
Assessment of water governance in the West Bank, Palestine

Tariq Judeh and Marwan Haddad*

An-Najah National University,
Nablus, Palestine
Email: tariq_judeh_93@hotmail.com
Email: haddadm@najah.edu
*Corresponding author

Gül Özerol

University of Twente,
Enschede, The Netherlands
Email: g.ozero@utwente.nl

Abstract: Water governance deals with the steering, organisation and guidance of water resources management. Alongside encouraging technical solutions, effective water governance addresses organisational, legal, financial, socio-economic and political issues. This paper applies governance matrix, which was tailored to the local context of Palestine. Setting of the matrix dimensions and related evaluation criteria, the questions and indicators were identified based on sectorial gaps using authors' knowledge and experiences in the sector and the review of available documents and reports. The matrix includes 13 dimensions: levels and scales, actors and networks, organisations and organisational capacity, problem perspectives and goal ambitions, water quality, strategies and instruments, rules enforcement, responsibilities and resources, technology systems, funding, infrastructure, political status, and social status. Findings indicate that the two most supportive dimensions, or the least in need of improvement, were water quality and responsibilities and resources, and the two most restrictive dimensions were political status and social status.

Keywords: water governance; water policy; water management; governance assessment; West Bank; Palestine.

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Biographical notes: Tariq Judeh is a civil engineer and master student in water and environmental engineering program at An-Najah National University in Nablus, Palestine. He is a researcher at Water and Environmental Studies Institute (WESI) at An-Najah National University. His main research interests include the surface hydrology, water resources management and water governance.

Marwan Haddad is a Full Professor of Environmental Engineering and directing Water and Environmental Studies Institute (WESI) at An-Najah National University (ANU) in Nablus, Palestine. His main research area is in water quality and resource management. He has published over 200 papers in his field, and edited over ten international conference proceedings and refereed books. He directed and acted as a team leader of ten's of major projects in his. He received many national and international. He served and is serving as an editorial board member in and a reviewer for several local and international journals in his field.

Gül Özerol is an Assistant Professor at the University of Twente, The Netherlands. Her main research interests include the political and institutional aspects of water, land and energy governance. She has been participating in and managing various research and consultancy projects in Europe, Middle East and North Africa, where she has acquired local experience in The Netherlands, Turkey and Palestine. She has co-edited a book on the transfer of knowledge on water policy and governance, and co-authored journal articles, book chapters, reports and conference papers on water policy, water governance, decision-making under uncertainty and public participation.

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1 Introduction

As local demand from the agricultural, industrial, municipal and environmental sectors increased above the available and or renewable supply, the governance of water resources became the most important tool to rethinking the sector management (UNDP, 2013). 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 held accountable in the development and management of water resources and delivery of water services. Water governance is a dynamic process that varies in time and it is natural that the governance system is different from past to present and it needs to change to be effective in the future (Michalski et al., 2001).

This paper focuses on water governance in Palestine, which deserves a contextualised approach to reflect the political and economic realities of Palestine. Palestine is under Israeli occupation since 1967. In the West Bank, the Palestinian Authority has limited control over the land classified under area A and area B, and no control over the land classified under area C, whereas the Gaza Strip is under Israeli blockade, which also significantly restricts mobility of people and goods (Ministry of Planning and Administrative Development, 2012). According to article 40 of Oslo Agreement, Palestinian water resources are also under full 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 and driven by donor countries

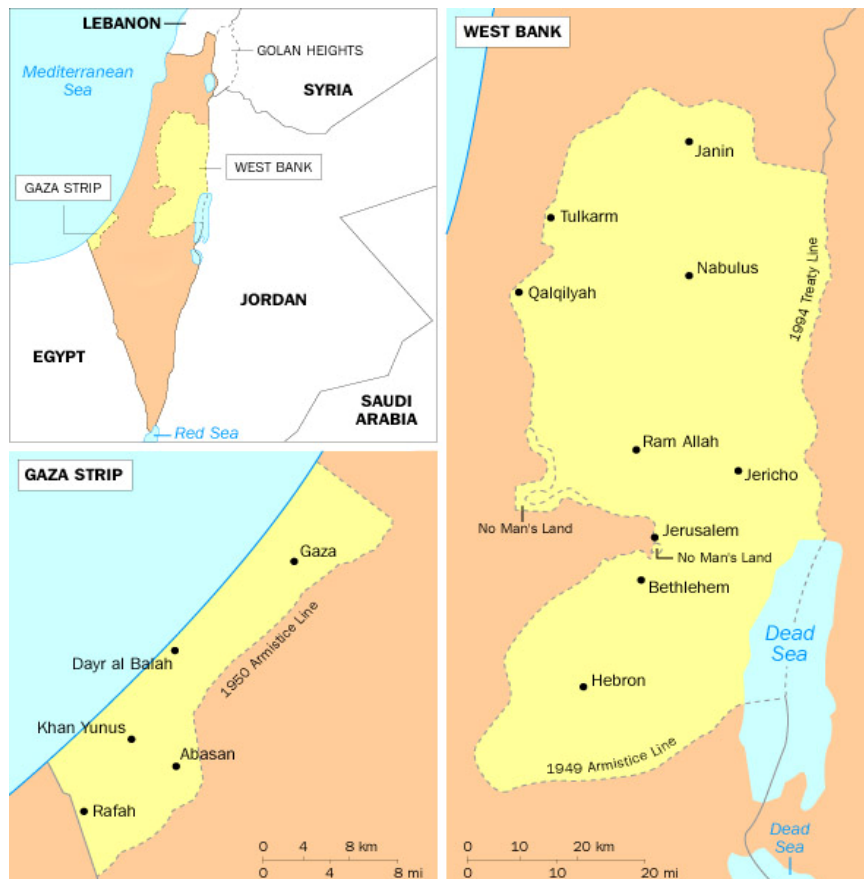
and international organisations. Therefore, the governance of the Palestinian water sector is relatively complicated due to these political and economic contexts. However, there are limited studies on water governance in Palestine. Therefore, this paper aims to contribute a better understanding of the Palestinian water governance system by conducting a governance assessment, which is based on multiple dimensions and criteria, with an ultimate goal of identifying the weaknesses and strengths of the water sector.

2 Materials and methods

2.1 Study area

Palestine including West Bank, East Jerusalem and Gaza Strip is the land area occupied by Israel since 1967. West Bank including East Jerusalem have a population of approximately 2.8 million and an area of 5,860 km², and Gaza Strip has a population of approximately 1.76 million and an area of 360 km² (PCBS, 2014a, 2014b). See Figure 1 for the map of Palestine.

Figure 1 Map of Palestine (see online version for colours)



Source: <http://www.globalsecurity.org/military/world/palestine/images/palestine-map.gif>

Water in Palestine comes from three 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 the West Bank and 327 mm/y in the Gaza Strip, which is equivalent to rainfall volume of 2,542 MCM/yr and 120 MCM/yr, respectively. Surface water is mainly in the Jordan River and ephemeral wadis. Jordan River discharges 30 MCM/yr into the Dead Sea, and the long-term average annual flow through wadis in the West Bank is estimated at about 165 MCM/yr. However, Palestinians do not have access to this surface water. Ground water from the main aquifer, wells and springs is considered the main source of freshwater for the Palestinians and provides more than 90% of all water supplies. The main aquifer can be divided into four distinct units: the Western Aquifer Basin, the North-eastern Aquifer Basin and the Eastern Aquifer Basin for the West Bank, and the Coastal Aquifer for Gaza, with long-term total annual average recharge of 578–814 MCM/yr and 55–60 MCM/yr in the West Bank and the Gaza Strip, respectively. There are about 383 wells in the West Bank, of which 119 are not pumping or abandoned and in need for rehabilitation. The total abstractions from these wells are 64.3 MCM/yr. Finally, there are approximately 300 main springs in the West Bank, with a long-term annual discharge of 54 MCM.

The Palestinian water sector institutions and institutional framework have been created since 1995 to manage water resources and water uses, including the provision of water and the wastewater services (PWA, 2013). In recent years, various projects have been implemented that serve for the advancement of the sector. Most of these projects are related to water services and provision, such as wells, water distribution networks and 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 organisations and governmental institutions (PWA, 2013, 2014). However, most of the solutions and suggestions in these plans and laws cannot be implemented due to, among others, the lack of Israeli approval in the Joint Water Committee.

2.2 Governance assessment tool

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 paper for assessing water governance in Palestine is a governance assessment tool, which was effectively applied in several studies (de Boer et al., 2013; Bressers et al., 2013a, 2013b, 2015). The tool consists of a matrix with five dimensions (located in the rows) that are evaluated based on four 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.

Detailed analysis of the Palestinian water sector was conducted by water experts from An-Najah National University and PWA, and the paper authors reviewed several PWA related reports (PWA, n.d., 2012, 2013, 2014). As a result, it was concluded that the governance assessment tool should be tailored in order to incorporate the political, economic and social factors specific to the Palestinian governance context. Therefore, eight new dimensions were included in addition to the main five dimensions suggested initially by GAT team (de Boer et al., 2013; Bressers et al., 2013a, 2013b, 2015),

increasing the total number of dimensions to 13. The main five dimensions and the additional eight dimensions are listed in Table 1 and Table 2, respectively.

Table 1 The main dimensions in the governance assessment matrix

<i>Number</i>	<i>Governance dimension</i>
1	Levels and scales
2	Actors and networks
3	Problems perceptions and goals ambitions
4	Strategies and instruments
5	Responsibilities and resources

Table 2 The additional dimensions used to assess water governance in the Palestinian context

<i>Number</i>	<i>Governance dimension</i>
1	Water quality
2	Rules enforcement
3	Organisations and organisational capacity
4	Technology systems
5	Funding
6	Infrastructure
7	Political status
8	Social status

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 (Bressers et al., 2013a).

Table 3 The questions on each water governance criterion

<i>Criteria</i>	<i>Questions</i>
Extent	Are all elements in the 13 dimensions 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 4.

Table 4 The questions on each water governance dimension

<i>Governance dimension</i>	<i>Questions</i>
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?
Organisations and organisational capacity	Are all water related organisations involved? Do the organisations trust each other and work together without conflict between them? Is it possible to add or remove loads to/from the organisation's human and technical capacity? Is this organisational 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 are 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 harmonised with available resources? To what extent do these responsibilities are 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)

Notes: (1) Water organisations such as PWA, utilities and water department at municipalities deal only with administrative organisational issues and not social, actor and/or stakeholder, etc. (2) Strategies and instruments did not include any question related to rules and regulations setting and/or enforcement. (3) Responsibilities and resources include the wide range of resources needed for the management of water sector and its institutions including technical/technological, physical, and economical aspects. Funding and human capacity were separated because of their specific importance for the water sector in Palestine (as a donor driven economy), and limited space for them within this dimension.

Table 4 The questions on each water governance dimension (continued)

<i>Governance dimension</i>	<i>Questions</i>
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 affects funding availability and use? If one source stop funding or run 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 status	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 status	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?

Notes: (1) Water organisations such as PWA, utilities and water department at municipalities deal only with administrative organisational issues and not social, actor and/or stakeholder, etc. (2) Strategies and instruments did not include any question related to rules and regulations setting and/or enforcement. (3) Responsibilities and resources include the wide range of resources needed for the management of water sector and its institutions including technical/technological, physical, and economical aspects. Funding and human capacity were separated because of their specific importance for the water sector in Palestine (as a donor driven economy), and limited space for them within this dimension.

2.3 Interviews

A sample of 30 representatives of the major water sector actors has been interviewed and each of them answered the questions in the governance assessment matrix. Due to the difficulty in coordination and accessibility to Gaza Strip, the interviews were made only in the West Bank, with the knowledge that there is a significant difference between the situations of the water sector in the West Bank and in the Gaza Strip. The interviewed actors were distributed among West Bank's three geographical parts:

- 1 northern part (Tulkarm, Nablus, Tubas and Jenin)
- 2 central part (Ramallah, Al-Bireh and Jericho)
- 3 southern part (Hebron and Bethlehem).

Table 5 lists the organisations included in the interviews, the five groups that they are categorised in, and the number of respondent from each group.

Table 5 Organisations included in the interviews

<i>Group no.</i>	<i>Group name</i>	<i>Organisations</i>	<i>Number of respondents</i>
1	Water policy-makers	Palestinian Water Authority (PWA) Water Sector Regulatory Council	7
2	Other governmental organisations	Ministry of Agriculture Ministry of Local Government Palestinian Energy Authority Palestinian Environmental Quality Authority	6
3	Utilities and municipalities	Nablus Municipality Hebron Municipality Bethlehem Water and Wastewater Undertaking	3
4	Experts	An-Najah National University Palestine Technical University-Khadoorie Al-Quds University	8
5	Research centres and NGOs	International Centre for Agricultural Research in the Dry Areas National Agriculture Research Centre Palestinian Hydrology Group Palestinian Agricultural Relief Committees The Applied Research Institute Jerusalem	6

It was observed during the interviews that most respondents were hesitant to talk about data and facts; some respondents had limited knowledge of various dimensions, which required explanations; and many respondents were not present at the time set for the interview. Some potential respondents were not available at the time of the interviews and/or they declined participating, such as Jerusalem Water Undertaking representative. So they are not included in Table 5.

Likert scale was adopted for the analysis and evaluation of interview results (Bertram, 2007). Using a five-point Likert scale, weights were given for each question and criteria as listed in Table 6.

Table 6 Likert scale weights and their descriptions

<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Highly supportive (the least in need of improvement)	Supportive	Not decided	Restrictive	Highly restrictive (the most in need of improvement)

2.4 Focus group meeting

After the individual interviews were completed, a focus group meeting with representatives from the water sector actors was conducted. 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 (Marwan Haddad).

3 Results and discussion

Results obtained from the interviews and the focus group meeting are detailed in this section and summarised in Tables 7 to 18. Governance matrix discussions in the following sections are discussed in three parts: per criteria, per actors and an overall governance assessment.

Table 7 Most supportive governance dimensions according to extent

	<i>Water policy-makers</i>	<i>Other governmental organisations</i>	<i>Utilities and municipalities</i>	<i>Experts</i>	<i>Research centres and NGOs</i>	<i>Overall</i>
Most supportive	Water quality	Funding	Water quality	Water quality	Water quality	Water quality
Weight from 5	1.5	1	1.7	2	1.4	1.7

Table 8 Most supportive governance dimensions according to coherence

	<i>Water policy-makers</i>	<i>Other governmental organisations</i>	<i>Utilities and municipalities</i>	<i>Experts</i>	<i>Research centres and NGOs</i>	<i>Overall</i>
Most supportive	Water quality	Social issues	Water quality	Water quality	Water quality	Water quality
Weight from 5	1.5	1.6	1	1.75	1.7	1.8

Table 9 Most supportive governance dimensions according to flexibility

	<i>Water policy-makers</i>	<i>Other governmental organisations</i>	<i>Utilities and municipalities</i>	<i>Experts</i>	<i>Research centres and NGOs</i>	<i>Overall</i>
Most supportive	Technology systems	Technology systems	Water quality	Technology systems	Water quality	Technology systems
Weight from 5	1.3	1.3	1.7	2	2	2.1

Table 10 Most supportive governance dimensions according to intensity

	<i>Water policy-makers</i>	<i>Other governmental organisations</i>	<i>Utilities and municipalities</i>	<i>Experts</i>	<i>Research centres and NGOs</i>	<i>Overall</i>
Most supportive	Organisations	Water quality	Water quality	Water quality	Rules enforcement	Water quality
Weight from 5	2.4	2	1	2	2.4	2.2

Table 11 Most restrictive governance dimensions according to extent

	<i>Water policy-makers</i>	<i>Other governmental organisations</i>	<i>Utilities and municipalities</i>	<i>Experts</i>	<i>Research centres and NGOs</i>	<i>Overall</i>
Most restrictive	Social issues	Social issues	Strategies and instruments	Social issues	Social issues	Social issues
Weight from 5	4.4	4.6	3.6	4.25	4	4.2

Table 12 Most restrictive governance dimensions according to coherence

	<i>Water policy-makers</i>	<i>Other governmental organisations</i>	<i>Utilities and municipalities</i>	<i>Experts</i>	<i>Research centres and NGOs</i>	<i>Overall</i>
Most restrictive	Political issues	Political issues	Political issues	Political issues	Social issues	Political issues
Weight from 5	4.4	5	4.4	5	4.7	4.7

Table 13 Most restrictive governance dimensions according to flexibility

	<i>Water policy-makers</i>	<i>Other governmental organisations</i>	<i>Utilities and municipalities</i>	<i>Experts</i>	<i>Research centres and NGOs</i>	<i>Overall</i>
Most restrictive	Political issues	Organisations	Political issues	Political issues	Social issues	Political issues
Weight from 5	3.8	4.6	3.6	5	4.7	4.4i

Table 14 Most restrictive governance dimensions according to intensity

	<i>Water policy-makers</i>	<i>Other governmental organisations</i>	<i>Utilities and municipalities</i>	<i>Experts</i>	<i>Research centres and NGOs</i>	<i>Overall</i>
Most restrictive	Political issues	Problem perceptions and goals ambitions	Political issues	Political issues	Social status	Political issues
Weight from 5	4.4	4.6	5	5	4.7	4.6

Table 15 Most supportive governance dimensions from the point of view of each stakeholder

	<i>Water policy-makers</i>	<i>Other governmental organisations</i>	<i>Utilities and municipalities</i>	<i>Experts</i>	<i>Research centres and NGOs</i>
Most supportive dimensions	Water quality Responsibilities and resources	Rules enforcement Responsibilities and resources	Water quality Political issues	Water quality Strategies and instruments	Water quality Rules enforcement

Table 16 Most restrictive governance dimensions from the point of view of each stakeholder

	<i>Water policy-makers</i>	<i>Other governmental organisations</i>	<i>Utilities and municipalities</i>	<i>Experts</i>	<i>Research centres and NGOs</i>
Most restrictive dimensions	Political issues Social issues	Political issues Problem perceptions and goals ambitions	Political issues Infrastructures	Political issues Problem perceptions and goals ambitions	Social issues Political issues

Table 17 The overall most supportive dimensions according to all criteria together

Water quality
Responsibilities and resources

Table 18 The overall most restrictive dimensions according to all criteria together

Political status
Social status

3.1 Assessment by governance criteria

This section includes the discussion of the most supportive and most restrictive dimension for the four criteria and the 13 dimensions and the five actors interviewed.

3.1.1 Supportive dimensions

3.1.1.1 Extent

Table 7 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 other governmental organisations choose the funding as the most supportive dimension, which refers to the presence and the inclusion of the different sources of funding whether these sources are regional or international. It was observed that most respondents emphasised non-controversial issues such as water quality, and got aside from technology systems and problem perceptions and goals ambitions.

3.1.1.2 Coherence

Table 8 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 organisations choose the social issues as the most supportive dimension, because from their opinion there is no preference to specific communities or districts over the others within the available sources in each district. None of the respondents choose any dimension related directly to the water entities as the most supportive dimension such as levels or organisations, 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 organisations.

3.1.1.3 Flexibility

Table 9 shows that the most supportive dimension related to the flexibility is the technology systems and this indicates the multiplicity of the technologies used in the water sector and of the ways that these technologies are managed. The utilities and research centres choose the water quality as the most supportive dimension and this refers to the multiple ways that are used to control the water quality parameters. It was observed that governance dimension 'organisation and organisational capacity' was not emphasised and/or given importance by participants.

3.1.1.4 Intensity

Table 10 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 seen as sufficient and appropriate for the water sector. Water policy-makers and research centres choose organisations and rules enforcement respectively as the most supportive dimension (because from their opinion, the water organisations and the rules

enforcement methods form a strong impact on the water sector improvement and development, and also sufficient and appropriate to the water sector. However, during the focus group meeting, the participants stated that water law enforcement should be improved by upgrading old water laws from Ottoman, Jordanian, and Egyptian era. Here and for the first time, the organisations appear as the most supportive dimension, but this is only from the view of water policy-makers.

3.1.2 Restrictive dimensions

3.1.2.1 Extent

Table 11 shows that social dimension 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 districts in the West Bank. The utilities and municipalities choose 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.

3.1.2.2 Coherence

Table 12 shows that the most restrictive dimension related to the coherence is the political dimension, this refers to the discrepancies between the elements of the signed political agreements with the Israeli side, so that the agreements indicate to 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. Only research centres and NGOs choose the social issues as the most restrictive dimension.

3.1.2.3 Flexibility

Table 13 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. The other governmental organisations choose the organisations as the most restrictive dimension; this refers to the weak flexibility between the various water organisations and also inside the organisations. Research centres and NGOs choose the social issues as the most restrictive dimension and they explained this by the absence of flexibility in dealing with the citizens' water supply problems.

3.1.2.4 Intensity

Table 14 shows that the political issues are the most restrictive dimension with respect to the intensity, and its weight reaches to five in some cases. This is because there is no strong impact of the water-related political agreements on water sector improvement and development. Other governmental organisations choose the problem perceptions and goal ambitions as the most restrictive one and from their opinion this refers to the weak impact of the water sector goals on the sector improvement and development and also because

these goals do not fit the Palestinian water sector. As previously turned out, social status had the attention of most of the respondents from research centres, since the current social status related to the water sector is not seen as sufficient.

3.2 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.

3.2.1 Most supportive views

Table 15 shows that most of the respondents see the water quality as the most supportive dimension. However, it is important to note that other governmental organisations have chosen the rules enforcement dimension as the most supportive one, meaning that they are not engaged with public as well as water organisations and/or well informed about this dimension and its applications. The opinions differ regarding the second supportive dimension. The water policy-makers and the other governmental organisations choose the responsibilities and resources, since according to them the responsibilities are clearly assigned with the available resources inside the water entities, and the PWA is an example for this. The other respondents choose strategies and instruments, problem perception and goals ambitions and political issues as their second supportive dimension.

3.2.2 Most restrictive views

Table 16 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 five groups in the selection of the second restrictive dimension. Experts and other governmental organisations choose the problem perceptions and goals ambitions as their second restrictive dimension, this means they was 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.

3.3 Overall assessment

This section includes the discussion of the two most restrictive dimensions, as well as the two most supportive dimensions through the current Palestinian water governance system, with respect to all the criteria together, from the overall perspective.

3.3.1 Most supportive dimensions

Table 17 shows that the most supportive dimension in the current water governance system is the 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 one is the responsibilities and resources, and this is refers to the stakeholders' satisfaction with the distribution of the responsibilities alongside the various water institutions, and also the

satisfaction with the water institution's resources in terms of equipment, funding and labour. It was observed that various respondents did not differentiate between non-controversial, serious issues in their selections. So they selected water quality as the most supportive dimension, and responsibilities and resources as their second supportive dimension. During the focus group meeting, participants expressed the need to enhance responsibilities and resources, since there is a high need for ensuring the accountability for performance and efficiency of water departments and utilities.

3.3.2 Most restrictive dimensions

As Table 18 shows, the most restrictive dimension that affects the Palestinian water governance system is the political status. This is because the Israel controls most of the 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 status, 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 emphasise publicly agreed upon governance dimensions (political and social issues), and did not choose to talk about organisational and administrative issues (responsibilities and resources, organisations, and levels and scales).

4 Conclusions

This paper assessed the governance of the water sector in Palestine, through 30 individual interviews and a focus group meeting that were conducted with the participation of representatives from the major stakeholders of the sector. It is concluded that the application of the governance matrix, which was tailored to the Palestinian social, political and economic context combined with focus group meeting and discussions constitute an appropriate methodology for water governance assessment in Palestine. Focus group meeting participants expressed unsatisfactory view of the current Palestinian water sector governance, as they see it mostly as for steering and directing daily water issues in Palestine. The overall assessment of the governance system shows that political status and social status constitute the two most restrictive dimensions (the most in need of improvement), whereas water quality and responsibilities and resource are the two most supportive dimensions (the least in need of improvement). Results and lessons learned from this assessment were presented and shared with the main actors of the Palestinian water sector in a workshop where policy changes and needs of the sector were discussed. It is recommended that the strengths and weaknesses of the water governance system, which are respectively indicated by the supportive and restrictive dimensions, are comprehensively addressed by water sector actors and this assessment is reviewed and improved in a timely manner.

References

- Bertram, D. (2007) *Likert Scales*, 18 May 2012, University of Calgary Department of Computer Science, Calgary, Alberta, Canada.
- Bressers, B., Bressers, N., Browne, A., Furusho, C., Lajeunesse, I., Larrue, C., Özerol, G., Ramos, M-H., Stein, U., Tröltzsch, J. and Vidaurre, R. (2015) *Benefit of Governance in Drought Adaptation – Governance Assessment Guide* [online] <http://www.dropproject.eu> (accessed 17 June 2015).
- Bressers, H., de Boer, C., Kuks, S., Özerol, G. and Vinke-De Kruijf, J. (2013a) *Water Governance Assessment Tool*, CSTM, University of Twente, Enschede.
- Bressers, H., de Boer, C., Özerol, G., Lordkipanidze, M., Vinke-De Kruijf, J., Furusho, C., Lajeunesse, I., Larrue, C., Ramos, M-H., Kampa, E., Stein, U., Tröltzsch, J., Vidaurre, R. and Browne, A. (2013b) *Water Governance Assessment Tool – With an Elaboration for Drought Resilience*, DROP Project, EU Brussels.
- de Boer, C., Bressers, H., Goddek, S. and Vinke-de-Kruijf, J. (2013) *Report on the Application of the Governance Tool for the Steering Centre for Urban Flood Control*, Universities Twente, The Netherlands.
- Michalski, W., Miller, R. and Stevens, B. (2001) *Governance in the 21st Century: Power in the Global Knowledge Economy and Society*, pp.7–26, OECD Future Studies, Paris.
- Ministry of Planning and Administrative Development (2012) *Sustainable Development under Israeli Occupation: Achievements and Challenges*, Palestine's Report to the United Nations Conference on Sustainable Development, Rio de Janeiro, 20–22 June.
- OECD (2015) *Inventory of Water Governance Indicators and Measurement Frameworks*, OECD Water Governance Initiative, Paris.
- PCBS (2014a) *Area* [online] http://www.pcbs.gov.ps/site/lang_ar/881/default.aspx#Area (accessed 25 August 2015).
- PCBS (2014b) *Population* [online] http://www.pcbs.gov.ps/site/lang_ar/881/default.aspx#PopulationA (accessed 25 August 2015).
- PWA (2012) *Palestinian Water Sector: Status Report of Water Resources in the Occupied State of Palestine*, PWA, Ramallah, Palestine.
- PWA (2013) *Water Sector Reform Plan: Technical, Planning and Advisory Team in the Water and Sanitation Sector*, PWA, Ramallah, Palestine.
- PWA (2014) *Palestinian Water Law: Decree No.14 for the Year 2014 Relating to the Water Law*, PWA, Ramallah, Palestine.
- PWA (n.d.) *Getting the Facts Right: Correcting Inaccuracies in COGAT's Factsheet 'Water in the West Bank'*, PWA, Ramallah, Palestine.
- Rogers, P. and Hall, H. (2003) *Effective Water Governance*, Global Water Partnership Technical Committee, Sweden.
- The Government of the State of Israel and the Palestine Liberation Organization (1995) *Israeli Palestinian Interim Agreement on the West Bank and Gaza Strip*, Washington DC.
- UNDP (2013) *User's Guide on Assessing Water Governance*, Governance Centre, Oslo.