved in this partnership, and then these data are analyzed using SPSS software. ANOVA test couldn't be used because the data are not normally distributed (See Table D6 in Appendix D). So, an alternative test called Kruskal-Wallis Test was used to test if there are difference between the means of the different potential incentives or not (See Table D18 in Appendix D). After that, another test called Mann-Whitney Test was used to make a pairwise comparison between each 2 potential incentives to end by ordering the potential incentives based on their importance. Kruskal-Wallis Test assumptions were checked and applied.

Table 4.22 shows that the top three potential incentives expressed by public sector to be involved in the partnership are:

1. Reduces public debt.
2. Access to an expertise not available in the public sector.
3. Getting a new financial sources for development.

Table 4.22 also shows other good potential incentives that attract public sector to this partnership. Full and detailed results for this section attached in table E6 in Appendix E.

**Table 35 Potential incentives expressed by public sector**

Potential incentives expressed by public sector	Status
Reduces public debt	Excellent
Access to an expertise not available in the public sector	Excellent
Getting a new financial sources for development	Excellent
Promotes innovation	Good
Improve the service performance	Good
Minimizes development risk	Good
Clear accountability (no hidden costs)	Good
Transfer the responsibility: No public employees to manage No more strikes to manage	Good
Penalties for poor performance	Good

#### **4.3.8.2. Potential fears expressed by public sector**

Several potential fears are tested and evaluated from 1 to 7 by each respondent to know what are the fears of public sector to be involved in this partnership, and then these data are analyzed using SPSS software. ANOVA test couldn't be used because the data are not normally distributed (See Table D7 in Appendix D). So, an alternative test called Kruskal-Wallis Test was

used to test if there are difference between the means of the different potential fears or not (See Table D19 in Appendix D). After that, another test called Mann-Whitney Test was used to make pairwise comparison between each 2 potential fears to end by ordering the potential fears based on their importance. Kruskal-Wallis Test assumptions were checked and applied.

Table 4.23 shows that the top four potential fears expressed by public sector to be involved in the partnership are:

1. Depletion of available resources.
2. Loss of control on the Palestinian water sector.
3. Creation of a private monopoly.
4. Inflated prices of services.

Table 4.23 also shows other relative potential fears that don't attract public sector to this partnership and one weak factor which is the tendency from public sector to distrust private sector. Full and detailed results for this section attached in table E7 in Appendix E.

**Table 36 Fears for the public sector**

Potential fears expressed by public sector	Status
Depletion of available resources	Excellent
Loss of control on the Palestinian water sector.	Excellent
Creation of a private monopoly	Excellent
Inflated prices of services	Excellent
Convert the profit outside the country	Good
Disputes can affect the reputation of the country	Good
Tendency to distrust private sector	Poor

#### **4.3.8.3. Potential incentives expressed by private sector**

Several potential incentives are tested and evaluated from 1 to 7 by each respondent to know what are the motivations for private sector to be involved in this partnership, and then these data are analyzed using SPSS software. ANOVA test couldn't be used because the data are not normally distributed (See Table D8 in Appendix D). So, an alternative test called Kruskal-Wallis Test was used to test if there are difference between the means of the different potential incentives or not (See Table D20 in Appendix D). After that, another test called Mann-Whitney Test was used to make a pairwise comparison between each 2 potential incentives to end by ordering the potential incentives based on their importance. Kruskal-Wallis Test assumptions were checked and applied.

Table 4.24 shows that the main potential incentive expressed by private sector to be involved in the partnership is generating a cash flow for a long term period, and this is the fact because private sector is almost looking for the profits before anything.

Table 4.24 also shows other good potential incentives that attract/distract private sector to this partnership. Full and detailed results for this section attached in table E8 in Appendix E.

**Table 37 Incentives for the private sector**

Potential incentives expressed by private sector	Status
Generate cash flow for a long term period	Excellent
Partnership for future PPPs	Good
Government supports (subsidies, tax, guarantees)	Good

#### **4.3.8.4. Potential fears expressed by private sector**

Several potential fears are tested and evaluated from 1 to 7 by each respondent to know what are the fears of private sector to be involved in this partnership, and then these data are analyzed using SPSS software. ANOVA test couldn't be used because the data are not normally distributed (See Table D9 in Appendix D). So, an alternative test called Kruskal-Wallis Test was used to test if there are difference between the means of the different potential fears or not (See Table D21 in Appendix D). After that, another test called Mann-Whitney Test was used to make a pairwise comparison between each 2 potential fears to end by ordering the potential fears based on their importance. Kruskal-Wallis Test assumptions were checked and applied.

Table 4.25 shows that the main potential fear expressed by private sector to be involved in the partnership is the political risk; this refers to the instability situation caused by the Israeli occupation. Other relative potential fears that distract private sector to this partnership are listed in the Table 4.25. And there are three factors weren't given high importance by private sector, because they didn't form burden or danger on its investments, these three factors are:

1. Transaction costs (advisors, lawyers).
2. Regulation changes (safety, environment).
3. Lack of bankability.

Full and detailed results for this section attached in table E9 in Appendix E.

**Table 38 Fears for the private sector**

Potential fears expressed by private sector	Status
Political risk	Excellent
Penalties on any shortening or malfunction	Good
Conflict with local partners	Good
Accusation of corruption	Good
Lack of bankability	Poor
Regulation changes (safety, environment)	Poor
High transaction costs (advisors, lawyers)	Poor

#### **4.3.8.5. Potential incentives expressed by users (citizens)**

Several potential incentives are tested and evaluated from 1 to 7 by each respondent to know the motivations for citizens to encourage the establishment of this partnership, and then these data are analyzed using SPSS software. ANOVA test couldn't be used because the data are not normally distributed (See Table D10 in Appendix D). So, an alternative test called Kruskal-Wallis Test was used to test if there are difference between the means of the different potential incentives or not (See Table D22 in Appendix D). After that, another test called Mann-Whitney Test was used to make pairwise comparison between each 2 potential incentives to end by ordering the potential incentives based on their importance. Kruskal-Wallis Test assumptions were checked and applied.

Table 4.26 shows that the top two potential incentives expressed by citizens are:

1. Creation of a new service
2. Better maintenance.

Table 4.26 also shows other good potential incentives that attract citizens to encourage this partnership. And also show poor incentive which is the confidence expressed by citizens to private sector. Full and detailed results for this section attached in table E10 in Appendix E.

**Table 39 Incentives for the users (citizens)**

Potential incentives expressed by the users (citizens)	Status
Creation of a new service	Excellent
Better maintenance	Excellent
Social tariffs for low income	Good
Better quality for a lower price	Good
Less public debt means less taxes	Good
Better compliance with environmental regulation	Good
Confidence expressed by citizens to private sector	Poor

#### **4.3.8.6. Fears for the users/citizens**

Several potential fears are tested and evaluated from 1 to 7 by each respondent to know the fears of citizens to encourage this partnership, and then these data are analyzed using SPSS software. ANOVA test couldn't be used because the data are not normally distributed (See Table D11 in Appendix D). So, an alternative test called Kruskal-Wallis Test was used to test if there are difference between the means of the different potential fears or not (See Table D23 in Appendix D). After that, another test called Mann-Whitney Test was used to make pairwise comparison between each 2 potential fears to end by ordering the potential fears based on their importance. Kruskal-Wallis Test assumptions were checked and applied.

Table 4.27 shows that the top two potential fears expressed by citizens are:

1. Creation of a private monopoly.

## 2. Rising of services' prices.

Full and detailed results for this section attached in table E11 in Appendix E.

**Table 40 Fears for the users (citizens)**

Potential fears expressed by the users (citizens)	Status
Creation of a private monopoly	Excellent
Rising of services' prices	Excellent
Disputes can affect the quality of service	Good

### 4.3.9. Model of PPP

This section includes some details about PPP unit that together form a comprehensive model for involving private sector the Palestinian water sector.

#### 4.3.9.1. Main activities/involvements of PPP unit

This section aims to identify the main activities and responsibilities of PPP unit by testing a group of activities listed in the questionnaire. These activities are evaluated from 1 to 7 by each respondent and then these data are analyzed using SPSS software. ANOVA test couldn't be used because the data are not normally distributed (See Table D12 in Appendix D). So, an alternative test called Kruskal-Wallis Test was used to test if there are difference between the means of different activities or not (See Table D24 in Appendix D). After that, another test called Mann-Whitney Test was used to make pairwise comparison between each 2 activities to end by ordering the activities based on their importance. Kruskal-Wallis Test assumptions were checked and applied.



Table 4.28 shows that the top three activities and responsibilities should be carried out by PPP unit are:

1. Check submitted projects for completion
2. Provide Knowledge transfer and training
3. Suggest project upgrade and improvement

Other activities that should be carried by PPP unit are listed in Table 4.28. Full and detailed results for this section attached in table E12 in Appendix E.

**Table 41 Main activities/involvements of PPP unit**

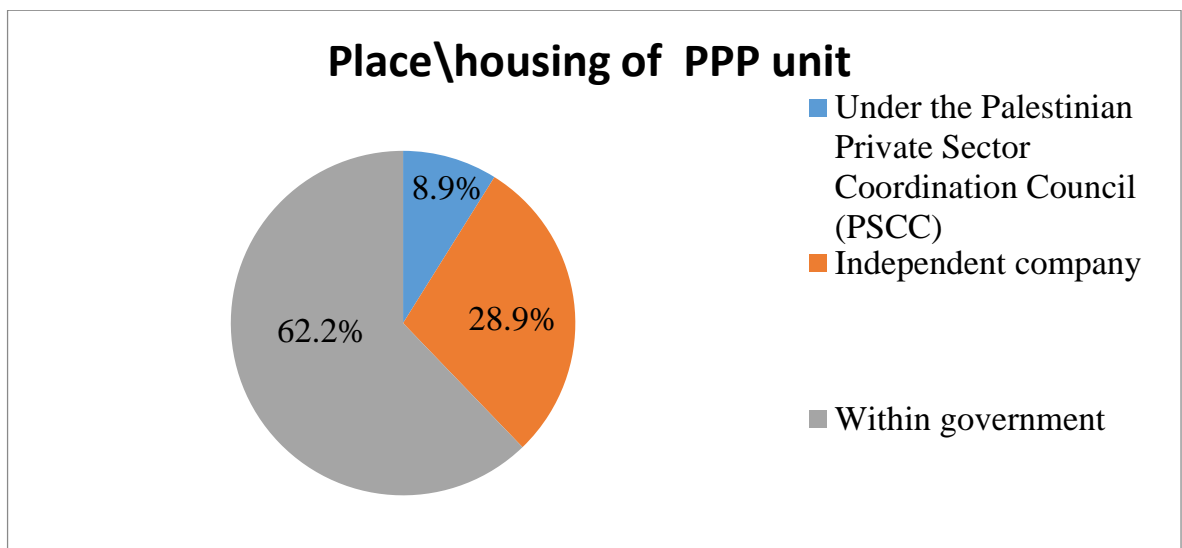
Main activities/involvements of PPP unit	Status
Check submitted projects for completion	Excellent
Provide Knowledge transfer and training	Excellent
Suggest project upgrade and improvement	Excellent
Co-ordination with public bodies	Good
Advise and support to project sponsors, eg: legal, technical, technological and financial guidance	Good
Evaluate the approved projects continuously	Good
Ensuring uniformity of policy standards	Good
Conduct quality control, standardization	Good
Decide on project approval	Good
Introduce new knowledge, skills, tools and experience	Good
Provide support in procurement process	Good
Suggest continuous improvement in PPP partnership	Good
Provide technical assistance to government agencies	Good
Provide marketing/promotion of projects to interested groups.	Good
Provide financial support for project	Poor

#### 4.3.9.2. Place\housing of PPP unit

This section shows the most suitable place\housing to establish PPP unit. Three choices were listed in the questionnaire and each respondent chooses the most suitable one and Figure 4.1 shows the results. The three choices are:

1. Within government, with the coordination with the private sector.
2. Independent company that gets money for the provision of services, and form coordination between the two sectors, public and private.
3. Under the Palestinian Private Sector Coordination Council (PSCC), with the coordination with government.

Figure 4.1 shows that Palestinian Government is the most suitable place to include the PPP unit with a percent 62.2%.



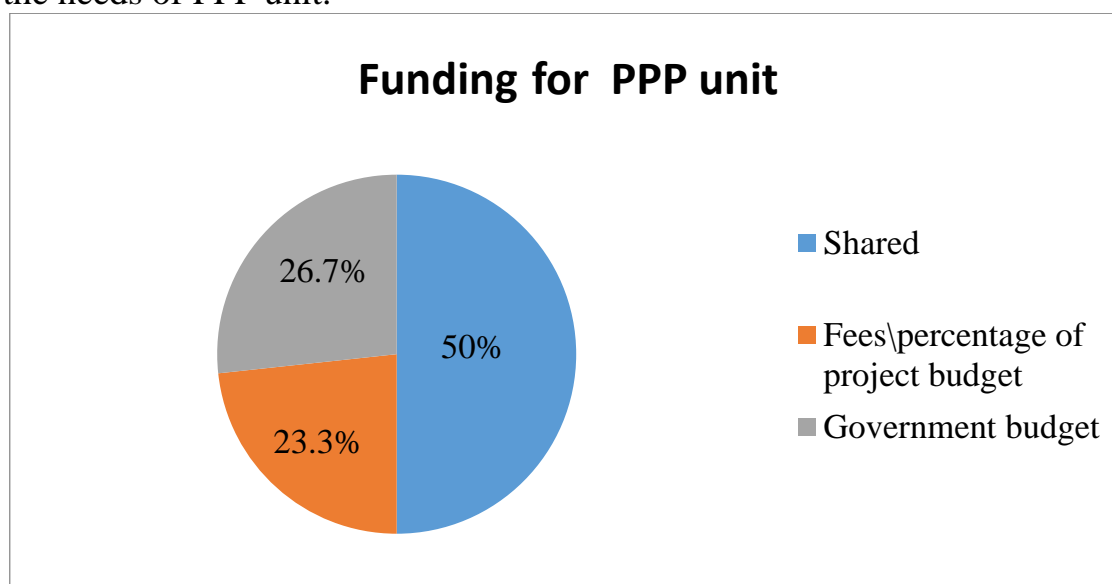
**Figure 12** Place\ housing of PPP unit

#### 4.3.9.3. Funding for PPP unit

This section shows the most suitable source\sources of funding for PPP unit. Three choices were listed in the questionnaire and each respondent chooses the most suitable one and figure 4.2 shows the results. The three choices are:

1. Government budget.
2. Fees imposed on projects budget.
3. Shared from source 1 and 2.

Figure 4.2 shows that the shared funding is the most suitable source to cover the needs of PPP unit.



**Figure 13** Funding for PPP unit

#### 4.3.9.4. SWOT analysis for PSI in the Palestinian water sector

According to PPP questionnaire results, SWOT analysis for private sector involvement was concluded and summarized in table 4.29.

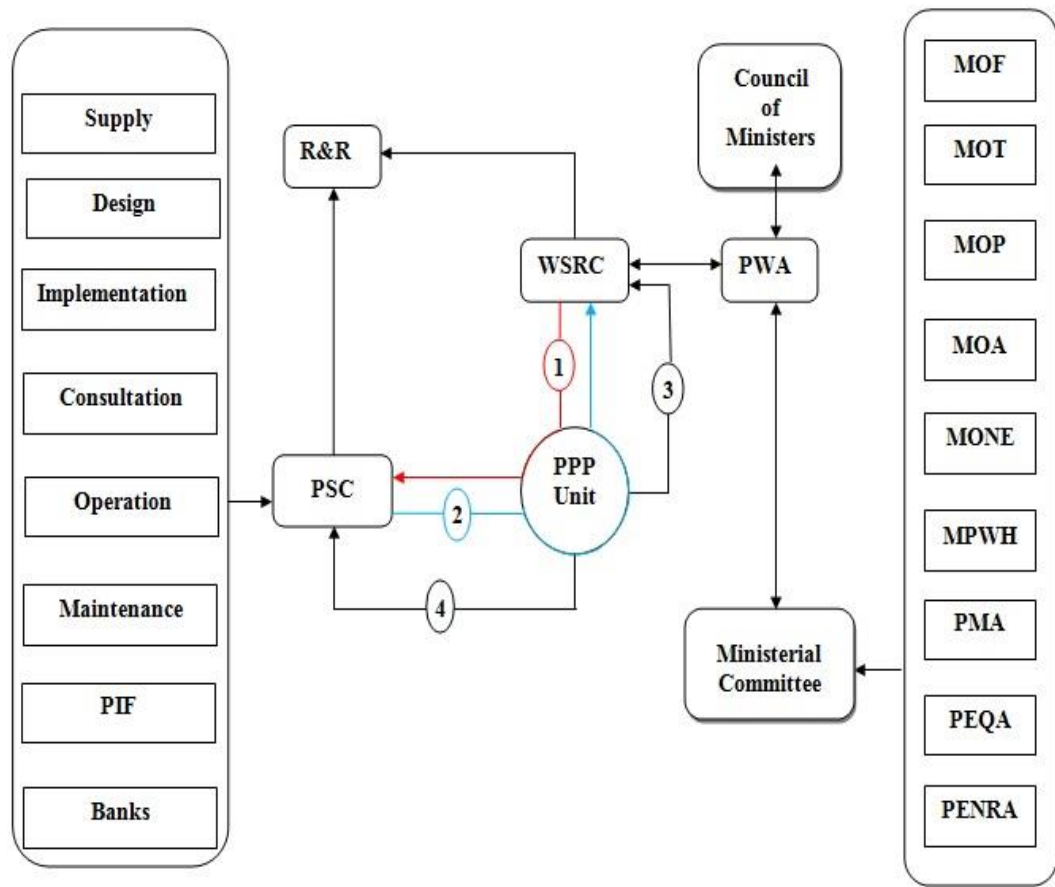
**Table 42 SWOT analysis for PSI in the Palestinian water sector**

<b>Strengths</b>	<b>Weaknesses</b>
<ul style="list-style-type: none"> <li>• Respondents express their optimism that PPP is the most suitable trend that should be applied to improve and develop the Palestinian water sector.</li> <li>• Institutional framework in the Palestinian water sector are ready for PSI.</li> <li>• Capacity building in the Palestinian water sector are ready for PSI.</li> <li>• Staff experience and financial strength through private sector are excellent and ready for starting PPP.</li> </ul>	<ul style="list-style-type: none"> <li>• Financial facilities: Government payments and subsidies against risks are not ready for PSI.</li> <li>• Private sector should work in socio-economic side to be more acceptable for citizens.</li> <li>• Regulatory framework should be totally developed.</li> <li>• Concession laws should be totally developed.</li> </ul>
<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>• Private sector will be successful in the field of designing water related projects and networks and the field of investment; for example, through pump and other water parts production.</li> <li>• BOT contracts are the most suitable way to manage and success of PSI.</li> <li>• Establishing of a body called "Public private partnership unit (PPPU)" of certain responsibilities that facilitate and assist in PSI success and development.</li> </ul>	<ul style="list-style-type: none"> <li>• Political status in Palestine form a threat especially to private sector to be involved in this partnership, due to the attacks of Israeli occupation and his control on the Palestinian water rights.</li> </ul>

#### **4.3.9.5 Framework including PPP unit**

Figure 4.3 shows the recommended framework to involve PPP unit, this framework has four main parties which are:

1. council of ministers represented by PWA and WSRC; those representatives hold meetings with the ministerial committee that has a set of members mentioned in figure 14, to take the positive and negative notes about the work of PPP and then pass these notes to PPP unit. This unit discusses these notes and try to improve them through coordination with the private sector representative.
2. Private sector represented by PSC holds meetings with the PSC members who mentioned in Figure 4.3, to take the positive and negative notes about the work of PPP and then pass these notes to PPP unit. This unit discusses these notes and try to improve them by coordinating with the public sector representatives.
3. PPP unit.
4. Rules and regulations represented by Palestinian judiciary and laws.



**Figure 14** Recommended framework to involve PPP unit

Notes:

- No. 1 in the framework means that PPP unit should coordinate between the two parties (From WSRC/PWA to PSC).
- No. 2 in the framework means that PPP unit should coordinate between the two parties (From PSC to WSRC/PWA).
- No.3 in the framework form the responsibilities of PPP unit toward public sector, which are:
  - ❖ Coordination with private bodies.
  - ❖ Provide technical assistance to government agencies.
  - ❖ Provide knowledge transfer and training.

- No.4 in the framework form the responsibilities of PPP unit toward private sector, which are:
  - ❖ Co-ordination with public bodies.
  - ❖ Advise and support to project sponsors. e.g.: legal, technical, technological and financial guidance.
  - ❖ Provide knowledge transfer and training.

## **5. Conclusions and Recommendations**

### **5.1 Conclusions**

The first conclusion to be made is that PSI can be realized and optimized in the Palestinian water sector but by taken the limitations and incentives that discussed through the thesis, and this involvement has a positive and some negative effects in the sector. Based on results obtained and discussions made in this research, the following conclusions were summed:

- Political issues and social issues were found to be the most restrictive dimensions in the Palestinian water governance system. So, the Palestinian government should clarify and somehow give guarantees about the political status.
- Water quality and institutions and institutional capacity were the most supportive dimensions in the Palestinian water governance system.
- PPP were the most preferable choice/trend to lead the Palestinian water sector rather than public or private sector alone.
- Institutional framework and capacity building were found to be the readiest dimensions in Palestine to start PPP. In contrast, political status and financial facilities; government payments and subsidies against risks were the least ready dimensions to start PPP.
- Staff experience and financial strength were found to be the readiest dimensions related to private sector in order to start PPP. In contrast, socio-economic were the least ready dimensions.



- Fields of design and investment (e.g. through pump manufacturing company) were found to be the most suitable fields to involve private sector. On the other hand, field of management was the least suitable field to involve private sector.
- BOT contracts were found to be the most suitable contracts to involve and make a partnership with private sector.
- Government was found to be the most suitable place to include the PPP unit.
- Shared funding; from government budget and from the fees imposed on projects budget were found to be the most suitable sources of funding to cover the needs of PPP unit.

## **5.2 Recommendations**

The study presents important recommendations to the authorities concerned with water governance and PSI in Palestine, which are:

- Strengths and weaknesses of the water governance system should be comprehensively addressed, and water governance assessment should be reviewed and improved in a timely manner.
- Private sector should improve its social acceptance in order to get more success for the PPP.
- Palestinian government should give some financial and legal incentives in order to attract the investors.
- PPP unit should be established and play the role of coordination between public and private sectors.

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## **Appendices**

## Appendix A: Governance assessment matrix

Governance assessment matrix will be shown in this appendix through 4 tables according to the 4 governance criteria: extent, coherence, flexibility and intensity. Each table includes questions related to one evaluation criterion.

- Extent criterion

**Table A1 Governance assessment matrix – Extent criterion**

Governance dimension	Questions	Evaluation
Levels and scales	Are all administrative levels and scales involved in water governance system? Are there any important gaps or missing levels or scales not involved in water governance system?	High
		Medium
		Low
Actors and networks	Are all stakeholders and networks included? Are there any stakeholders or networks excluded?	High
		Medium
		Low
Institutions and institutional capacity	Are all main institutions involved? Are the human and technical capacity of each institution specified?	High
		Medium
		Low
Problems perceptions and goals ambitions	To what extent are the different problems taken into account? To what extent are the goals taken into account?	High
		Medium
		Low
Water quality	Are all water quality parameters (physical, chemical and biological) taken into account? Are there any water quality parameter not taken into account?	High
		Medium
		Low
Strategies and instruments		High



	Are all strategy components are implemented? Are all needed instrument used?	Medium
		Low
Rules enforcement	Are all legal aspects in water sector taken into account in Palestine? Is there a punishment for each infraction that exceeded these rules?	High
		Medium
		Low
Responsibilities and resources	Are all PWA responsibilities clearly assigned, facilitated and harmonized with available resources?	High
		Medium
		Low
Technology systems	To what extent are technology systems available in Palestinian water sector? To what extent this technology is used by staff?	High
		Medium
		Low
Funding	Are there different sources of funding? Are there any important funding sources excluded?	High
		Medium
		Low
Infrastructure	Do existing infrastructure elements represent all needs? Are all infrastructure elements in use?	High
		Medium
		Low
Political issues	Are all water related political agreements taken into account? Are there any water related political issues excluded or not involved?	High
		Medium
		Low
Social issues	Is water available to all people in Palestine? Is the water delivered to all consumers with the same quantity, quality and cost?	High
		Medium
		Low

- Coherence criterion

**Table A2 Governance assessment matrix – Coherence criterion**

Governance dimension	Questions	Evaluation
Levels and scales	To what extent do the levels and scales depend on each other? Do the levels trust each other and work together without conflict between them?	High
		Medium
		Low
Actors and networks	Do these stakeholders work together and do they trust and respect each other? Do the stakeholders trust each other and work together without conflict between them?	High
		Medium
		Low
Institutions and institutional capacity	To what extent do these institutions support each other? Do the institutions trust each other and work together without conflict between them?	High
		Medium
		Low
Problems perceptions and goals ambitions	To what extent do the realities and goals support each other? Are there any conflict between them?	High
		Medium
		Low
Water quality	Do these water quality parameters depend on each other? Are there any conflict between the ways that used to deal with these water quality parameters?	High
		Medium
		Low
Strategies and instruments	To what extent is the strategy components are coherent? Are there any overlaps or conflicts between strategy elements and instrument used?	High
		Medium
		Low
Rules enforcement	To what extent do the existing rules and regulations cover the needs of the water sector? Are there any conflict between the Palestinian water Law items?	High
		Medium
		Low
Responsibilities and resources	To what extent are the PWA responsibilities in competence with other Palestinian institutions? Are they applied by the main stakeholders?	High
		Medium
		Low

Technology systems	To what extent do these technologies work together and support water sector development? Are there any duplication or deficiencies in the available technologies?	High
		Medium
		Low
Funding	Is the conditions on funding by funders affect funding availability and use? Are there any conflict between the different sources of funding?	High
		Medium
		Low
Infrastructure	To what extent do infrastructure elements support the water system performance? To what extent do each infrastructure element facilitate the planned duties separately?	High
		Medium
		Low
Political issues	Do these water related political agreement articles support water sector goals? Do these water related political agreement articles are in conflict with Palestinian interest and water sector goals?	High
		Medium
		Low
Social issues	To what extent the serving of all segments of society considered incentive in your plans? Is there a preference in service provision to any level in water service?	High
		Medium
		Low

- Flexibility criterion

**Table A3 Governance assessment matrix – Flexibility criterion**

Governance dimension	Questions	Evaluation
Levels and scales	Is it possible to move up and down levels given the issue at stake? Is it possible to move up and down in the duties and responsibilities?	High
		Medium
		Low
Actors and networks	Is it possible for new actors to be included when there are reasons for this? Is it possible that the decision maker shifts duties and responsibilities from one actor to another when there are reasons for this?	High
		Medium
		Low
Institutions and institutional capacity	Is it possible to merge more than institution in one institution in some cases? Is it possible to add or remove loads to/from the institution human and technical capacity?	High
		Medium
		Low
Problems perceptions and goals ambitions	Are there different solutions to deal with any real problem? Are there opportunities to reassess goals?	High
		Medium
		Low
Water quality	Are there any alternative ways to control (manage) these water quality requirement, if the main way are not efficient? Is it possible to exceed the water quality requirement (up and down)?	High
		Medium
		Low
Strategies and instruments	Are there opportunities to combine or make use of different types of strategies? Are there opportunities to combine or make use of different types of instruments?	High
		Medium
		Low
Rules enforcement	Is it possible to use multiple mechanisms to enforce one rule? Is it possible to use other accredited laws (environmental, agricultural) in solving water sector legal needs?	High
		Medium
		Low
Responsibilities and resources	To what extent is it possible to accomplish the assigned responsibilities and resources as long as accountability and transparency are not compromised?	High
		Medium
		Low

Technology systems	Is it possible to use available technologies in multi tasks within the water sector? How these technologies availability affect the efficiency and performance of water sector?	High
		Medium
		Low
Funding	If one source stops funding or runs out, are there alternative funding sources to cover the deficit? Is it possible to involve the sector main actors in sector funding?	High
		Medium
		Low
Infrastructure	Is it possible to use some infrastructures for multiple goals (to make different tests on the field and to record different readings)? Are these infrastructure elements designed to handle any over expected activities?	High
		Medium
		Low
Political issues	Are there different ways to deal with these political status and agreements? Can these multiple agreements be optimized-modified?	High
		Medium
		Low
Social issues	Is there a flexible dealing with the water supply problems to citizens? Is there equal cost collection policy?	High
		Medium
		Low

- Intensity criterion

**Table A4 Governance assessment matrix – Intensity criterion**

Governance dimension	Questions	Evaluation
Levels and scales	Do these levels and scales sufficient, appropriate and applicable to the water sector in Palestine? Is there a strong impact from a certain level towards behavioral change or management reform?	High
		Medium
		Low
Actors and networks	Do these stakeholders and networks sufficient, appropriate and applicable to the water sector in Palestine? Is there a strong pressure from an actor or actor coalition towards behavioral change or management reform?	High
		Medium
		Low
Institutions and institutional capacity	Do these institutions and institutional capacity sufficient, appropriate and applicable to the water sector in Palestine?	High
		Medium
		Low
Problems perceptions and goals ambitions	How different are the goal ambitions from the status quo or business as usual?	High
		Medium
		Low
Water quality	How different are the accepted water quality standards from the practice in Palestine?	High
		Medium
		Low
Strategies and instruments	Do these strategies sufficient, appropriate and applicable to the water sector in Palestine? Do these instruments sufficient, appropriate and applicable to the water sector in Palestine?	High
		Medium
		Low
Rules enforcement	Do the current laws sufficient to the water sector in Palestine? Is there a need to look for other laws to enforce the rules?	High
		Medium
		Low
Responsibilities and resources	Do these assigned responsibilities and resources sufficient, appropriate and applicable to the situation in Palestine?	High
		Medium
		Low

Technology systems	Do the current technology sufficient, appropriate and applicable to the water sector in Palestine? Is there a strong impact of available technologies on sector development?	High
		Medium
		Low
Funding	Do the current funding and funding sources sufficient to the water sector in Palestine? Is there a need to look for other sources of funding?	High
		Medium
		Low
Infrastructure	Do the current infrastructure sufficient to the situation in Palestine? Is there a need to develop other infrastructures?	High
		Medium
		Low
Political issues	Do these water related political agreements sufficient, appropriate and applicable to the water sector in Palestine? Is there a strong impact of these water related political agreements on water sector situation in Palestine?	High
		Medium
		Low
Social issues	Is water services achieves justice among the various levels of society? Is there a need to serve some water sectors more than others (agriculture vs. domestic)?	High
		Medium
		Low

## Appendix B: PPP questionnaire



جامعة النجاح الوطنية

كلية الدراسات العليا

استبيان

"الآليات المثلى لاندماج القطاع الخاص في حوكمة قطاع المياه الفلسطيني"

السادة رؤساء الجهات المعنية،

تم إعداد هذه الاستبيان ضمن إطار رسالة ماجستير بعنوان "الآليات المثلى لاندماج القطاع الخاص في حوكمة قطاع المياه الفلسطيني" والذي يهدف إلى وضع إستراتيجية لدخول القطاع الخاص في قطاع المياه الفلسطيني بالشراكة مع القطاع العام. ويتم تنفيذ هذا البحث تحت إطار التعاون الفلسطيني الهولندي المشترك بتمويل من الحكومة الهولندية.

هذا و نشمن تعاونكم في تعبئة هذه الاستبيان لما تمثله مساهمتكم من أهمية بالغة في تزويد الباحث ببيانات دقيقة و آراء سديدة تعكس الواقع الراهن وتتصور الوضع المستقبلي لقطاع المياه الفلسطيني.

مع جزيل الشكر والتقدير لتعاونكم.



### Part One: Private sector, public sector and PPP comparison

Fill the table below with a scale from 1 (very weak) to 7(very strong) to describe the expected status of each governance dimension under the control of each alternative.

Governance dimension	Alternatives		
	Public sector	PPP	Privatization
Levels and scales			
Actors and networks			
Problems perceptions and goals ambitions			
Strategies and instruments			
Responsibilities and resources			
Water quality			
Rules enforcement			
Institutions and institutional capacity			
Technology systems			
Funding			
Infrastructure			
Political issues			
Social issues			

### Part Two: Readiness of the country to PPP

Fill the table below with a scale from 1 (very weak) to 7(very strong) to describe the readiness of Palestine to PPP in water sector.

Factors	Scale
Legal and regulatory framework	
Institutional framework	
Investment climate	
Financial facilities : Government payments and subsidies against risks	
Capacity-building	
Political status	
Risk management	

### Part Three: Readiness of private sector to PPP

Fill the table below with a scale from 1 (very weak) to 7(very strong) to describe the readiness of private sector to be involved in PPP through the Palestinian water sector.

Criteria	Scale
Financial strength	
Staff experience	
Planning and development	
Risk handling	
Institutional stability	
Technical and technological status	
Socio-economic	

### Part Four: Areas for PPP

This part shows the areas that private sector can work through. Fill the table below with a scale from 1 (very weak) to 7(very strong) to evaluate and end by the most suitable areas (specialties) that PPP can succeed through.

Field	Scale
Supply	
Investment (Pumps manufacturing company)	
Planning	
Management (partnership)	
Design	
Implementation	
Operation and maintenance	
Overall: design, implementation, operation and maintenance	

### Part Five: Responsibilities and resources

Fill the table below with **(1: Private sector), (2: Public sector) or (3: Joint responsibility)** to allocate each responsibility or resource listed in the table to the most suitable party\parties.

Responsibilities/Resources	Party\Parties
Asset ownership	
O&M	
Capital investment	
Commercial risk	
Obtaining net revenues or losses	
Monitoring and follow up	

### Part Six: Factors affecting the success of PPP

Put a mark (X) in the most suitable trend that should be applied for each factor in the following table.

Factors	Trend				
	Extremely decrease	Partially decrease	Fixation	Partially increase	Extremely increase
Taxation					
Foreign exchange					
Interest rate					
Environmental aspects					
Safety aspects					
Water sector performance					
Regulatory framework					
Concession laws					
Regime stability					
Capacity building					
Employees productivity					
Services cost					
Services quality					

### Part Seven: Incentives and limitations by the government to the work of PPP

Fill the tables below with a scale from 1 (very weak) to 7(very strong) to describe the importance of each incentive and/or limitation that the government should provide to order to facilitate and manage PPP.

A: Incentives	Scale
Law provides tax breaks	
Law offers customs exemptions	
Law offers customs exemptions on the operating cars	
Law extends exemptions for investment projects	
Law provides exemptions on the developer part of the projects	
Law provides guarantees and insurance to investors against risks	
Law guarantees the application of the incentive system without personal interference considerations.	

Law ensures information confidentiality of private investors	
Law guarantees the settlement of disputes between investors and the government.	
Law guarantees the right of residence for external investor in Palestine	
Judiciary is the body that can reserve or confiscate investors fund.	
Palestinian National Authority allows converting all investors' financial resources outside Palestine, except if there are legal infractions prevent this.	
Establishment of a body called "Public private partnership unit (PPPU)" of certain responsibilities.	
Setting specification for the quality of services, and gives incentives for special services.	

<b>B: Limitations</b>	<b>Scale</b>
Canceling the privileges, exemptions if there is infraction done by the private sector	
Palestinian National Authority can put restrictions on converting the investors' financial resources outside Palestine if there is infraction to Palestinian bankruptcy laws	
Palestinian National Authority can put restrictions on converting the investors' financial resources outside Palestine if there is infraction to Palestinian criminal laws.	
Palestinian National Authority can put restrictions on converting the investors' financial resources outside Palestine if there is infraction to Palestinian tax laws.	
Setting of ceiling price for the services that will be offered.	
Setting limits on the quantities of natural resources (water) that are allowed to be consumed.	
Setting specification for quality of services, and put penalties according to it.	

**Part Eight: Effects/impacts of PPP on the Palestinian water sector.**

Fill the tables below with a scale from 1 (very weak) to 7(very strong) to evaluate each potential incentive/fear by PPP

**A. Potential incentives expressed by public sector**

Incentives	Scale
Reduces public debt	
Getting a new financial sources for development	
Clear accountability (no hidden costs)	
Promotes innovation	
Access to an expertise not available in the public sector	
Minimizes development risk	
Improve the service performance	
Transfer the responsibility: No public employees to manage No more strikes to manage	
Penalties for poor performance	

**B. Potential fears expressed by public sector**

Fears	Scale
Tendency to distrust private sector	
Creation of a private monopoly	
Depletion of available resources	
Disputes can affect the reputation of the country	
Inflated prices of services	
Loss of control on the Palestinian water sector	
Convert the profit outside the country	

**C. Potential incentives expressed by private sector**

Incentives	Scale
Generate cash flow for a long term period	
Government supports (subsidies, tax, guarantees)	
Partnership for future PPPs	

**D. Potential fears expressed by private sector**

<b>Fears</b>	<b>Scale</b>
Lack of bankability	
High transaction costs (advisors, lawyers)	
Accusation of corruption	
Political risk	
Penalties on any shortening or malfunction	
Conflict with local partners	
Regulation changes (safety, environment)	

**E. Potential incentives expressed by the users (citizens)**

<b>Incentives</b>	<b>Scale</b>
Creation of a new service	
Social tariffs for low income	
Better quality for a lower price	
Confidence expressed by citizens to private sector	
Less public debt means less taxes	
Better maintenance	
Better compliance with environmental regulation	

**F. Potential fears expressed by the users (citizens)**

<b>Fears</b>	<b>Scale</b>
Creation of a private monopoly	
Rising of services' prices	
Disputes can affect the quality of service	

**Part Nine: Main activities/involvements of PPP unit**

Fill the table below with a scale from 1 (very weak) to 7(very strong) to evaluate the main activities/involvements that should be consider a responsibility of **PPP Unit**.

<b>Activities/Involvements</b>	<b>Scale</b>
Co-ordination with public bodies	
Introduce new knowledge, skills, tools and experience	
Check submitted projects for completion	
Advise and support to project sponsors, eg: legal, technical, technological and financial guidance	
Decide on project approval	
Suggest project upgrade and improvement	
Evaluate the approved projects continuously	
Provide marketing/promotion of projects to interested groups.	

Ensuring uniformity of policy standards	
Conduct quality control, standardization	
Provide technical assistance to government agencies	
Provide financial support for project	
Provide Knowledge transfer and training	
Provide support in procurement process	
Suggest continuous improvement in PPP partnership	

### Part Ten: Place\housing of a PPP unit

Put mark (X) in the most suitable location/housing for the PPP unit.

<b>Location/Housing</b>	<b>(X)</b>
Within government, with the coordination with the private sector	
Independent company that get money for the provision of services, and form coordination between the two sectors, public and private.	
Under the Palestinian Private Sector Coordination Council (PSCC), with the coordination with government.	

### Part Eleven: Funding for PPP unit

Put mark (X) in the most suitable source of funding for the PPP unit.

<b>Source of funding</b>	<b>(X)</b>
Government budget.	
Fees imposed on projects budget	
Shared from source 1 and 2	

### Appendix C: Sample size for PPP questionnaires

In this appendix, respondents who filled PPP questionnaire are listed and shown through table C1.

**Table C1 Respondents who filled PPP questionnaire**

No.	Group	Members
1	Interested banks	Arab Bank
2		Cairo Amman Bank
3		Bank of Palestine
4	Water policy-makers	Environment Quality Authority (EQA)
5		Palestinian Water Authority (PWA)
6		Water Sector Regulatory Council
7	Related ministries	Ministry of National Economy
8		Ministry of Local Government
9		Ministry of Agriculture
10		Ministry of Finance
11	NGO's	Applied Research Institute Jerusalem (ARIJ)
12		Palestinian Hydrology Group (PHG)
13		Palestinian Agricultural Relief Committees (PARC)
14	Private sector	Brothers Contracting Company (BCC)
15		Consolidated Contractors Company (CCC)
16		Nawaya Contracting Company
17		Dar AL-bina' for Trading & General Contracting Company
18		M3alem Contracting Company
19		Black and Veatch
20		Al-Saleh Contracting Company



21	Water undertaking	Jerusalem Water Undertaking JWU
22	Municipalities	Hebron Municipality
23		Samou Municipality
24		Alshyoukh Municipality
25		Al Dahrieh Municipality
26		Bethlehem Municipality
27		Turmusaya Municipality
28		Jenin Municipality
29		Halhul Municipality
30		Sier Municipality
31		ASIRA Municipality
32		AbuDis Municipality
33		Jericho Municipality
34		Bireh Municipality
35		Al-Ram Municipality
36		Al-Zawyah Municipality
37		Al-Zababdeh Municipality
38		Al-Silat al-Harithiya Municipality
39		Al-Auja Municipality
40		Alyamun Municipality
41		Bedo Municipality
42		Bidya Municipality
43		Burqen Municipality
44		Bruqin Municipality
45		Balaa Municipality
46		Beit Jala Municipality
47		Beit Sahour Municipality
48		Beit Surike Municipality

49		Beit Fajjar Municipality
50		Beit Furik Municipality
51		Beitleed Municipality
52		Beita Municipality
53		Beitunia Municipality
54		Jayyous Municipality
55		Dura Municipality
56		Der Al-Ghosoon Municipality
57		Deir Ballout Municipality
58		Deir Istiya Municipality
59		Ramallah Municipality
60		Salfit Municipality
61		Sinjel Municipality
62		Selat al-daher Municipality
63		Sureif Municipality
64		Tammun Municipality
65		Tubas Municipality
66		Tulkarm Municipality
67		Ajja Municipality
68		Arrabah Municipality
69		Azzun Municipality
70		Aqraba Municipality
71		Illar Municipality
72		Anabta Municipality
73		Qabatiya Municipality
74		Qabalan Municipality
75		Qatana Municipality
76		Qafeen Municipality

77		Qalqiliya Municipality
78		Kafr Dan Municipality
79		Nablus Municipality
80		Kafr Ra'I Municipality
81		Attil Municipality
82		Birzeit Municipality
83	Experts	Anan Jayyousi
84		Dr. Abdelhaleem Khader.
85		Hamees S Tubeileh
86		Rima Nassar
87		Dr. Qasim Judeh
88		Dr. Sameer Shadeed
89		Dr. Nabil Dmaidi
90	Water Studies Institutes	Water and Environmental Studies Institute- An-Najah National University (Dr. Marwan Haddad)

### Appendix D: Statistical analysis for PPP questionnaires

This appendix shows the statistical methods and analysis used to get the results shown in Chapter 4.

- Check for normality using both Shapiro-Wilk test and Kolmogorov-Smirnov test on SPSS

**Table D1 SPSS results for both Shapiro-Wilk test and Kolmogorov-Smirnov test to check normality of the data obtained for section 4.3.2.**

Readiness factors	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Legal and regulatory framework	.161	90	.000	.948	90	.001
Institutional framework	.169	90	.000	.936	90	.000
Investment climate	.213	90	.000	.921	90	.000
Financial facilities : Government payments and subsidies against risks	.170	90	.000	.938	90	.000
Capacity-building	.169	90	.000	.921	90	.000
Political status	.165	90	.000	.905	90	.000
Risk management	.170	90	.000	.944	90	.001

**Table D2 SPSS results for both Shapiro-Wilk test and Kolmogorov-Smirnov test to check normality of the data obtained for section 4.3.3.**

Readiness factors	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Financial strength	.239	90	.000	.859	90	.000
Staff experience	.224	90	.000	.876	90	.000
Planning and development	.248	90	.000	.899	90	.000
Risk handling	.186	90	.000	.919	90	.000
Institutional stability	.181	90	.000	.916	90	.000
Technical and technological status	.202	90	.000	.882	90	.000
Socio-economic	.253	90	.000	.904	90	.000

**Table D3 SPSS results for both Shapiro-Wilk test and Kolmogorov-Smirnov to check normality of the data obtained for section 4.3.4.**

Areas for PPP	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Supply	.171	90	.000	.927	90	.000
Investment (Pumps manufacturing company)	.255	90	.000	.868	90	.000
Planning	.183	90	.000	.922	90	.000
Management(Partnership)	.149	90	.000	.948	90	.001
Design	.239	90	.000	.874	90	.000
Implementation	.212	90	.000	.895	90	.000
Operation and maintenance	.259	90	.000	.885	90	.000
Overall: Design, implementation, Operation and maintenance	.263	90	.000	.869	90	.000

**Table D4 SPSS results for both Shapiro-Wilk test and Kolmogorov-Smirnov test to check normality of the data obtained for section 4.3.7.1.**

Incentives by the government to the work of PPP	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Law provides tax break.	.249	90	.000	.889	90	.000
Law offers customs exemptions	.196	90	.000	.909	90	.000
Law offers customs exemptions on the operating cars	.171	90	.000	.923	90	.000
Law extends exemptions for investment projects	.183	90	.000	.919	90	.000
Law provides exemptions on the developer part of the projects	.187	90	.000	.899	90	.000
Law provides guarantees and insurance to investors against risks	.182	90	.000	.902	90	.000
Law guarantees the application of the incentive system without personal interference considerations.	.218	90	.000	.853	90	.000
Law ensures information confidentiality of private investors	.201	90	.000	.872	90	.000
Law guarantees the settlement of disputes between investors and the government.	.233	90	.000	.862	90	.000
Law guarantees the right of residence for external investor in Palestine	.192	90	.000	.912	90	.000
Judiciary is the body that can reserve or confiscated investors fund.	.185	90	.000	.887	90	.000

Palestinian National Authority allows converting all investors' financial resources outside Palestine, except if there are legal infractions prevent this..	.173	90	.000	.919	90	.000
Establishment of a body called "Public private partnership unit (PPPU)" of certain responsibilities.	.204	90	.000	.858	90	.000
Setting specification for the quality of services, and gives incentives for special services.	.246	90	.000	.834	90	.000

**Table D5 SPSS results for both Shapiro-Wilk test and Kolmogorov-Smirnov test to check normality of the data obtained for section 4.3.7.2.**



Limitations by the government to the work of PPP	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Canceling the privileges, exemptions if there is infraction done by the private sector	.235	90	.000	.867	90	.000
Palestinian National Authority can put restrictions on converting the investors' financial resources outside Palestine if there is infraction to Palestinian bankruptcy laws	.179	90	.000	.888	90	.000
Palestinian National Authority can put restrictions on converting the investors' financial resources outside Palestine if there is infraction to Palestinian criminal laws.	.183	90	.000	.886	90	.000
Palestinian National Authority can put restrictions on converting the investors' financial resources outside Palestine if there is infraction to Palestinian tax laws.	.168	90	.000	.894	90	.000
Setting of ceiling price for the services that will be offered.	.290	90	.000	.769	90	.000
Setting limits on the quantities of natural resources (water) that are allowed to be consumed.	.206	90	.000	.881	90	.000

Setting specification for quality of services, and put penalties according to it.	.279	90	.000	.775	90	.000
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**Table D6 SPSS results for both Shapiro-Wilk test and Kolmogorov-Smirnov test to check normality of the data obtained for section 4.3.8.1.**

Potential incentives expressed by public sector	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Reduces public debt	.227	90	.000	.855	90	.000
Getting a new financial sources for development	.245	90	.000	.867	90	.000
Clear accountability (no hidden costs)	.189	90	.000	.906	90	.000
Promotes innovation	.212	90	.000	.889	90	.000
Access to an expertise not available in the public sector	.198	90	.000	.887	90	.000
Minimizes development risk	.237	90	.000	.893	90	.000
Improve the service performance	.188	90	.000	.890	90	.000
Transfer the responsibility: No public employees to manage No more strikes to manage	.208	90	.000	.859	90	.000
Penalties for poor performance	.225	90	.000	.885	90	.000

**Table D7 SPSS results for both Shapiro-Wilk test and Kolmogorov-Smirnov test to check normality of the data obtained for section 4.3.8.2.**

Potential fears expressed by public sector	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Tendency to distrust private sector	.164	90	.000	.945	90	.001
Creation of a private monopoly	.225	90	.000	.856	90	.000
Depletion of available resources	.225	90	.000	.837	90	.000
Disputes can affect the reputation of the country	.243	90	.000	.906	90	.000
Inflated prices of services	.213	90	.000	.877	90	.000
Loss of control on the Palestinian water sector	.276	90	.000	.834	90	.000
Convert the profit outside the country	.199	90	.000	.911	90	.000

**Table D8 SPSS results for both Shapiro-Wilk test and Kolmogorov-Smirnov test to check normality of the data obtained for section 4.3.8.3.**

Potential incentives expressed by private sector	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Generate cash flow for a long term period	.274	90	.000	.820	90	.000
Government supports (subsidies, tax, guarantees)	.210	90	.000	.906	90	.000
Partnership for future PPPs	.200	90	.000	.907	90	.000

**Table D9 SPSS results for both Shapiro-Wilk test and Kolmogorov-Smirnov test to check normality of the data obtained for section 4.3.8.4.**

Potential fears expressed by private sector	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Lack of bankability	.163	90	.000	.945	90	.001
High transaction costs (advisors, lawyers)	.151	90	.000	.948	90	.001
Accusation of corruption	.226	90	.000	.913	90	.000
Political risk	.248	90	.000	.812	90	.000
Penalties on any shortening or malfunction	.191	90	.000	.911	90	.000
Conflict with local partners	.203	90	.000	.912	90	.000
Regulation changes (safety, environment)	.147	90	.000	.943	90	.001

**Table D10 SPSS results for both Shapiro-Wilk test and Kolmogorov-Smirnov test to check normality of the data obtained for section 4.3.8.5.**

Potential incentives expressed by the users (citizens)	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Creation of a new service	.280	90	.000	.846	90	.000
Social tariffs for low income	.270	90	.000	.823	90	.000
Better quality for a lower price	.209	90	.000	.892	90	.000
Confidence expressed by citizens to private sector	.151	90	.000	.947	90	.001
Less public debt means less taxes	.174	90	.000	.917	90	.000
Better maintenance	.217	90	.000	.869	90	.000
Better compliance with environmental regulation	.160	90	.000	.923	90	.000

**Table D11 SPSS results for both Shapiro-Wilk test and Kolmogorov-Smirnov test to check normality of the data obtained for section 4.3.8.6.**

Potential fears expressed by the users (citizens)	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Creation of a private monopoly	.288	90	.000	.699	90	.000
Rising of services' prices	.233	90	.000	.822	90	.000
Disputes can affect the quality of service	.153	90	.000	.923	90	.000

**Table D12 SPSS results for both Shapiro-Wilk test and Kolmogorov-Smirnov to check normality of the data obtained for section 4.3.9.1**

Main activities/involvements of PPP unit	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Coordination with public bodies	.252	90	.000	.861	90	.000
Introduce new knowledge, skills, tools and experience	.308	90	.000	.830	90	.000
Check submitted projects for completion	.347	90	.000	.786	90	.000
Advise and support to project sponsors, eg: legal, technical, technological and financial guidance	.286	90	.000	.838	90	.000
Decide on project approval	.253	90	.000	.850	90	.000
Suggest project upgrade and improvement	.331	90	.000	.804	90	.000
Evaluate the approved projects continuously	.280	90	.000	.850	90	.000
Provide marketing/promotion of projects to interested groups.	.225	90	.000	.903	90	.000
Ensuring uniformity of policy standards	.318	90	.000	.822	90	.000
Conduct quality control, standardization	.251	90	.000	.872	90	.000
Provide technical assistance to government agencies	.297	90	.000	.792	90	.000
Provide financial support for project	.217	90	.000	.930	90	.000
Provide Knowledge transfer and training	.377	90	.000	.754	90	.000
Provide support in procurement process	.322	90	.000	.813	90	.000

Suggest continuous improvement in PPP partnership	.284	90	.000	.792	90	.000
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- Check for significance differences using Kruskal Wallis Test on SPSS

**Table D13 SPSS results for Kruskal Wallis to check if there is significance difference between the data obtained for section 4.3.2.**

Kruskal Wallis Test	
Chi-Square	89.768
Df	6
Asymp. Sig.	.000

**Table D14 SPSS results for Kruskal Wallis Test to check if there is significance difference between the data obtained for section 4.3.3.**

Kruskal Wallis Test	
Chi-Square	37.112
Df	6
Asymp. Sig.	.000

**Table D15 SPSS results for Kruskal Wallis Test to check if there is significance difference between the data obtained for section 4.3.4.**

Kruskal Wallis Test	
Chi-Square	53.737
Df	7
Asymp. Sig.	.000



**Table D16 SPSS results for Kruskal Wallis Test to check if there is significance difference between the data obtained for section 4.3.7.1.**

Kruskal Wallis Test	
Chi-Square	90.277
Df	13
Asymp. Sig.	.000

**Table D17 SPSS results for Kruskal Wallis Test to check if there is significance difference between the data obtained for section 4.3.7.2.**

Kruskal Wallis Test	
Chi-Square	34.574
Df	6
Asymp. Sig.	.000

**Table D18 SPSS results for Kruskal Wallis Test to check if there is significance difference between the data obtained for section 4.3.8.1.**

Kruskal Wallis Test	
Chi-Square	27.375
Df	8
Asymp. Sig.	.001

**Table D19 SPSS results for Kruskal Wallis Test to check if there is significance difference between the data obtained for section 4.3.8.2.**

Kruskal Wallis Test	
Chi-Square	83.055

Kruskal Wallis Test	
Chi-Square	34.574
Df	6
Asymp. Sig.	.000
Df	6
Asymp. Sig.	.000

**Table D20 SPSS results for Kruskal Wallis Test to check if there is significance difference between the data obtained for section 4.3.8.3.**

Kruskal Wallis Test	
Chi-Square	32.467
Df	2
Asymp. Sig.	.000

**Table D21 SPSS results for Kruskal Wallis Test to check if there is significance difference between the data obtained for section 4.3.8.4.**

Kruskal Wallis Test	
Chi-Square	116.042
Df	6
Asymp. Sig.	.000

**Table D22 SPSS results for Kruskal Wallis Test to check if there is significance difference between the data obtained for section 4.3.8.5.**

Kruskal Wallis Test	
Chi-Square	62.457
Df	6
Asymp. Sig.	.000

**Table D23 SPSS results for Kruskal Wallis Test to check if there is significance difference between the data obtained for section 4.3.8.6.**

Kruskal Wallis Test	
Chi-Square	53.104
Df	2
Asymp. Sig.	.000

**Table D24 SPSS results for Kruskal Wallis Test to check if there is significance difference between the data obtained for section 4.3.9.1**

Kruskal Wallis Test	
Chi-Square	107.016
Df	14
Asymp. Sig.	.000

Kruskal Wallis Test	
Chi-Square	53.104
Df	2
Asymp. Sig.	.000

- **Mann-Whitney U test to locate where the significance difference is:**

**Table D25 SPSS results for Mann-Whitney U Test to locate where the significance difference is between the data obtained for section 4.3.2.**

Factor	Compared by factor.	modified $\alpha = 0.05/21$	Z	Sig
Legal and regulatory framework	Institutional framework	0.0238	-3.481	0
	Investment climate	0.0238	-2.524	0.012
	Financial facilities : Government payments and subsidies against risks	0.0238	-1.991	0.046
	Capacity-building	0.0238	-3.111	0.002
	Political status	0.0238	-4.649	0
	Risk management	0.0238	-0.314	0.753
Institutional framework	Legal and regulatory framework	0.0238	-3.481	0
	Investment climate	0.0238	-1.035	0.301
	Financial facilities : Government payments and subsidies against risks	0.0238	-4.99	0
	Capacity-building	0.0238	-0.289	0.773
	Political status	0.0238	-7.192	0
	Risk management	0.0238	-2.846	0.004

Investment climate	Legal and regulatory framework	0.0238	-2.524	0.012
	Institutional framework	0.0238	-1.035	0.301
	Financial facilities : Government payments and subsidies against risks	0.0238	-4.177	0
	Capacity-building	0.0238	-0.761	0.447
	Political status	0.0238	-6.492	0
	Risk management	0.0238	-1.949	0.051
Financial facilities : Government payments and subsidies against risks	Legal and regulatory framework	0.0238	-1.991	0.046
	Institutional framework	0.0238	-4.99	0
	Investment climate	0.0238	-4.177	0
	Capacity-building	0.0238	-4.713	0
	Political status	0.0238	-2.686	0.007
	Risk management	0.0238	-2.072	0.038
Capacity-building	Legal and regulatory framework	0.0238	-3.111	0.002
	Institutional framework	0.0238	-0.289	0.773
	Investment climate	0.0238	-0.761	0.447
	Financial facilities : Government payments and subsidies against risks	0.0238	-4.713	0
	Political status	0.0238	-6.955	0
	Risk management	0.0238	-2.587	0.01
Political status	Legal and regulatory framework	0.0238	-4.649	0
	Institutional framework	0.0238	-7.192	0

	Investment climate	0.0238	-6.492	0
	Financial facilities : Government payments and subsidies against risks	0.0238	-2.686	0.007
	Capacity-building	0.0238	-6.955	0
	Risk management	0.0238	-4.535	0
Risk management	Legal and regulatory framework	0.0238	-0.314	0.753
	Institutional framework	0.0238	-2.846	0.004
	Investment climate	0.0238	-1.949	0.051
	Financial facilities : Government payments and subsidies against risks	0.0238	-2.072	0.038
	Capacity-building	0.0238	-2.587	0.01
	Political status	0.0238	-4.535	0

This test repeated to the other sections that statistically analyzed using SPSS in section 4.3.

### Appendix E: Detailed results for PPP questionnaires

**Table E1 Detailed results obtained by using SPSS for section 4.3.2.**

Readiness of the country to PPP	Alternatives No.	Mean	Excellent	Good	Partially good	Poor
Institutional framework	2	4.59	2			
Capacity building	5	4.53	5			
Investment climate	3	4.37	3	3		
Risk management	7	3.94		7	7	

Legal and regulatory framework	1	3.51			1	
Financial facilities : Government payment risk , Government support for low-income users	4	3.49			4	
Political status	6	2.87				6

**Table E2 Detailed results obtained by using SPSS for section 4.3.3.**

Readiness of private sector to PPP	Alternatives No.	Mean	Excellent	Good	Partially good
Staff experience	2	5.21	2		
Financial Strength	1	5.16	1		
Technical and technological status	6	5.09	6	6	
Planning and development	3	5.02	3	3	3
Institutional stability	5	4.71		5	5
Risk handling	4	4.54		4	4
Socio-economic	7	4.50			7

**Table E3 Detailed results obtained by using SPSS for section 4.3.4.**

Areas for PPP	Alternatives No.	Mean	Excellent	Good	Partially good
Design	5	5.56	5		
Investment (Pumps manufacturing company)	2	5.42	2		

Implementation	6	5.29	6	6	
Operation and maintenance	7	5.02	7	7	
Overall: Design, implementation, Operation and maintenance	8	4.98		8	
Supply	1	4.96	1	1	1
Planning	3	4.92	3	3	3
Management(Partnership)	4	4.33			4

**Table E4 Detailed results obtained by using SPSS for section 4.3.7.1.**

Incentives by the government to the work of PPP	Alternatives No.	Mean	Excellent	Good	Partially good
Setting specification for the quality of services, and gives incentives for the special services.	14	5.94	14		
Law guarantees the settlement of disputes between the investors and the government.	9	5.69	9	9	
Law guarantees the application of the incentive system without interference Personal considerations.	7	5.68	7	7	
Law ensures information confidentiality of private investors	8	5.64	8	8	8
Establishment of a body called "Public private	13	5.59	13	13	13



partnership unit (PPPU)" of certain responsibilities.					
Judiciary is the body that can reserve or confiscated investors fund.	11	5.52	11	11	11
Law provides tax breaks	1	5.39	1	1	1
Law offers customs exemptions	2	5.36	2	2	2
Law provides guarantees and insurance to investors against risks	6	5.20		6	6
Law offers customs exemptions on the operating cars	3	5.14		3	3
Law provides exemptions on the developer part of the projects	5	5.11		5	5
Law extends exemptions for investment projects	4	5.08		4	4
Palestinian National Authority allows converting all investors' financial resources outside Palestine ,except if there are legal infractions prevent that	12	4.90			12
Law guarantees the right of residence for external investor in Palestine	10	4.73			10

**Table E5 Detailed results obtained by using SPSS for section 4.3.7.2.**

Limitations by the government to the work of PPP	Alternatives No.	Mean	Excellent	Good	Partially good
Setting specification for quality of services, and put penalties according to it.	7	6.09	7		
Setting of ceiling price for the services that will be offered.	5	6.02	5		
Palestinian National Authority can put restrictions on converting the investors' financial resources outside Palestine if there is infraction to Palestinian bankruptcy laws	2	5.62		2	2
Palestinian National Authority can put restrictions on converting the investors' financial resources outside Palestine if there is infraction to Palestinian criminal laws.	3	5.58		3	3
Palestinian National Authority can put restrictions on converting the investors' financial resources outside Palestine if there is infraction to Palestinian tax laws.	4	5.49			4
Canceling the privileges, exemptions if there is infraction done by the private sector	1	5.41			1
Setting limits on the quantities of natural resources (water) that are allowed to consume.	6	5.36			6

**Table E6 Detailed results obtained by using SPSS for section 4.3.8.1.**

Potential incentives expressed by public sector	Alternatives No.	Mean	Excellent	Good
Reduces public debt	1	5.64	1	
Access to an expertise not available in the public sector	5	5.61	5	
New financial sources for development	2	5.57	2	
Promotes innovation	4	5.51	4	4
Improve the service performance	7	5.48	7	7
Minimizes development risk	6	5.24	6	6
Clear accountability (no hidden costs)	3	5.19	3	3
Transfer the responsibility: No public employees to manage No more strikes to manage	8	5.01		8
Penalties for poor performance	9	4.99		9

**Table E7 Detailed results obtained by using SPSS for section 4.3.8.2.**

Potential fears expressed by public sector	Alternatives No.	Mean	Excellent	Good	Partially good	Poor
Depletion of available resources	3	5.78	3			
Loss of control over administration and accounting	6	5.53	6			
Creation of a private monopoly	2	5.51	2			
Inflated prices of services	5	5.49	5	5		
Convert the profit outside the country	7	5.26		7	7	
Disputes can affect the reputation of the country	4	4.73			4	
Tendency to distrust private sector	1	2.80				1

**Table E8 Detailed results obtained by using SPSS for section 4.3.8.3.**

Potential incentives expressed by private sector	Alternatives No.	Mean	Excellent	Good
Generate cash flows for a long term period	1	5.86	1	
Partnership for future PPPs	3	5.09		3
Government supports (subsidies, tax, guarantees)	2	4.88		2

**Table E9 Detailed results obtained by using SPSS for section 4.3.8.4.**

Potential fears expressed by private sector	Alternatives No.	Mean	Excellent	Good	Partially good	Poor
Political risk	4	5.99	4			
Penalties on any shortening or malfunction	5	5.18		5		
Conflict with local partners	6	4.99			6	
Accusation of corruption	3	4.94			3	
Lack of bankability	1	3.67				1
Regulation changes (safety, environment)	7	3.40				7
High transaction costs (advisors, lawyers)	2	3.17				2

**Table E10 Detailed results obtained by using SPSS for section 4.3.8.5.**

Potential incentives expressed by the users (citizens)	Alternatives No.	Mean	Excellent	Good	Partially good	Poor
Creation of a new service	1	5.9	1			
Better maintenance	6	5.71	6			
Social tariffs for low income	2	5.33	2	2	2	
Better quality for a lower price	3	5.31	3	3	3	
Less public debt means less taxes	5	5.18		5	5	
Better compliance with environmental regulation	7	5.12			7	
High confidence with private sector	4	3.37				4

**Table E11 Detailed results obtained by using SPSS for section 4.3.8.6.**

Potential fears expressed by the users (citizens)	Alternatives No.	Mean	Excellent	Good
Creation of a private monopoly	1	6.23	1	
Raising of services' prices	2	5.9	2	
Disputes can affect the quality of service	3	4.84		3

**Table E12 Detailed results obtained by using SPSS for section 4.3.9.1.**

Main activities/involvements of PPP unit	Alternatives No.	Mean	Excellent	Good	Partially good	Poor
Check submitted projects for completion	3	5.83	3			
Provide Knowledge transfer and training	13	5.78	13			
Suggest project upgrade and improvement	6	5.73	6			
Co-ordination with public bodies	1	5.73	1	1		
Advise and support to project sponsors, eg: legal, technical, technological and financial guidance	4	5.68	4	4		
Evaluate the approved projects continuously	7	5.68	7	7		
Ensuring uniformity of policy standards	9	5.68	9	9		
Conduct quality control, standardization	10	5.66	10	10		
Decide on project approval	5	5.64	5	5	5	
Introduce new knowledge, skills, tools and experience	2	5.58	2	2	2	
Provide support in procurement process	14	5.58	14	14	14	
Suggest continuous improvement in PPP partnership	15	5.51	15	15	15	

Provide technical assistance to government agencies	11	5.48	11		11	
Provide marketing/promotion of projects to interested groups.	8	5.1			8	
Provide financial support for project	12	3.23				12



جامعة النجاح الوطنية  
كلية الدراسات العليا

# الآليات المثلى لاندماج القطاع الخاص في حوكمة قطاع المياه الفلسطيني

إعداد  
طارق غسان جودة

إشراف  
أ.د. مروان حداد

قدمت هذه الأطروحة استكمالاً لمتطلبات الحصول على درجة الماجستير في هندسة المياه والبيئة  
بكلية الدراسات العليا في جامعة النجاح الوطنية، نابلس- فلسطين.

2017

ب

## الآليات المثلى لاندماج القطاع الخاص في حوكمة قطاع المياه الفلسطيني

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### الملخص

إندماج القطاع الخاص في قطاع المياه هو قضية حساسة من الممكن أن تتأثر بعوامل منها: محددات الإستثمار، الوضع الإقتصادي، النواحي القانونية، النواحي الإجتماعية، والنواحي السياسية، كل هذه العوامل تؤثر في نسبة نجاح هذه الإندماج بين دولة وأخرى.

قطاع المياه الفلسطيني يعاني من مشاكل و تحديات عديدة منها: إختلاف كميات ومصادر المياه من محافظة إلى أخرى، الإعتماد على الدول المانحة، العلاقات الضعيفة بين المؤسسات المختلفة داخل قطاع المياه، الفشل في إدارة وتطوير القطاع وإنخفاض نسبة الاستثمار، والسيطرة والوصول المحدود إلى مصادر المياه بسبب ممارسات واعتداءات الاحتلال الإسرائيلي. كل هذه النقائص و القصور وتحديداً الإقتصادية منها يجب أن تؤخذ بعين الإعتبار. إضافة الى ذلك، هناك عدد محدود من الدراسات التي تتعلق بحوكمة إندماج القطاع الخاص في قطاع المياه الفلسطيني وهذا يزيد من أهمية البحث.

تم إنجاز هذا البحث لعدة أهداف، أولاً: عمل تحليل (SWOT Analysis) لاندماج القطاع الخاص في قطاع المياه الفلسطيني، ثانياً: تحديد أنواع، مجالات، الهيكلية المؤسساتية و الهيكلية القانونية لهذا الاندماج، وثالثاً: تعظيم الأساليب الأمثل لهذا الاندماج من خلال تحليلات نوعية للبيانات التي تم جمعها.

بناء على ذلك تم تحديد سؤال البحث الرئيسي كما يلي: هل من الممكن تحقيق وتعظيم إندماج القطاع الخاص في حوكمة قطاع المياه الفلسطيني، وما هي آثار هذا الإندماج على قطاع المياه الفلسطيني؟

البحث يتكون من جزئين رئيسيين: الجزء الأول، تقييم حوكمة قطاع المياه الفلسطيني. الجزء الثاني، تعظيم إندماج القطاع الخاص في حوكمة قطاع المياه الفلسطيني.

تقييم حوكمة قطاع المياه الفلسطيني يجب أن تتم قبل البدء بأي تخطيط و توجه مستقبلي. تم تطبيق أداة جديدة لتقييم قطاع المياه الفلسطيني وهي مصفوفة تقييم حوكمة قطاع المياه. هذه المصفوفة تتكون من 13 محوراً تم تقييمها من خلال 4 معايير للجودة وهي: الشمولية، التماسك، المرونة و الملاءمة. تم جمع البيانات من خلال عقد 60 مقابلة مع عينة من الفاعلين الرئيسيين في قطاع المياه الفلسطيني. النتائج كشفت أن أفضل المحاور نجاحاً وجاهزية (أو الأقل حاجة للتحسين) هما: جودة المياه، والمؤسسات العاملة في قطاع المياه وسعتها، كما كشفت أن أقل المحاور نجاحاً وجاهزية (أو الأكثر حاجة للتحسين) هما: المحاور السياسية، و المحاور الاجتماعية.

إستبيان تفصيلي تم تصميمه لجمع بيانات هيكلية، تقنية، قانونية، إقتصادية، سياسة وإجتماعية تتعلق بجميع النواحي المرتبطة بشراكة القطاعين العام و الخاص في قطاع المياه الفلسطيني. يقسم الإستبيان إلى 11 جزء رئيسياً. تم تجهيز إستبيان لجمع البيانات وتعبئته من قبل 90 شخصاً يمثلون القطاعين العام والخاص. بعد تحليل البيانات تبين أن أسلوب الشراكة بين القطاعين الخاص و العام (PPP) هو الأسلوب الأنسب و المفضل لقيادة قطاع المياه الفلسطيني مقارنةً مع القطاع الخاص أو القطاع العام منفردين، وتبين أيضاً أن عقود (BOT) هي الأنسب لتحديد أسلوب هذه الشراكة. النتائج بينت أنه يجب تأسيس وحدة جديدة تسمى وحدة الشراكة بين القطاعين العام و الخاص، ويجب أن تندرج تحت إطار الحكومة الفلسطينية لتعمل كمنسق بين القطاعين العام و الخاص، وتم تحديد مصادر التمويل لهذه الوحدة من خلال مصدرين رئيسيين هما: ميزانية حكومية و رسوم يتم فرضها على مشاريع الشراكة يقوم المستثمرون بدفعها. يوصى بأن يتم معالجة نقاط القوة و الضعف لحوكمة قطاع المياه بشكل شامل ودوري مع مرور الوقت. نتائج البحث سوف يتم مشاركتها مع الفاعلين الرئيسيين في قطاع المياه الفلسطيني.