



## Water in Palestine

The Birzeit Strategic Studies Forum  
The Ibrahim Abu-Lughod Institute of International Studies  
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The opinions expressed here do not necessarily reflect the position of the Ibrahim Abu-Lughod Institute of International Studies or Birzeit University.

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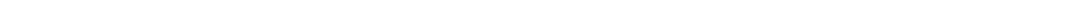
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## Introduction

### Ibrahim Abu-Lughod Institute of International Studies

The issue of water in Palestine is considered one of the most debatable issues in the Israel- Palestinian conflict. This matter has, in a way, been marginalized in Israeli- Palestinian negotiations and in Palestinian academia in particular. Thus, this volume is comprised of a number of articles written about water in Palestine, in terms of challenges, dependency on Israel, and most importantly Israeli control over water resources in the country. Three of the articles included in this volume were presented in a workshop organized by the Ibrahim Abu-Lughod Institute of International Studies entitled "Water in Palestine."<sup>1</sup>

In Alexander Kuttab's article, he argues that water has received little attention in the negotiations process, particularly in the Oslo Accords. He also mentions that due to the scarcity of water resources in the region, water can potentially lead to a devastating conflict. This paper also analyses some of the strategic challenges facing the Palestinian water sector. Moreover, in Jan Selby's paper on "Dependence, Independence and Interdependence in the Palestinian Water Sector", he presents a schematic overview of current and potential future governance arrangements in the Palestinian water sector. He does this by establishing two sets of distinctions: between 'dependence', 'independence' and 'interdependence' in external water relations; and between 'homogenous' and 'heterogeneous' internal water relations. In his paper, Clemens Messerschmid's investigates the current state of the Palestinian water sector, the main causes and challenges faced by policy makers and possible ways out of the quagmire. He also addresses the politically induced water scarcity as well as the myths revolving around it.

Regarding the wastewater management sector in Palestine, Nidal Mahmoud and Adel Yassin discuss how the wastewater management sector has been neglected, since the "Israeli occupation and administration" and up until today, and little investment has been made in the field of wastewater treatment since the Oslo Accords. In this paper, both authors analyze the main challenges facing the Palestinian Water Authority in order to efficiently manage and plan the wastewater sector.

Due to the fact that water in Palestine continues to lie on the margins of the Palestinian question, the Ibrahim Abu-Lughod Institute of International Studies has taken the initiative of emphasizing on the political side of the water sector in Palestine, and has aimed at putting forward policies that will move in the short term and long term to decrease that one-directional dependence, and achieve greater independence for the Palestinian economy which the Palestinian Authority can implement.

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<sup>1</sup> This workshop was part of the series of workshops on the "Political Economy of Dependence and Independence in Palestine" organized by the Ibrahim Abu-Lughod Institute of International Studies. It was held on November 1<sup>st</sup>, 2011 at Birzeit University.



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# Thinking Strategically about Water: Future Scenarios for the Palestinian Water Sector

Alexander Kouttab

## INTRODUCTION

Water receives relatively little attention as an issue of strategic importance for Palestine.<sup>1</sup> This neglect is all the more puzzling given the acute water problems (both supply and quality) Palestinians face, as well as the seminal importance of water to issues related to health, sanitation, economic development and sovereignty. Water also has the potential to become a flashpoint for future conflict, particularly in a water scarce region where the effects of global warming threaten to further increase competition over natural freshwater resources.<sup>2</sup> What little attention water has received, especially since its designation as a permanent status issue under the interim Oslo Accords signed between Israel and the PLO in the early 1990's, has generated few positive results. Nearly two decades of negotiations have done little to correct the significant imbalance in freshwater allocations between Palestinians and Israelis or address chronic water insecurity among Palestinians. If anything, the dynamic of dependency and control in the water sector originally fashioned under Israel's occupation, and described below, has only grown worse over the intervening years.

Taking the papers presented in this volume as its starting point, this chapter analyses some of the strategic challenges facing the Palestinian water sector. In part, it provides a basic introduction to some of the major challenges facing the Palestinian water sector, as well as identifies future 'scenarios' with which Palestinian policy makers will likely have to contend in the future. Particular attention is given to questions of water supply and allocation,<sup>3</sup> both of which are fundamental to understanding the water crisis

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1 This chapter follows the format developed by the Palestine Strategy Group, whose work I am greatly indebted to ([www.palestinestrategygroup.com](http://www.palestinestrategygroup.com)). Thanks are also due to Council members of the Ibrahim Abu-Lughod Institute of International Studies at Birzeit University for their feedback following a presentation of an earlier version of this paper. Most of all, a great debt of thanks are due to Dr. David Philips and Dr. John Murray, both of whom commented extensively on earlier versions of this chapter. I continue to benefit enormously from their generosity and expertise. Any mistakes are of course my own.

2 N. Zawahri & A. Gerlack, 'Navigating International River Disputes to Avert Conflict', *International Negotiation*, Vol. 14, 2009. As Zawahri and Gerlack point out, water also has the potential to be a source of cooperation.

3 For reasons of space, wastewater and sanitation, as well as issues related to service provision and regulation, receive less attention here, but are no less important.

affecting Palestinians throughout the occupied Palestinian territory (oPt).<sup>4</sup>

Unless Palestinians are able to change the strategic balance in their favor, attainment of their basic water rights will remain forever illusive. Believing that it serves its own strategic interests, Israel appears comfortable with the *status quo*, while the international community has shown little appetite for anything it believes might “rock the boat,” or that deviates from the Oslo agreements and entails confrontation with Israel. More so now than ever amid the changes sweeping the region, neighboring Arab states are largely focused on their own domestic and regional priorities. For its part, the Palestinian leadership seems incapable of either challenging or changing the status quo in any meaningful way, in part because of the constraints of Israel’s occupation under which it operates. This combination has bought Israel ample time to create ‘facts on the ground’ aimed at unilaterally imposing a *de facto* “solution” that threatens to take water off the negotiating table *per se*.

Reversing this situation requires a coherent and well thought-out strategy, one focused on achieving Palestinian strategic objectives while taking into account the strategic calculations Israel is likely to make, as well as the relative ability of both sides to act on their respective decisions and directives. This chapter aims to encourage the development of such a water strategy.

## WATER IN THE WEST BANK AND GAZA

Immediately following its occupation of the West Bank, including East Jerusalem, and Gaza, Israel took over control of almost all the shared or trans-boundary water resources in the oPt, including the underground mountain aquifer – comprising the Eastern, North-Eastern and Western basins – and the Jordan River. Both straddle the June 4 1967 border (or ‘Green Line’) separating Israel and the West Bank, and as such, both are considered trans-boundary waters.<sup>5</sup> In particular, Israel issued a number of military orders during the first few months of its occupation transferring full authority over these shared water resources to the Israeli army, annulling all previous land and water-related arrangements in the oPt, and forbidding

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4 The occupied Palestinian territory, comprising the West Bank, including East Jerusalem, and Gaza, is treated here as one territorial unit as per its designation under the 1993 *Declaration of Principles* (Oslo I).

5 Running north to south, the Jordan River demarcates Jordan’s western border with both Israel and the occupied West Bank.



Palestinian construction of water infrastructure without first obtaining a military issued permit.<sup>6</sup>

Today, Israel retains control over these same freshwater resources, which it continues to utilize for near exclusive Israeli use. Under customary international water law, all trans-boundary water resources such as the mountain aquifer and Jordan River should be shared “equitably and reasonably.”<sup>7</sup> The reality on the ground, however, is vastly different. Since 1967, there has been a steady decline in the balance of water supply and use by Palestinians, and a corresponding increase in the share of the water supply utilized by Israel. For example, prior to 1967, Palestinians utilized approximately 30 million cubic meters of water per year (MCM/y) from the Jordan River for agriculture and irrigation.<sup>8</sup> Today, Israel utilizes up to 650 MCM/y from the Jordan River, while Palestinians are prevented from accessing a single drop of water, and even prevented from physically visiting the river.<sup>9</sup> Similarly, even after signing the 1995 *Interim Agreements*, Palestinian extraction rates from the mountain aquifer have continued to decline.<sup>10</sup> According to the World Bank, Palestinians currently utilize no more than one fifth of the estimated potential of the mountain aquifer, with Israel extracting the balance, and overdrawing on the aquifer’s estimated potential by more than 50 percent,<sup>11</sup> while the Palestinian Water Authority (PWA) estimates that Israel exploits over 90 percent of all shared freshwater resources for its own use, and allocates less than 10 percent for Palestinian use.<sup>12</sup>

Restrictions on Palestinian water allocations are the principal cause of

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6 Military Order’s 92 (issued 15 August 1967), 291 (issued 19 December 1967) and 158 (issued 19 November 1967) respectively. For more information, see in particular Amnesty International, *Troubled Waters: Palestinians Denied Fair Access to Water*, October 2009, pp. 15-20, retrievable at: <http://www.amnesty.org/en/library/asset/MDE15/027/2009/en/e9892ce4-7fba-469b-96b9-c1e1084c620c/mde150272009en.pdf>

7 In particular, see the 1997 *United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses*, retrievable at: [http://untreaty.un.org/ilc/texts/instruments/english/conventions/8\\_3\\_1997.pdf](http://untreaty.un.org/ilc/texts/instruments/english/conventions/8_3_1997.pdf).

8 World Bank, *West Bank and Gaza: Assessment of Restrictions on Palestinian Water Sector Development*, April 2009, p. 5, retrievable at:

<http://siteresources.worldbank.org/INTWESTBANKGAZA/Resources/WaterRestrictionsReport18Apr2009.pdf>

9 Amnesty International, *Troubled Waters: Palestinians Denied Fair Access to Water*, p. 11.

10 Between 1999 and 2007 alone, Palestinian abstractions from the mountain aquifer fell from 138.2 MCM/y to 113.5 MCM/y. See World Bank, *West Bank and Gaza: Assessment of Restrictions on Palestinian Water Sector Development*, p. 12.

11 World Bank, *West Bank and Gaza: Assessment of Restrictions on Palestinian Water Sector Development*, April 2009, p. 11.

12 Palestinian Water Authority, *Palestine: The Right to Water*, 2011, p. 4.

water shortages experienced across the West Bank.<sup>13</sup> These shortages affect only Palestinians. Unfair water allocations similarly account for the enormous discrepancy in water consumption between Palestinians and Israelis. While average domestic water consumption among Palestinians in the West Bank is estimated to be just 70 liters per capita per day (lpcd), falling short of both the ‘absolute minimum’ standard of 100 lpcd recommended by the World Health Organization, as well as its ‘preferred minimum’ standard of 150 lpcd, average domestic water consumption in Israel stands at 300 lpcd.<sup>14</sup> Even greater discrepancies in water supply and consumption exist between Israeli settlements and Palestinian towns and villages across the West Bank.

If acute water shortages are the most serious aspect of the water crisis facing Palestinians living in the West Bank, in the Gaza Strip it is poor water quality. With Gaza under a land, air and sea blockade imposed by Israel, its residents are prevented from importing or utilizing alternative water resources. Instead, its population of 1.6 million inhabitants must rely on the portion of the Coastal Aquifer underlying the Gaza Strip as their only source of water supply.<sup>15</sup> With an estimated sustainable yearly recharge of just 55 MCM/y, the aquifer is inadequate to meet even their most basic water needs, which in turn has resulted in massive over-pumping of the aquifer. According to the PWA, Gazan’s currently extract almost three times more water than the aquifer’s sustainable yearly recharge.<sup>16</sup> Over-pumping has led to increased saline intrusion as the aquifer’s water levels drop, allowing seawater from the Mediterranean, as well as saline groundwater in Israel, to infiltrate the aquifer in ever greater volumes. In the absence of adequate wastewater and sanitation infrastructure like wastewater treatment plants, raw or partially treated sewage also seeps into the aquifer from sewage collection ponds located on the surface.<sup>17</sup> This combination of saline intrusion and sewage infiltration has led to a rapid deterioration in

13 Ibid., p. 5.

14 Amnesty International, *Troubled Waters: Palestinians Denied Fair Access to Water*, p. 4. The World Bank puts this figure even lower at 50 lpcd. See World Bank, *West Bank and Gaza: Assessment of Restrictions on Palestinian Water Sector Development*, p. 17.

15 The Coastal Aquifer runs along the Mediterranean Coast and under Gaza into north-western Egypt. It is thus classed as a trans-boundary water resource.

16 PLO Negotiation Affairs Department, *Disengagement v. the Environment: Stripping the Gaza Strip*, Fact Sheet, August 2005, retrievable at: <http://www.nad-plo.org/print.php?id=17>

17 Sewage collection ponds serve as a poor substitute for basic wastewater and sanitation infrastructure that Gaza lacks. Much of this infrastructure was physically targeted by Israel during Operation Cast Lead in 2008-2009, and has fallen further into disrepair as a result of Israel’s blockade, which restricts the entry of basic construction materials and spare parts into Gaza needed to repair, service and upgrade its ailing wastewater treatment plants. For damages sustained by Gaza’s water infrastructure during Operation Cast Lead, see Coastal Municipalities Water Utility, *Damage assessment report: Water and Waste Water infrastructure and facilities* (Gaza; 27 December 2008 – 19 January 2009), Jan 2009, retrievable at: [http://www.ochaopt.org/documents/opt\\_wash\\_cmwu\\_Water\\_Wastewater\\_Infra\\_Damage\\_jan\\_2009.pdf](http://www.ochaopt.org/documents/opt_wash_cmwu_Water_Wastewater_Infra_Damage_jan_2009.pdf)

the aquifer's water quality, with only 5 to 10 percent of all water extracted from wells in the Gaza Strip today meeting safe drinking water standards.<sup>18</sup> Many experts predict that unless this situation is immediately reversed, the underlying portion of the Coastal Aquifer on which Gaza relies for its water supplies will collapse entirely by 2020.<sup>19</sup>

Rather than alleviate the water problems Palestinians face, the Oslo Accords have largely exacerbated them. Article 40 of Annex III of the 1995 Israeli-Palestinian Interim Agreement on the West Bank and the Gaza Strip ("Interim Agreement") outlined new arrangements for all water and wastewater related issues in the oPt. In particular, it capped water allocations from the mountain aquifer for both Palestinians and Israelis, as well as identified additional volumes to meet future Palestinian water needs (estimated over a 5 year period). Article 40 also established a tripartite structure for the coordinated management of all water and wastewater issues in the West Bank, including the establishment of the Joint Water Committee (JWC) charged with such tasks as coordinating joint water management of the shared water resources, as well as water and sewage systems; ensuring the protection of water resources and water and sewage systems; facilitating water supply from one side to the other; facilitating the exchange of information relating to water and sewage laws and regulations; overseeing joint supervision and enforcement of all agreements; and dispute resolution.<sup>20</sup> In addition, Schedule 8 of Article 40 forbids the development of water resources and systems, including the licensing and drilling of new wells, and the modification or construction of new water and sewage infrastructure, without prior JWC approval.<sup>21</sup>

Still in operation today, the JWC is composed of an equal number of Palestinian and Israeli representatives. All decisions reached by the JWC require consensus. What sounds like a fair arrangement on paper, however, has proved to be anything but fair in practice. In particular, the 1995 *Interim Agreement* left intact Israel's unilateral control over the shared or trans-boundary water resources, ensuring that Palestinians remained dependent on Israel for much of their water supply. Nor did it redress the discrepancy in water allocations between Palestinians and Israelis in keeping with customary international water law. For its part, the JWC gives Israel an

<sup>18</sup> World Bank, *West Bank and Gaza: Assessment of Restrictions on Palestinian Water Sector Development*, p. 27.

<sup>19</sup> Philips Robinson & Associates, *The Comparative Study of Options for an Additional Supply of Water for the Gaza Strip*, July 2011 (on file with the author)

<sup>20</sup> See *The Israeli-Palestinian Interim Agreement on the West Bank and the Gaza Strip*, Annex III, Article 40, Schedule 8, retrievable at: <http://www.unhcr.org/refworld/publisher,ARAB,,3de5ebbc0,0.html>

<sup>21</sup> *Ibid.*

effective veto over most Palestinian water projects, with all JWC approvals requiring consensus, and virtually all water works requiring JWC approval. Palestinians have no reciprocal say over water projects and policies in Israel, with the JWC's jurisdiction limited to just the West Bank. Continued Israeli control over the shared water resources, and chronic Palestinian dependency on Israel for much of its water supplies in the West Bank, ensures that the use of this veto in the JWC is one directional. In addition, Israel does not apply for JWC permits for water projects located within Israeli settlements in the West Bank, viewing them as part of sovereign Israeli territory. Lastly, Israel still uses the water allocations listed under the 1995 *Interim Agreement* to cap Palestinian water supplies, despite the Palestinian population having more than doubled in the seventeen years since the agreement was signed. In short, the institutional and jurisdictional arrangements agreed to under Article 40 did little to change the dynamic of dependency and control that has long characterized Palestinian-Israeli water relations under occupation. More to the point, they have largely served to reinforce this dynamic behind a veneer of cooperation and negotiation, which Israel has often successfully exploited, while a number of institutional failures on the part of key Palestinian institutions in the water sector have only compounded this situation.<sup>22</sup>

In summary, the acute water problems facing Palestinians in both Gaza and the West Bank have grown more critical over time. In the West Bank, acute water shortages are in large part the result of Israel's continued unilateral control over the trans-boundary water resources, and the limited water allocations Palestinians receive. In the Gaza Strip, over abstraction of the underlying portion of the Coastal Aquifer on which Palestinians are forced to rely has led to a rapid deterioration in water quality due to saline intrusion, and the infiltration of raw or partially treated sewage, with immediate action required to prevent the aquifer from collapsing by 2020.

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<sup>22</sup> For some of the failings of the Palestinian Water Authority, see in particular Amnesty International, *Troubled Waters: Palestinians Denied Fair Access to Water*, pp. 73-75.

## PREREQUISITES FOR AN EFFECTIVE PALESTINIAN WATER STRATEGY

Developing an effective Palestinian water sector strategy requires a number of prerequisites. Partly following the formula developed by the Palestinian Strategy Study Group, three such prerequisites are identified below:

### Shaping the Discourse

A key component of any effective strategy is being able to successfully shape the discourse surrounding the water conflict between Palestinians and Israelis is. A discourse makes intelligible or ‘frames’ how we see a certain situation or event. Discourses are seminal in shaping the opinions we hold, in delimiting what issues we prioritize, and in determining how we differentiate between legitimate and illegitimate responses and actions. In particular, they are fundamental to the production and regulation of knowledge. Often, they regulate what can and cannot be said about a particular situation, as well as determine the significance and meaning we attach to individual statements made. Not only do discourses frame how we see and understand a particular situation, they also go a long way in determining how we might respond. The value of shaping public discourse over water thus lies in its power to influence and shape public opinion and perceptions of the water conflict, to make intelligible its root causes as well as distinguish and define legitimate actions and solutions as distinct from illegitimate ones.<sup>23</sup>

Both the Israeli Water Authority (IWA) and the Israeli Civil Administration (ICA) have introduced a number of arguments intended to shape the discourse surrounding the Palestinian-Israeli water conflict. These arguments intentionally mask the causal relationship that exists between Israel’s occupation and Palestinian water shortages, as well as marginalize international law and the attainment of basic water rights as essential prerequisites for solving the water conflict. They include claims that Palestinian water shortages are primarily the result of environmental factors such as drought and/or the onset of climate change.<sup>24</sup> In addition, water shortages are routinely blamed on Palestinian water mismanagement, including water theft and the loss of water incurred as a result of ailing water infrastructure, such as leaking pipes.<sup>25</sup> Similarly, discrepancies in the volumes of water consumption between Palestinians and Israelis are

<sup>23</sup> On framing as a form of ‘soft power’ see in particular Joseph S. Nye, Jr., *The Future of Power*, PublicAffairs: New York, 2011, pp. 12-13.

<sup>24</sup> As an example, see the factsheet entitled “Water in the West Bank” released by the ICA in June 2012, and retrievable at: [http://www.cogat.idf.il/Sip\\_Storage/FILES/4/3274.pdf](http://www.cogat.idf.il/Sip_Storage/FILES/4/3274.pdf).

<sup>25</sup> For example, see S. Udasin, *Erdan, PA agree: Increase water cooperation*, JPost (online), 14 December 2011, retrievable at: <http://www.jpost.com/Sci-Tech/Article.aspx?id=249379>

claimed to be the result of “different lifestyles,” the inference being that Israelis have a more ‘developed’ and advanced lifestyle than Palestinians.

When framed in this way, the solution to Palestinian water shortages appears part managerial (good governance reforms leading to better PWA planning, implementation and management) and part technical (desalination, wastewater treatment, water saving measures intended to mitigate the effects of drought and climate change). It is never legal or political (the restoration of Palestinian water rights, the reallocation of shared water resources as per customary international water law, and an end to Israel’s occupation). Both the IWA and ICA will argue that they have done everything they can and more to help Palestinians find solutions to their water problems (such as providing technical know-how and managerial training, as well as additional supplies of water), and that responsibility to change the existing situation rests with the Palestinians.<sup>26</sup>

As Clemens Messerschmid observes in his paper included in this volume, the underlying premise of these arguments has been internalized by donors and other international stakeholders in the water sector, for whom ‘water scarcity’ and ‘crisis amelioration’ have replaced Israel’s occupation as the main focus of their interventions.<sup>27</sup>

It is essential that Palestinians recognize the impact and success Israel has achieved in being able to better ‘frame’ issues related to water. In part, negotiations have helped reinforced this success by obscuring the underlying dynamic of occupation and control that defines the core of the water conflict between Palestinians and Israel. As the Palestine Strategy Group has argued, neither a “peacemaking discourse,” nor a “state-building discourse,” provide suitable frameworks within which to grasp the essential struggle between occupation and liberation.<sup>28</sup> Peacemaking suggests a conflict between two equal parties separated by competing and symmetric claims, whereas relations under occupation are asymmetrical and unequal, while the claims of Palestinians and Israel can be clearly differentiated according to international law. State building similarly shifts the spotlight away from Israel’s occupation, instead placing the onus on Palestinians

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26 Ibid

27 Clemens Messerschmid, *Back to the Basics – Policy Options for Palestinian Water Sector Development*, November 2011.

28 Palestine Strategy Group, *Regaining the Initiative: Palestinian Strategic Options to End Israeli Occupation*, August 2008, pp. 16-17, retrievable at:

[http://www.palestinestrategygroup.ps/Regaining\\_the\\_Initiative\\_FINAL\\_17082008\\_\(English\).pdf](http://www.palestinestrategygroup.ps/Regaining_the_Initiative_FINAL_17082008_(English).pdf). Peacemaking suggests a conflict between two equal parties separated by competing and symmetric claims. Relations under occupation, however, are asymmetrical rather than equal. State building similarly shifts the spotlight away from Israel’s occupation, instead placing the onus on Palestinians to ‘prove’ that they are ready and deserving of statehood.

needing to 'prove' that they are ready and deserving of statehood.

The most appropriate discourse is one centered on the language of rights, on liberation and emancipation, on ending occupation and discrimination, and on the application of international law. Such a discourse immediately and implicitly reflects the root causes behind the water crisis Palestinians face (denial of rights, lack of freedom, violations of customary international law), and simultaneously foreshadows the solution (restoration of rights, implementation of customary international law, an end to Israel's occupation).<sup>29</sup> Framing the situation in this way points to a solution that starts with the reallocation of the shared water resources in keeping with the principles embedded in customary international water law. This in turn, will go a long way to undoing the relationship of dependency and control that presently defines the power asymmetry between Palestinians and Israel in the water sector, and which has had such an adverse affect on Palestinian water rights. Following the rules enshrined in international law also provides a measure of predictability and stability, enhancing prospects for future cooperation and lessening the chances of future conflict.

While a number of water sector advocacy groups and international NGO's today use international law and basic water rights as their starting point in framing the Palestinian-Israeli water conflict, 'water scarcity' and 'crisis amelioration' continue to structure their interventions in the oPt.<sup>30</sup> For its part, the PWA foregrounds a state-building discourse, and has failed to develop a coherent or effective international campaign built around the human right to water. In both language and action, Palestinians need to consistently 'frame' the water crisis as an issue of rights, liberation and occupation to both domestic and international audiences alike. Such a discourse can be coupled with either the vision of two states that continues to animate current peace efforts, or linked to new vision that foregrounds universal rights and responsibilities, as well as a shared future within common borders where a place exists for all.

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29 One of the most negative aspects of the Oslo Accords, and the "peace process" in general, has been the replacement of words such as freedom, liberation and rights, with terms like Road Map, interim agreements, confidence building measures, and obligations. The latter are neutral and give little away when it comes to realities on the ground. Rather, they draw up a false sense of equivalence, as well as responsibility and power, and effectively erase the very fact of Israel's occupation.

30 For example, the Emergency Water Sanitation and Hygiene-Group (EWASH), which seeks to coordinate the work and advocacy of local and international non-governmental organizations, UN agencies and governmental bodies active in the Water and Sanitation sector in the oPt ([www.ewash.org](http://www.ewash.org)).

- **Palestinian Unity**

Successfully implementing an effective strategy capable of overturning the *status quo* will be difficult without Palestinian unity. While political differences and internal debate are essential components of any healthy democracy, the current divide between the West Bank and Gaza, and the resultant fragmentation of the Palestinian body politic, fatally undermines Palestinian prospects for achieving freedom and national emancipation. Disunity in part reflects the policies and pressures associated with Israel's occupation, and only helps further entrench the *status quo*.

- **Strengthening Palestinian Capacity in Policy and Strategy Formulation**

Taken in isolation, unity is no guarantee that Palestinian decision making and policy formulation on water (or other issues) will improve. Water continues to rate poorly on the index of concerns preoccupying the Palestinian leadership.<sup>31</sup> Failure to develop a comprehensive and forward looking political strategy, as well as a set of matching policies focused on Palestinian water rights, has only compounded this neglect. Greater focus on the importance of strategy and policy formulation, including capacity building in these areas among sector professionals and other key stakeholders, is an essential prerequisite to developing an effective Palestinian water strategy.

## PALESTINIAN STRATEGIC OBJECTIVES

Water has enormous strategic value across a range of fields and in a number of different areas. Three areas in particular deserve to be mentioned. First, access to adequate and stable water supplies is crucial to sustaining a Palestinian presence on the land as communities struggle to resist the myriad pressures they face to relocate. This includes home demolitions and the demolition of essential water infrastructure like wells and cisterns, land confiscation, planning and permit restrictions, restrictions on movement and access and settler violence.<sup>32</sup> In short, water is crucial to

<sup>31</sup> This is especially the case when water is positioned next to such issues as the fate of Jerusalem, consolidation of the 1967 border and security coordination.

<sup>32</sup> Such policies are implemented with particularly severity in those parts of the West Bank designed Area C, which comprises over 60 percent of the West Bank, and over which Israel has full control. Area



the form of resistance Palestinians call *Sumud* or 'steadfastness'. As Jan Selby argues in his contribution to this issue, water policy should be seen as an extension or arm of territorial policy.<sup>33</sup> Both go hand in hand, and should be treated as one indivisible unit, rather than separated as in their current configuration into two discrete permanent status issues that are more often than not treated in isolation from one another.

Second, within the context of bilateral negotiations, water has strong linkages with other permanent status issues. For example, the topography of the mountain aquifer in the West Bank means that the best water extraction points lie along the 1967 Green Line, where the aquifer is shallowest. This has direct implications when it comes to negotiations over borders. In particular, access to water should be included in the range of considerations used to determine a Palestinian negotiating position on borders.<sup>34</sup> Similar linkages exist between water and the capacity to absorb returning refugees, water and state-to-state relations, and so forth.

Third, within the state building paradigm, access and control over adequate water supplies is critical to the viability of a future Palestinian state, including the development of key sectors of the Palestinian economy. How much water will be needed and where, will depend on several factors, including the type of economy Palestinians opt for.

Against this backdrop, the following represent four key strategic objectives that should be the long term focus of strategists and policy makers in the Palestinian water sector:

- **West Bank: Reverse Palestinian Dependency on Israel for Basic Water Supplies and Infrastructure Development.**

While unrealistic within the context of today's *status quo*, ending the dynamic of dependency and control that currently shapes Palestinian-Israeli water relations should be a key objective of Palestinian strategic

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C is the only contiguous landmass in the West Bank, surrounding the archipelago of islands that make up Area's A and B under Palestinian, and joint Palestinian-Israeli control, respectively. As the presence of Israeli settlements in the West Bank has grown, Israel has sought to integrate more and more of Area C into Israel proper. Policies such as home demolitions and planning restrictions, coupled with manned checkpoints, permit restrictions and the construction of Israel's Wall, have led to the forced displacement and greater concentration of Palestinians into a series of isolated enclaves and population centers that are disconnected from one another, and that make up Area A.

<sup>33</sup> Jan Selby, *Dependence, Independence and Interdependence in the Palestinian Water Sector*, paper presented at the workshop "Water in Palestine" hosted by the Ibrahim Abu-Lughod Institute of International Studies, November 2011.

<sup>34</sup> Put differently, given that bilateral negotiations over borders have been structured by the formulation of a 1:1 land swap that is equal in size and value, access to water must serve a key indicator in determining the relative value and viability of any land swap.

thinking and decision making. Palestinians must find ways to successfully challenge Israel's continued control and exploitation of the major trans-boundary freshwater resources in the West Bank, and ensure access to their "equitable and reasonable" share of these resources in accordance with customary international water law. Being able to drill new deep wells to secure additional freshwater supplies from the Mountain aquifer, and gaining access to their rightful share of the Jordan River, or being compensated accordingly, are all important to the fulfillment of Palestinian water rights. Whether Palestinians opt for water independence or interdependence will determine many of their strategic choices.<sup>35</sup>

- **Gaza: End Israel's Blockade and Gaza's Isolation, and Find Alternative Water Supplies to Ease Pressure on the Coastal Aquifer.**

To reverse the current rate of deterioration affecting water quality in that portion of the Coastal Aquifer underlying Gaza, and to prevent its total collapse, alternative water supplies must be found to meet the water needs of Gaza's 1.6 million residents. A range of options exist, though the viability of each one is heavily impacted by Israel's continuing land, air and sea blockade over Gaza. They include significantly expanding water imports into Gaza (whether as Palestinian transfers from the West Bank, or imported water from Israel or Turkey), developing Gaza's capacity to produce new water (desalination), and expanding Gaza's reliance on non-conventional water schemes, such as the use of treated wastewater to support irrigated agriculture and to artificially recharge the aquifer.<sup>36</sup> All of these options will require the introduction of new arrangements in place of Israel's continuing blockade over Gaza. A key challenge for Palestinian strategists and policy-makers will be to balance practical solutions to Gaza's water crisis, with the protection of Gaza's basic water rights.

- **Develop a Relatively Even and Homogenous National Water Supply Network Covering Both the West Bank and Gaza.**

Palestinian water sector planning should be directed towards the creation of a modern, standardized, and relatively even or equitable national water supply, pricing and governance regime spanning both the West Bank and

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<sup>35</sup> Jan Selby, *Dependence, Independence and Interdependence in the Palestinian Water Sector*.

<sup>36</sup> For a detailed description of these and other possible options, as well as an analysis of their feasibility (measured against political, technical, social and economic considerations), see Philips Robinson & Associates, *The Comparative Study of Options for an Additional Supply of Water for the Gaza Strip*, July 2011, pp. 15-23.

Gaza. Ensuring that all Palestinians have access to a reliable supply of clean and affordable water is a key objective of any state building exercise, and is of importance in its own right.

- **Negotiate a Joint Water Management or Coordination Mechanism.**

The trans-boundary or shared nature of the water resources available to Palestinians and Israelis, and the principle of 'equitable and reasonable use' embedded in customary international water law, require that a fair and effective joint water management or coordination mechanism be established to coordinate such issues as water allocations and transfers. This mechanism should safeguard international law and basic water rights, promote environmentally sustainable practices and standards, and ensure mutual compliance regarding decisions made. This joint management or coordination mechanism could potentially be extended to include all five riparian's of the Jordan River Basin.<sup>37</sup>

## **THE STATUS QUO UNDER THE OSLO INTERIM AGREEMENTS**

Under the *status quo* that prevails today, Palestinians have failed to meet any of the strategic objectives described above. In large part, the 1995 *Interim Agreement*, which presently structures water relations in the oPt, effectively formalized and consolidated the water regime Israel had created after 1967. Not only did Israel retain physical control over almost all of the shared water resources in the West Bank (namely, the mountain aquifer basin and Jordan River), as well as retain the lion's share of the available water for exclusive Israeli use. The new institutional arrangements that came into effect after the signing of the agreement also gave Israel a free hand to restrict, veto and police the development of Palestinian water and wastewater infrastructure. These arrangements will be looked at in more detail in the following section.

Since signing the Interim Agreement, Palestinian dependency on Israel for essential water supplies has increased across the West Bank. This has corresponded to a decline in Palestinian domestic water production capacity (for example, as old wells dry up and substitute wells are denied a JWC permit), as well as ongoing under-development of essential

<sup>37</sup> Alternatively, Palestinians may choose to establish such a mechanism with the other Arab riparian's of the Jordan River Basin first, namely Lebanon, Syria and Jordan. This may help build momentum in terms of bringing Israel to the negotiating table. See 'Acceptable Scenarios' below.

water and wastewater infrastructure in the oPt. While poor management and coordination by the PWA is partly to blame, Israel's use of JWC and ICA permits to delay or veto the construction of new Palestinian water infrastructure, as well as the rehabilitation of old infrastructure, is the main cause of declining Palestinian domestic production. Increased water dependency on the part of Palestinians has translated into ever greater reliance on purchased water from Israel. In 2010 alone, the PWA purchased just over 55 MCM of water from Israel's national water company Mekorot, accounting for 36 percent of all Palestinian water supplies to the West Bank for that year.<sup>38</sup> Israel's decision to limit Palestinian water allocations to the quotas that were agreed under the Interim Agreement, coupled with increased Palestinian demand for water due to population growth, have further compounded the ever worsening water shortages facing Palestinians in the West Bank.

It is reasonable to conclude that a decline in Palestinian domestic water production capacity, coupled with increasing reliance on purchased water from Israel, compounded by increasing demand and greater Palestinian vulnerability in the face of worsening water shortages, are all key Israeli policy objectives in the West Bank. All work to lock Palestinians into a pattern of dependency and control, providing Israel with an array of options by which to threaten or induce Palestinians in the pursuit of its own interests. Over time, Palestinians will become major consumers of desalinated water from Israel, with Palestinian dependency likely to become a key factor in the industry's growth. Acute vulnerability also sets up the conditions for elite accommodation or collaboration on the part of Palestinians.<sup>39</sup> Israel's continued control over the shared water resources is also crucial in consolidating and expanding the presence of Israeli settlements in the West Bank, especially by ensuring that they have access to safe, secure and adequate water supplies. This includes substantial investment in expanding the water infrastructure servicing settlements, as well as in the development of new wastewater treatment facilities intended to treat sewage from both Israeli settlements and Palestinian villages, with the treated water used exclusively to irrigate Israeli agriculture (particularly settlement farms in the Jordan Valley).<sup>40</sup>

38 Palestinian Water Authority, *Water Supply Report 2010*, March 2012, p. 31.

39 Jan Selby, *Dependence, Independence and Interdependence in the Palestinian Water Sector*. Furthering this dynamic of dependency are Israeli proposals to connect some Palestinian villages to the water network feeding settlements (though restrictive Palestinian water quotas will remain in place).

40 Israel's recent construction of a new wastewater treatment plant at Nabi Musa in the West Bank is a case in point. See "Statement by Dr. Shaddad Attali on the Nabi Musa Wastewater Treatment Plant," released 18 April 2012, retrievable at:

If the status quo in the West Bank is characterized by greater water dependency, in the Gaza Strip it has become one of forced isolation over the last two decades. In particular, Israel has pursued a policy of complete separation of the Gaza Strip from both Israel and the West Bank. This policy was augmented by Israel's so called "disengagement" in 2005, during which all Israeli settlers were evacuated and all troops were redeployed along Gaza's borders. Following its disengagement, Israel tightened its land, air and sea blockade over Gaza, imposing stringent limitations on the movement of goods and people in and out of the territory.<sup>41</sup> In the short-term, Israel has sought to wash its hands of all responsibility as an occupying power for the needs of Gaza's 1.6 million residents, while in the long-term, it is looking for ways to disconnect Gaza from future water negotiations per se.<sup>42</sup>

Under blockade and forced to rely on the underlying portion of the Coastal Aquifer to meet its everyday water needs, Gaza has fast depleted its endogenous freshwater resources, precipitating a water crisis that has seen the water quality of the aquifer deteriorate at an alarming rate.<sup>43</sup> With time fast running out to save the aquifer from total collapse, the severity of the water crisis facing Gaza, coupled with the severe limitations imposed by Israel's blockade, leave Palestinian decision makers with few available options. A recent study commissioned by the PWA, which has since won endorsement within the Palestinian water sector, favors a rolling program of interventions in Gaza that includes large scale desalination.<sup>44</sup> The study identifies a mix of desalination (for additional drinking water), wastewater treatment and reuse (for agriculture), and upgrades to Gaza's domestic water distribution and supply network, as the most feasible option when measured against a range of political, technical, social and economic variables and constraints.<sup>45</sup>

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[http://www.pwa.ps/Portals/\\_PWA/SA%20statement%2018%20April%202012%20\(1\).pdf](http://www.pwa.ps/Portals/_PWA/SA%20statement%2018%20April%202012%20(1).pdf).

41 For a relatively recent analysis of Israel's blockade over Gaza and its humanitarian impact on the lives of Palestinians living there, see UN-OCHA, *Easing the Blockade: Assessing the Humanitarian Impact on the Population of the Gaza Strip*, Special Focus, March 2011, retrievable at:

[http://www.ochaopt.org/documents/ocha\\_opt\\_special\\_easing\\_the\\_blockade\\_2011\\_03\\_english.pdf](http://www.ochaopt.org/documents/ocha_opt_special_easing_the_blockade_2011_03_english.pdf). See also PLO Negotiation Affairs Department, *FAQ: Israel's Military Assault on Gaza*, February 2009, retrievable at: <http://www.nad-plo.org/userfiles/file/fact%20sheet/GAZA%20QnA%20Final.pdf>.

42 Israel argues that it ended its occupation of Gaza following its 2005 "disengagement," and as a consequence, no longer holds any responsibility for the welfare of Gaza's residents. Under international law, however, Israel's continuing control over Gaza's land, air and sea borders, and its ability to limit and regulate all that enters and exits the territory, constitutes a form of occupation.

43 Running along the Mediterranean coast through Israel and Gaza and into Egypt, the portion of the Coastal Aquifer on which Gaza relies is located downstream of southern Israel, and runs east to west. It is thus of little strategic interest to Israel.

44 Philips Robinson & Associates, *The Comparative Study of Options for an Additional Supply of Water for the Gaza Strip*, July 2011.

45 The study goes on to recognize a number of challenges associated with desalination. These include

For its part, Israel has taken a number of steps to safeguard its own independence in terms of water supplies.<sup>46</sup> Building on its unilateral control over almost all of the trans-boundary freshwater resources on which it relies, Israel continues to invest heavily in an ambitious desalination program that promises to guarantee ample water reserves well into the future. This degree of independence has allowed Israel to operate from a position of unrivalled strength, and has minimized its susceptibility to outside pressures to change or modify its water policies. It has little need to accommodate the interests of its neighbors, including Palestinians. Instead, it enjoys enormous freedom and flexibility to plan and make decisions about water supply and allocation based solely on what it perceives to be in its own national interests.<sup>47</sup>

### **REINFORCING THE *STATUS QUO***

In order to think strategically about potential “acceptable” and “unacceptable” scenarios facing the Palestinian water sector, we need to develop a more comprehensive understanding of the myriad ways in which the *status quo* is perpetuated on the ground. Rather than provide an exhaustive list, this section focuses on three key areas in which the *status quo* is reinforced. They are a) institutional arrangements in the West Bank; b) the role played by the international community and c) PWA policy.

#### **Institutional Arrangements in the West Bank**

As has been mentioned, the institutional arrangements established under the *Interim Agreements* largely served to perpetuate existing asymmetrical relations between Palestinians and Israel in the water sector. They include:

- *Israel’s continued control over almost all shared freshwater resources in the West Bank*

In the West Bank, Palestinians remain dependent on Israel for much of their basic water supply, making them vulnerable to different types of power employed by Israel. This includes coercion, inducement and threat.

- *Joint Water Committee jurisdiction limited to the West Bank*

the myriad restrictions Israel imposes on the entry of construction materials into Gaza; the high costs associated with running and maintaining a large scale desalination plant; Gaza’s endemic fuel shortages that result in routine electricity blackouts; and the high cost of desalinated water, particularly in a territory like Gaza that is mired by poverty and heavily dependent on aid.

46 Jan Selby defines any society or polity that it is neither heavily constrained by, nor requires the material support of other polities, as independent. In policy terms, the outcome is often unilateralism.

47 Israel’s selective regard for the JWC is but one example.

While the JWC gives Israel an effective power of veto over Palestinian proposed water projects in the West Bank, Palestinians have no reciprocal say over water projects or policy in Israel. This includes water projects located inside Israeli settlements, which Israel considers to be sovereign Israeli territory. Virtually the only projects submitted by Israel for JWC approval involve the laying of water or sewage pipes between different settlements, where those pipes cross Area's A or B.<sup>48</sup> In addition, the JWC and its associated permit regime have all but usurped international law and basic water rights, imposing a punitive and often arbitrary set of rules, procedures and criteria against which Palestinian water infrastructure is routinely judged to be either authorized and "legal," or unauthorized and "illegal." Any Palestinian water infrastructure that is deemed "illegal" is immediately slated for demolition, irrespective of the intervening circumstances (for example, whether a community has access to an alternative water supply that is about to lose its only well), and often in direct violation of international law. The designation of water infrastructure as 'illegal' or 'unauthorized' depending on whether it has acquired the right permit is now firmly entrenched in the water lexicon, and is commonly used by Palestinian, Israeli and international counterparts alike.

- *The requirement that all projects located in Area C must receive an additional permit from the Israeli Civil Administration*

The need for ICA approval in addition to JWC approval gives Israel an effective double veto over Palestinian water projects located in Area C, which contains some of the most fertile land and best water extraction points in the West Bank. Palestinian water projects in Area C are often subject to extensive delays as well as numerous ICA restrictions, and few projects receive unqualified approval.<sup>49</sup> In particular, this has hindered the ability of Palestinians to drill new wells, as well as carry out basic infrastructure projects, including the laying of pipe work, and the building of wastewater treatment facilities. The requirement that ICA approval must be sought for projects in Area C replicates the physical fragmentation of the West Bank (with the physical separation of Area C from the rest of the West Bank further reinforced by the fact that it is subject to a separate permit and approvals regime), and along with Gaza's isolation from the West Bank, undermines

<sup>48</sup> Even then, Palestinians rarely exercise their veto power for fear of Israeli countermeasures.

<sup>49</sup> Accusations of 'horse trading' are also common. This entails Israel conditioning its approval of Palestinian projects in the JWC on prior Palestinian approval of water infrastructure projects benefiting illegal Israeli settlements. This applies in particular to projects that involve laying down water or sewerage pipes that service settlements and that run through Area B.

Palestinian attempts to plan infrastructure projects on a national scale. In contrast, Israel has near complete freedom to create facts on the ground in Area C tailored to support the expansion of illegal Israeli settlements.

- *Water quotas from 1993 remain in effect*

The Palestinian population has doubled in the near two decades that have passed since the *Interim Agreements* were signed. Despite this, Israel continues to cap Palestinian water allocations at the quotas negotiated as part of the agreement, which was supposed to last no more than five years.

- *Over-reliance on donors, and susceptibility to donor agendas*

The PWA is reliant on donor funding for even the most rudimentary of projects. Not only do the funding priorities of donors tend to override and/or determine core agendas in the Palestinian water sector, but donors also condition their funding for individual water projects on prior JWC approval. This further binds the PWA to the JWC, and puts additional constraints on the room Palestinians have for maneuver.

### **Water Scarcity and the Role of the International Community.**

As already noted, most international community efforts are largely focused on managing water scarcity as a problem in itself, rather than tackling Israel's occupation as its root cause. Water scarcity, humanitarian or 'emergency' interventions, and marginal water schemes, while important, serve as band aid measures that both obscure and indefinitely delay the urgent task of confronting Israel's occupation directly.

As Clemens Messerschmid argues in this volume, in its attempt to tackle water scarcity in the oPt, the international community often applies a set of criteria imported from other programmes and missions that apply to natural disasters, but are ill-suited to address the water crisis Palestinians face. This includes the basic criteria used to structure and prioritize interventions by the Emergency Water, Sanitation and Hygiene group (EWASH) in the West Bank, namely immediate relief; early recovery; mitigation; mitigation and preparedness.<sup>50</sup>

Consistent with this approach, the international community continues to adopt policies aimed at crisis management and mitigation, rather than crisis resolution, focusing its attention on marginal water schemes and the

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<sup>50</sup> Clemens Messerschmid, *Back to the Basics – Policy Options for Palestinian Water Sector Development*, November 2011.



laying of new pipes, rather than conventional water supply and resource development. These policies negatively impact the water sector as a whole, normalizing the idea that its main mandate is to provide immediate emergency assistance to directly address humanitarian needs, rather than developing sustainable long-term solutions. Such policies have little political purchase in terms of confronting Israel's occupation or challenging facts on the ground. Rather, they are piecemeal, temporary, and arguably complicit with the occupation. Most of all, they are no substitute for the international political will needed to reach a just political solution.

- **PWA Policy**

Reflecting the challenges it faces on the ground, PWA policy is largely directed towards crisis management and mitigation rather than long-term strategic planning. This is particularly the case in terms of rolling water shortages across the West Bank, and poor water quality in Gaza. A lot of energy is also spent negotiating the many layers of bureaucracy associated with the JWC and ICA permit regimes, as well as trying to balance the competing demands between domestic needs, donor agenda's and Israeli restrictions on project planning and implementation.

**West Bank:** The PWA's primary focus in the West Bank continues to be water supply. This includes purchasing additional quantities of water from Israel to compensate for low domestic production capacity. Disproportionate attention is given to marginal water schemes, partly as a result of available funding opportunities, and partly because of the myriad restrictions Israel imposes on the drilling of new Palestinian wells. According to Clemens Messerschmid:<sup>51</sup>

- *Reducing network losses:* is only ever an additional instrument for optimizing available water supplies. Even if network losses were reduced to zero, the amount of water available to Palestinians would still fall short of the WHO absolute minimum standard of 100 l/c/d.
- *Wastewater reuse:* is a classic example of 'marginal water' often used to complement, but never to replace 'blue water' supplies. For wastewater treatment to produce an additional 28 MCM/y, all planned and even cancelled Palestinian wastewater treatment plants in the West Bank would need to be fully operational (only one such facility exists today),

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51 Ibid.

average domestic water consumption would need to almost double to 111 l/c/d, and 80 percent of all Palestinian households would need to be connected to the sewage network.

- **Cisterns:** while the total capacity of all 6000 cisterns in the West Bank is 0.3 MCM/y, one successful deep well can produce much more. And while the initial outlay for constructing/rehabilitating a cistern is much less than that of drilling a new well, in real terms the cost of water is much higher.

While of some utility, these schemes in themselves cannot compensate for or replace conventional water supply and resource development, particularly new supplies of fresh water through the drilling of deep wells.<sup>52</sup>

**Gaza:** The PWA's policy priorities in Gaza center on improving water quality, and on sourcing alternative water supplies. The widening political rift between the West Bank and Gaza has only further limited the PWA's scope for action in the latter in addition to Israel's blockade.<sup>53</sup> PWA interventions are largely focused on a number of marginal water schemes, including the provision of small scale desalination units and minor improvements to Gaza's wastewater and sanitation infrastructure within the constraints set by Israel's blockade.<sup>54</sup> Marginal water schemes take on added importance in Gaza as having the potential to provide an alternative water supply to the depleted Coastal Aquifer when it comes to irrigation and Gaza's agricultural sector, as well as also serving as a potential source of artificial aquifer recharge. The accelerated completion of major wastewater treatment plants in Gaza, and the use of treated water to service Gaza's agricultural

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52 It is no coincidence that these same marginal water schemes are the priority areas that Israel wants both the PWA and international donors to focus on. With respect to wastewater treatment, after preventing Palestinians from building wastewater treatment plants (WWTP's) for the last 20 years, Israel is now lobbying heavily for either jointly or Israeli managed WWTP's to treat sewerage from Palestinian villages and Israeli settlements. In large part, this is because raw sewerage flow in the West Bank has reached a point where Israel now fears contamination of the underground mountain aquifer on which it relies. Israel also seeks to use the treated wastewater to supply agricultural settlements scattered throughout the West Bank. Israel attaches similar importance to the reduction of network losses as the result of ailing infrastructure such as leaking water pipes. In large part, Israel uses network losses as a blunt tool to falsely blame Palestinians for the water shortages they face. In reality, not only will network loss reduction have little impact on alleviating Palestinian water shortages, but many Palestinian water networks are located in or cross through Area C, where Israel has full jurisdiction. Israel takes an opposite position on cistern construction and rehabilitation. In particular, it has recently escalated its policy of demolishing cisterns, many of which are located in Area C. Primarily used for livestock and less frequently for domestic use, cisterns play a crucial role in supporting the viability and continued presence of herder communities and small villages in Area C, especially those who are not connected to a water network. It is for this reason that Israel targets cisterns.

53 Despite the difficulties, the PWA continues to retain an active full-time staff in Gaza, whose ranks include the Deputy Head of the PWA.

54 Israel prevents the entry of a number of materials needed for the reconstruction and upgrade of Gaza's wastewater treatment plants.

sector, is one of the recommendations included in *The Comparative Study of Options for an Additional Supply of Water for the Gaza Strip* (hereafter *The Comparative Study of Options*). The other is large-scale desalination, envisaged as a viable alternative water supply to continued reliance and over-pumping of the Coastal Aquifer. Both recommendations have been endorsed by the PWA, which continues to lobby the international community for political and financial support.<sup>55</sup>

## SCENARIOS

Measured against Palestinian strategic objectives, the following scenarios are divided into three categories, namely “unacceptable,” “interim,” and “acceptable” scenarios.

### UNACCEPTABLE SCENARIOS

#### Continuation of the *Status Quo*

Continuation of the *status quo* is believed to be Israel’s preferred strategic option, or at the very least its default scenario, given the success with which it has been able to consolidate and extend its overwhelming advantage over Palestinians through the current interim arrangements on water. Israel will likely seek to make permanent many of the arrangements negotiated as part of the *Interim Agreement*, with minor cosmetic adjustments made if needed,<sup>56</sup> or at least defer for as long as possible final status negotiations while creating facts on the ground intended to *de facto* dictate a solution. In either case, part of Israel’s strategic calculations will be to limit the ability of Palestinians to mount an effective challenge against the *status quo*.

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55 As a first step, the PWA submitted its proposal to build a large scale desalination plant in Gaza to the Union for the Mediterranean (UfM) Secretariat in June 2011. The project was unilaterally endorsed by all 43-member countries of the UfM later that month, who pledged to help the PWA raise the necessary funds to construct the plant. In March 2012, during the 6th World Water Forum which took place in Marseille, then French Prime Minister François Fillon pledged 10 million Euros towards construction of the desalination plant. For further information, see the UfM Secretariat factsheet *Gaza Desalination: The Largest Single Facility to be Built in Gaza*, retrievable at: <http://www.ufmsecretariat.org/wp-content/uploads/2012/06/Gaza-Desalination-Project-Fact-Sheet-14-May-2012.pdf>. It should be noted that not all view desalination as a preferred option for solving Gaza’s water crisis. Clemens Messerschmid in particular argues that large scale desalination in Gaza has the potential to significantly undermine the Palestinian negotiating position by helping facilitate one of Israel’s core hydro-strategic objectives, namely that of disconnecting Gaza from all water negotiations. In contrast, he suggests that large scale water importation, even of the type that involves significant water purchases from Israel, is more in keeping with a just permanent status agreement, one that would presumably involve the transfer of these purchases into a lasting reallocation of the shared water resources in conformity with international water law.

56 This is the same strategy that informed Israel’s approach to the *Interim Agreements* themselves, which Israel used to codify and consolidate the structural relations it had established in the water sector after 1967.

For Palestinians, continuation of the *status quo* is unacceptable. In the West Bank, it means greater dependency on Israel for water, matched by increasing vulnerability to Israeli threats and inducements. Palestinians will continue to face inequitable water allocations insufficient to meet basic Palestinian demand, while their efforts to develop basic water and sanitation infrastructure will continue to be thwarted by a range of factors, including JWC and ICA permit restrictions and Israel's ongoing demolition of essential water infrastructure. Greater reliance on water purchased from Israel as a result of rising domestic demand and declining domestic water production capacity, is the most likely outcome. Under such a scenario, Palestinians will become major purchasers of desalinated water from Israel in the future, with Israel's private sector standing to gain the most. Revenue from the sale of desalinated water to Palestinians, coupled with long-term certainty over demand as a result of Palestinian dependency on desalinated water supplies from Israel, will no doubt prove an essential component in the expansion of Israel's desalination industry.<sup>57</sup> Such a scenario would also ensure that Israel continues to control the water supplies on which Palestinians depend. Furthermore, greater Israeli control over service delivery, including linking Palestinian villages outside the main Palestinian population centers to water networks servicing settlements, will consolidate Israel's ability to dictate and stunt Palestinian residential and land development, particularly in Area C. Important sectors of the Palestinian economy, particularly industry and agriculture, will continue to be adversely affected by inadequate water supplies, severely limiting prospects for economic growth. For its part, the JWC will continue to provide a veneer of cooperation, while on the ground, Israel's will press forward with its colonization and *de facto* annexation of large parts of Area C, with water supply and infrastructure development playing a crucial role in facilitating illegal settlement expansion and land cultivation.

In Gaza, continuation of the *status quo* will place ever greater strain on the already depleted section of the Coastal Aquifer on which Gaza relies. The more acute the water crisis facing Gaza is, the more urgent the need to find alternative water supplies becomes. To fail would be catastrophic. Within the current political constraints, *The Comparative Study of Options for an Additional Supply of Water for the Gaza Strip* commissioned by the PWA judges large scale desalination, in combination with a number of other measures, to provide the most feasible solution. Given the sheer urgency of the situation in Gaza, desalination continues to attract significant financial and political support internationally. While desalination offers a way forward, it also threatens to reinforce the *status quo* of complete

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<sup>57</sup> It is also highly likely that Israel is assessing the potential to expand its water exports to other parts of the region given worsening water scarcity.

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separation that Israel desires, and to swing the pendulum further in Israel's favor should future water negotiations take place, primarily by lessening the urgency behind Palestinian demands for their rightful allocation of the trans-boundary water resources. This danger is recognized by most, including the authors of *The Comparative Study of Options*, who make it clear that attaining equitable and reasonable water allocations is their preferred option, but one that is politically unfeasible in the current climate.

A key objective of successive Israeli governments has been the consolidation of Israel as a Jewish state. This in turn has led to a series of policies aimed at neutralizing Palestinians as a perceived demographic threat (including outright rejection of the Palestinian right of return; differentiating between, and separating Palestinians from their land; and complete separation of major Palestinian population centers from both Israel as well as land in the oPt controlled by illegal Israeli settlements), as well as ongoing efforts to weaken and fragment the Palestinian national movement. While the means of implementation Israel has adopted have changed over time, ranging from efforts to normalize the occupation through economic inducements, through to complete separation most starkly typified by the construction of Israel's wall, both of these objectives have largely remained the same. Both also explain many of the decisions Israel has made in the area of water.

Israel's approach in Gaza is focused on complete separation, combined with a blockade designed to paralyze, weaken and neutralize Gaza as a strategic threat. In the West Bank, Israel's aim is to retain control over as much of the land and natural resources as possible, while excluding as many Palestinians as possible from areas it has reserved for settlements, and which it seeks to integrate into Israel proper. Ensuring secure water supplies for Israeli settlements, and introducing ever greater insecurity in terms of Palestinian water supplies, has been crucial to both endeavors.

Within the current political configuration, Palestinians must make it clear to Israel that it cannot continue to push for separation, while simultaneously undermining Palestinian efforts to establish a viable state of their own. If the Oslo Accords are leading to such an outcome, then Palestinians must change the rules of the game. The rest of this chapter outlines several scenarios that aim to do just that. They range from a number of 'interim' measures intended to modify and positively change aspects of the current water regime under which Palestinians labor (these measures by themselves do not substantively change this regime), through to several alternative scenarios ranging from complete Palestinian disengagement from today's water regime to the pursuit of Palestinian strategic interests utilizing other available avenues. Israel is making a wager that it can prolong the *status quo* indefinitely. This not only requires a Palestinian interlocutor (the Palestinian

Authority), but ongoing Palestinian acceptance of and compliance with the terms of the *Interim Agreements*. The alternative of complete separation and suffocation does not provide Israel with a long-term solution as Gaza shows. Whatever their change of approach, Palestinians must convince Israel that business as usual is no longer an option, that a strict deadline exists for negotiations under the Oslo framework, and that the two-state solution has a fast approaching expiry date. The realization that any attempt to disengage from the current water regime will likely elicit strong retaliation on the part of Israel will continue to temper Palestinian decision making. Disengagement will necessitate the reconfiguration (if not complete dismantlement) of the PWA, in which case municipal councils will again become the primary focal point for Palestinian representation in the water sector, while Palestinian water supplies are likely to be severely affected, at least in the short term, as Israel looks to use water shortages to punish Palestinians with a view to pressuring them to recommit to the status quo.

Continuation of the *status quo* is directly compatible with a number of related scenarios thought to be acceptable to Israel, but which are unacceptable to Palestinians. They are briefly addressed below.

### **Permanent Water Dependency (West Bank) and Water Independence (Gaza)**

In essence, the *status quo* is essentially rendered permanent as the default outcome of either unilateral Israeli separation, or Palestinian acquiescence in the creation of a state with provisional borders.

- a. *Unilateral Israeli separation*: This is increasingly seen as a desirable alternative to permanent status negotiations by a growing number of Israelis. In essence, Israel would continue to create facts on the ground until it feels itself in a position to unilaterally impose final borders irrespective of negotiations. In the case of Gaza, Israel has already effected complete separation. In the West Bank, the contours of separation would be determined by the annexation of Israeli settlements and surrounding lands confiscated for their future expansion. These lands contain the best water extraction points and natural freshwater springs. Palestinians would be confined to an archipelago of islands connected only by a sparse network of roads, but otherwise cut off from each other and the rest of the West Bank, including East Jerusalem. Under such circumstances, Israel may choose to maintain the *status quo* of Palestinian water dependency in the West Bank, seeing it as both a tool of control as well as a source of income from forced water

purchases. Alternatively, it may enforce water independence in the West Bank, as in Gaza, the consequences of which are likely to be equally devastating in terms of ever more severe water shortages. The international community's response, beyond verbal approbation, will likely consist of further emergency measures aimed at compensating shortfalls in local Palestinian water production, as well as funding water purchases from Israel. The latter will seek to unilaterally expand its wastewater network in the West Bank, taking on the bulk of wastewater treatment in order to both safeguard against groundwater pollution of the mountain aquifer which Israel exploits, while using the treated water to irrigate Israeli farms and expand settlement agriculture.

As the example of Gaza shows, however, unilateral separation will not bring about peace. Rather, such a move will expose Israel to greater levels of instability and regional criticism, and definitively end any pretence of negotiations. It will also likely trigger a reconfiguration of Palestinian strategy away from support for the two-state solution, which will look less and less realistic.

- b. *State with Provisional Borders*: This entails much the same result for Palestinians, only in this instance, unilateral Israeli separation is presented as fulfillment of Phase II of the 2003 Road Map, whereby those areas to which Palestinians are confined are repackaged as the building blocks of a Palestinian state whose final borders are to be determined at a future date. This would be a state in name only, with no actual sovereignty (over its borders, its economy etc).

Many Palestinians fear this to be the most likely outcome of the current "peace process," and that Israel will seek to transform a provisional Palestinian state into a permanent solution. Current moves by the Palestinian leadership to win UN recognition of a Palestinian state on the June 4 1967 borders and to force Israel to accept these same borders as the starting point for bilateral negotiations, appears intended to counter such an outcome.

## **INTERIM SCENARIOS**

The interim scenarios that follow do not constitute a viable strategy in themselves. Rather, as their name suggests, they are intended as interim or bridging moves that have the potential to form part of a much broader strategy. Of the interim scenarios listed here, all have their starting point

in the current water regime, and all attempt to modify that regime to better respond to immediate Palestinian needs. In different ways, each aims to increase Palestinian maneuverability within the status quo within a relatively short time period.

### **Agreed Reforms to JWC Procedures**

Taking Israel's preference for the status quo as its starting point, this option wagers that under certain conditions, Israel can be expected to negotiate minor institutional and procedural changes to the status quo to ensure its survival. Similarly, because donor aid and international policy are largely locked into the current framework of the Interim Agreements, international support for internal reforms is also much more likely to be forthcoming than it would be for any attempt to radically overhaul the status quo.

In particular, Palestinians have a relatively good chance of reforming some of the JWC's processes and procedures, as well as winning international support for these reforms, though Israel will likely seek to dilute them before any agreement is reached. International concerns regarding Israel's policies in Area C, which is crucial to the viability of a future Palestinian state, provide one obvious focal point for such efforts. A number of additional options for internal reforms exist, some of which the PWA already openly advocates:

- a. *Fast track approvals*: Expand the list of projects that qualify for fast track approval.
- b. *One-stop approvals*: Water projects located in Area C would need only to receive JWC approval, without the need for subsequent ICA approval.
- c. *Expanding the list of water projects not requiring permits*: Expand the current list of water projects that do not require JWC approval. This may be attempted unilaterally, or through agreement with Israel.
- d. *Simplify the JWC's structure*: Eliminate or reduce the number of JWC technical sub-committees, or make their decisions binding, to help speed up JWC approvals.
- e. *Limit informal JWC discussions*: Limit Israel's ability to use informal discussions to 'forum shop' and make agreements without official oversight.

In the short-term, this scenario is likely to provide modest gains for Palestinians. The first three recommendations have the potential to partially



weaken Israeli oversight and/or control over Palestinian-initiated water projects, or to at least speed up the approval process for such projects. In the long run, however, they do little to fundamentally alter the *status quo*, especially if pursued in isolation from other strategies. Indeed, it can be argued that their overall effect will be to further entrench the *status quo*. Making a fundamentally unfair system more efficient or transparent does not make it any fairer.

## **Unilaterally Recalibrating PWA Policies and PWA Preparation for the JWC**

This scenario can be separated into two parts. The first involves the recalibration of PWA policy in line with Palestinian strategic interests. At present, PWA policy is largely (if not wholly) dictated by the inherent limitations Palestinian projects face within the current water regime, particularly in terms of water sector planning and project implementation, and to a lesser degree by donor-driven priorities. The opposite should be the case. The PWA should recalibrate its policy to coincide with key strategic Palestinian objectives, and this policy should in turn dictate all strategic decisions made by the PWA in terms of project planning and prioritization, as well as its requests of donors. Key policy priorities should include:

- a. *State building*: Accord greater priority to planning for Palestinian statehood, with water policy treated as an extension of territorial policy. A first step could be to develop a comprehensive *master plan* for the West Bank and Gaza Strip, including Area C, which will serve to provide a road map for Palestinian development and the prioritization of infrastructure needs.
- b. *Gaza*: In parallel with ongoing efforts to win international political and financial support for desalination in Gaza, attach equal importance to water importation and the construction of essential wastewater and sanitation infrastructure.
- c. *West Bank*: Prioritize the drilling of new deep wells and develop an ambitious program of wastewater infrastructure development. Make the provision of water supplies to Palestinian villages in Area C a priority. In particular, these priorities should serve as key directives for donor funding as well as public advocacy.
- d. *Water infrastructure*: Priority should be given to projects aimed at developing a modern, centralized and conventional water supply network.

- e. *Israeli settlements*: A strategy for contesting and/or limiting water provision to Israeli settlements should be developed and acted upon. This could include taking legal action (in conjunction with Palestinian/Israeli civil organizations) against settlement water infrastructure built without a JWC permit.

The second part involves PWA procedures relating to JWC meetings. Room exists for significant improvement in the way the PWA prepares and plans for JWC negotiations, as well as its performance during these negotiations. Currently, its approach seems *ad hoc* at best, and lacking any discernible strategic purpose. Possible areas the PWA can address include:

- a. *Develop an archive for JWC documents*: Until recently, the PWA lacked a centralized database or archive for JWC meeting minutes and project approvals.
- b. *Strategic planning and policy guidelines*: At present, there is no structured approach to JWC negotiations and little strategic planning to guide PWA decision-making. Rectifying this should be a key priority of the JWC.
- c. *Use of Palestinian expertise*: Draw upon Palestinian expertise (local universities, NGO's, and municipalities) for JWC teams, whether for meetings or preparation.
- d. *Public input*: The PWA should develop a transparent mechanism to allow for greater public input and consultation in terms of project prioritization.
- e. *Settlement projects*: Veto all settlement projects before the JWC, or all projects for settlements in strategically important areas (to be determined by the PWA). Alternatively, insist that all water projects for settlements first be submitted to the JWC for approval, including those located within settlements themselves.
- f. *Conditional PWA cooperation*: Assess the possibility of conditioning PWA cooperation in the JWC on a minimum number of approvals for Palestinian projects.

Recalibrating PWA policy and developing a robust and coherent policy programme in line with Palestinian strategic objectives should serve to not only guide PWA decision making in water sector planning and project prioritization, but should also set the tone for its interactions with donors. Palestinians have a high capability to effect these changes, while Israel has

a relatively low capacity to block them. The mismatch between Palestinian strategic objectives and the inherent limitations they face under the *status quo*, however, will be a source of ongoing friction that will likely grow over time. How well the PWA is able to navigate, manage and capitalize on this friction, and how successful it is in winning international and donor support for its key policy objectives, will be crucial. Too sudden or great a breakdown in relations between Palestinians and Israelis will likely trigger substantial pressure from the outside to keep 'the process' going, particularly from the US.

### **Moves to Marginalize the Interim Agreement/JWC Framework**

Reallocation of the trans-boundary water resources consistent with customary international water law, fairer joint water management arrangements that level the playing field in terms of coordination over water, and Palestinian control over its own water systems and policies, are all key Palestinian objectives. While internal reforms go some way towards helping alleviate the water crisis facing Palestinians, achieving these key objectives will require wholesale systemic change.

Israel will go to great lengths to block any moves to effect wholesale systemic change, unless it is of its own choosing. Similarly, international support for systemic change is highly unlikely, though this could change over time, particularly as prospects for a viable Palestinian state further fade. If the PWA is to set its sights on wholesale systemic change, an important prerequisite will be the success with which it is able to marginalize and challenge the legitimacy of the current *Interim Agreement/JWC* framework over time, as well as develop ways to bypass and progressively weaken it, and how well it is able to keep the international community on side in the process. A more direct approach would be to force a crisis – for example, a deadlock in the JWC – with the aim of garnering international support for (limited) structural change. Even more direct would be a decision by the PWA to unilaterally withdraw from the JWC.

#### **a) *Unilateral withdrawal from the JWC***

While there is little to commend the JWC, opting to unilaterally withdraw from it is not necessarily the best option available to Palestinians. In particular, unilateral withdrawal from the JWC would not fundamentally change today's arrangements established under the *Interim Agreements*, including the ICA's control over all planning and land use in Area C. Whether

actively sought or not, Palestinian projects in Area C would still be subject to ICA approval and Israeli demolition. Indeed, Israel will likely retaliate by tightening its planning restrictions in Area C and further escalating its policy of demolitions and displacement. As Jan Selby argues, however imperfect it may be, Palestinians still have a voice in the JWC, while they have no voice within the ICA.<sup>58</sup>

### *b) Introducing national criteria for PWA water projects*

The JWC permit regime introduces a set of processes and criteria used by Israel to target Palestinian water projects as “illegal” or “unauthorized,” and thus eligible for demolition. This regime has all but usurped international law and Palestinian water rights as the dominant framework within which discussions between Palestinian, Israeli and international counterparts in the water sector are generally held. In addition to reinforcing the primacy of international law and water rights as a key determinant in all decisions it makes, the PWA may also consider introducing a new set of national criteria intended to ground proposed Palestinian water projects within the broader framework of Palestinian efforts to establish a sovereign Palestinian state.

In large part, the political ‘green light’ already exists for such a move in the form of the Palestinian Authority’s two-year state-building plan.<sup>59</sup> The plan outlines a broad set of objectives regarding infrastructure and development, including:

- developing infrastructure in rural and marginalized areas (effectively Area C);
- developing and maintaining existing infrastructure;
- developing large infrastructure projects, primarily in Area C;
- developing regional infrastructure; and
- ensuring local participation and input in infrastructure development.<sup>60</sup>

These objectives are identified as integral to the success of Palestinian state-building efforts, and essential pre-requisites to achieving economic independence and prosperity. They provide both a template and a mandate for planning infrastructure projects at the national level.

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<sup>58</sup> Jan Selby, *Dependence, Independence and Interdependence in the Palestinian Water Sector*.

<sup>59</sup> Palestinian National Authority, *Ending the Occupation: Establishing the State*, August 2009, retrievable at: [http://www.palestinecabinet.gov.ps/Portals/\\_Rainbow/images/default/EndingTheOccup.pdf](http://www.palestinecabinet.gov.ps/Portals/_Rainbow/images/default/EndingTheOccup.pdf).

<sup>60</sup> *Ibid.*, p. 35.

Not only do Palestinians have the capacity to promote such a scenario, they also have a strong chance of galvanizing international support behind such a move. Reframing Palestinian water projects in this way helps to draw attention to the enormous gulf that exists between current Israeli policy and practices on the ground, and international support for the establishment of a Palestinian state and the two-state solution. The more Israel resists such a reframing, and the more it targets Palestinian national infrastructure projects, the more its commitment to the two-state solution will be called in to question, and the more likely it is to attract outside criticism and possibly political pressure.

*c) Develop a master plan for Area C*

Noticeably absent from the PNA's state-building programme is a comprehensive master plan that provides a blueprint for all national infrastructure and development projects in the oPt. The impact of this has been most acutely felt in Area C.

The PWA should consider developing a draft master plan for major water infrastructure projects across the entire oPt, irrespective of Areas A, B and C. Provisional in nature, such a master plan should serve as a template to help prioritize PWA project planning and focus donor-funding in Area C under the key thematic of national development and state-building. It should also include guidelines on how best to deal with Israeli policies in Area C, as well as how best to enhance water access for Palestinians living in Area C.

Palestinians are perfectly capable of promoting this scenario. Rather than continue to allow Israel to cloud debate over water demolitions with the issue of permits, let Israel be accused of obstructing and/or demolishing the infrastructure of a Palestinian state, and undermining the two-state solution. How best to negotiate the practical fallout from Israel's response, which is likely to target Palestinian water supplies, is much more difficult to answer. And just how willing the international community will be to fund projects in Area C without prior JWC approval is also unknown.<sup>61</sup>

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<sup>61</sup> The European Union has tentatively flagged its willingness to set a deadline for ICA permit approvals for Palestinian water projects in Area C, and to go ahead and fund these projects should the ICA fail to meet this deadline.

## ACCEPTABLE SCENARIOS

### Positive Sum Outcome

The Positive Sum Outcome (PSO) is the name the PLO gives to its official water policy reference. It can be loosely divided into three stages. The first entails reaching agreement with Israel over the reallocation of all trans-boundary freshwater resources in accordance with the principal of “equitable and reasonable” use embedded in customary international water law. This entails removing the inequalities in current water allocations, and will result in a substantial increase in the amount of natural freshwater Palestinians are able to access and utilize. The second stage involves mutual agreement over a transition period during which the reallocation of the trans-boundary water resources is implemented gradually over time. This gives Palestinians time to build the water infrastructure needed to take on additional quantities of water, as well as Israel time to complete existing plans to substantially increase its desalination capacity and introduce greater efficiencies in water use. The third stage involves the introduction of new arrangements to ensure cooperation and coordinated management of the trans-boundary water resources.

The transitional period included in stage two ensures that access to greater reserves of water for Palestinians does not translate into less water for Israel. Rather, Israel’s production of additional quantities of desalinated water will serve to offset water losses it incurs as a result of the reallocation of existing shared freshwater resources.

To date, Israel has been unwilling to actively engage or even discuss the PSO. Its preferred option is to leave current inequitable freshwater allocations in place (based on the principle of ‘prior use’), and in the case of the West Bank, to supplement Palestinian water needs with additional quantities of desalinated water pumped to the West Bank from desalination plants located along the Mediterranean coast, and sold to Palestinians (with the cost of this water to be partly subsidized by the international community). Not only is this costly (the production costs of desalinated water, combined with the costs of pumping this water up into the West Bank), but it leaves Israel in full control of Palestinian water supplies. While Palestinians are faced with the task of showing Israel that this is not an acceptable alternative, perhaps the greater challenge is convincing Israelis that the PSO is of major benefit to them. Not only will the PSO end the water conflict between Palestinians and Israelis, but it also serves as a

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potential model for regional cooperation over water-related issues between all five riparians of the Jordan River Basin (in particular, see the next two scenarios). Rather than continue to engage in a bilateral process weighted heavily in Israel's favor, Palestinians have the option of refocusing their efforts at the regional level, engaging neighboring Arab states on water issues with the aim of developing a collective position on water rights among the Jordan River riparians, as well as exploring what other avenues and forums exist, including the UN, to mount a more effective and diplomatic and legal campaign to pursue their water rights.

### **Build a Coalition with other Arab Riparians of the Jordan River Basin**

The Arab world is undergoing a period of rapid change. Various groups together under the banner of the 'Arab Uprisings' or 'Arab Spring', the political upheavals that have swept across much of the region will continue to have far-reaching consequences into the foreseeable future. New political actors are emerging, while perceptions of what is politically possible have changed on the ground. Many of the protests have been mobilized around demands for political, social and economic reform.

As the regional landscape changes, the Arab Uprisings open up both new opportunities as well as challenges for Palestinians. Their potential to reconfigure both the regional and domestic context within which the Palestinian struggle takes place, and to change Palestinian fortunes in the process, must not be underestimated. Democratically elected governments in the region are likely to be more genuine in their support for the Palestinian struggle and to better reflect prevailing sentiment on the Arab street. New regional initiatives may surface depending on how extensive or deep the reforms inspired by the Arab Uprisings are. In the water sector, the PSO provides an obvious starting point for Palestinian outreach to the region. While Israel refuses to countenance the PSO, there is little reason why Palestinians cannot explore the option of building a coalition comprising all four Arab riparians in support of a regional PSO. This would entail a joint commitment to adhere to customary international water law and applicable international conventions, and to work together towards finding sustainable solutions to regional water shortages. Indeed, a large part of the scaffolding is already in place in the form of the 1997 *United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses*, which all of the Arab riparians of the Jordan River Basin have signed, and which

Palestine has indicated it will sign upon achieving statehood. In contrast, Israel has not signed the *Convention*.<sup>62</sup>

An Arab PSO would set an important precedent in terms of galvanizing regional awareness and support for Palestinian rights, and could serve as an initial platform from which to build a broader regional coalition in the area of water. A collective regional approach to water based on the principles inherent in the PSO, will give much needed weight to Palestinian diplomatic efforts. By virtue of its intransigence, Israel will run the risk of further isolating itself. No doubt Israel will enlist the support of the United States and other allies in a bid to thwart such an outcome. Just how successful or otherwise Israel's efforts will be, will largely depend on how well Palestinians are able to raise awareness and win political and popular support for this issue. Israel's strongest card is likely to be its bilateral relations with Jordan.

### **Explore Alternative Avenues to Win Back Palestinian Water Rights**

This scenario involves a complete shift in Palestinian strategy, away from a bilateral approach that centers on negotiations with Israel, towards a multilateral approach that centers on using the legal avenues open to Palestinians to pursue their legitimate rights within different international forums. The most obvious example is an approach to the United Nations and its associated programmes and funds. This option, though poorly executed, has in part been endorsed by the Palestinian leadership in its approach to the United Nations Security Council (UNSC) in September 2011 seeking UN recognition of Palestine as a state. The bid ultimately failed. Arguably, where the leadership faltered was in using its approach to the UNSC as a *tactic* intended to isolate and embarrass the US, and to force Israel to return to the negotiating table on more favorable terms for Palestinians.<sup>63</sup> A bolder move, though one fraught with more risks, would have been to use September 2011 to launch an altogether new Palestinian *strategy* focused on utilizing a range of legal instruments and avenues. Indeed, many questions remained at the time over whether approaching the UN Security Council was the right decision, given that a US veto of Palestine's request was assured, while the nine votes required to force a

<sup>62</sup> For those who have signed the Convention see:

[http://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg\\_no=XXVII-12&chapter=27&lang=en](http://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-12&chapter=27&lang=en).

<sup>63</sup> By going to the UNSC seeking recognition of Palestine as a state, the Palestinian leadership threatened to force the US to veto a resolution consistent with America's own policy of support for the establishment of a Palestinian state, thus revealing the ambiguity and contradictions that continue to structure America's position on negotiations, while undermining its claim to be an 'honest broker'.



US veto were not. While Palestinians are unlikely to match the momentum they were able to create in the lead-up to the September 2011 bid, an approach to the UN General Assembly in search of the required two-thirds majority for full admission has a strong chance of success. Membership of the UN General Assembly would enable Palestinians to join various UN bodies, as well as ratify a number of accords, including the Rome Statute (the latter triggering Palestine's immediate membership to the International Criminal Court [ICC]), making available a number of options and alternatives through which Palestinians can pursue their legal rights. The successful bid made by Palestinians to join UNESCO, and the latter's recent listing of the Church of the Nativity in Bethlehem as a World Heritage Site, should serve as an example of the potential merits of such an approach.

The Palestinian water sector should assess what legal avenues are available to them to pursue their basic water rights, whether within the UN framework or elsewhere, as well as identify which international water bodies and institutes can best support these efforts. Such an approach, particularly Palestinian membership to the UN General Assembly, will not only transform the strategic landscape, but is also likely to attract a severe response from Israel, from the withholding of VAT revenues owed to the PA through to making good on its threat to unilaterally annex the settlements and their surroundings. How well Palestinians are able to withstand Israeli retaliation, and to keep the international community on side, will play a large part in determining the success or failure of this approach.

## **Reconstitution of the PA and Reassessment of the Two-State Solution**

The less likely a just two-state solution appears under the *status quo* of negotiations, the more likely Palestinians are to look for other alternatives. This scenario feeds into a much broader political debate among Palestinians regarding the future of their struggle. Some advocate the dismantlement of the Palestinian Authority, including the PWA. Some advocate a one-state solution over a two-state solution, which they no longer see as feasible given the growth of Israeli settlements. Some advocate reconfiguring the Palestinian struggle as an anti-apartheid movement that employs the tools of boycott and sanctions in much the same way as the anti-apartheid movement in South Africa. Just how the Palestinian struggle will evolve is largely outside the scope of influence of the Palestinian water sector. It should be said, however, that reconfiguring Palestinian institutions, rather than dissolving them entirely, will best serve the interests of Palestinians.



## Water in Palestine

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Any movement lacking a solid institutional framework stands much less chance of success than a movement that enjoys a strong institutional base. Planning for such an outcome, including the need to draw up strategic plans for how best to protect Palestinian water supplies and how best to reconstitute Palestinian water institutions, is a task that should be taken up by the Palestinian water sector sooner rather than later. Within the context of the Arab Uprisings, and against the backdrop of rising discontent against a failed “peace process,” the next decade looks to be anything but predictable for Palestinians.

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# Dependence, Independence and Interdependence in the Palestinian Water Sector

Jan Selby

## INTRODUCTION

This paper is an attempt to analyze current and potential future Palestinian water governance in relation to the overall workshop series theme: 'The Political Economy of Dependence and Independence'. In doing this, however, we need from the outset to go beyond this formulation, in two respects. First, we need to add a third term in addition to 'dependence' and 'independence,' since these two terms do not exhaust all possible types of relations between Palestine and the outside world, either in the water sector or in relation to various other issues. I propose this added term to be 'interdependence'. And second, we need to recognize that 'political economy' involves not just the analysis of external relations between Palestine and this outside world – relations that can variously be characterized as 'dependence', 'independence' or 'interdependence' – but also the analysis of internal relations within Palestinian society, whether these be relations between regions, classes, parties, religions, genders, and so forth.

Sufficient volumes to fill a small library have been written on the subjects of 'dependence', 'independence' and 'interdependence', including of course leading traditions of political economy whose entire theoretical edifices revolve around the terms (for example, liberal institutionalist political economy making much of 'interdependence', neo-Marxist dependency theory analyzing global order under the rubric of 'dependency'). But for the purposes of this paper we can define these three terms in a simple, straightforward fashion. 'Dependence', then, is a state of affairs where a society or polity is heavily constrained by, and requires the material support of other societies or polities. In addition and as a crucial marker of 'dependence', these other societies or polities are not constrained by, and do not require material support from the society or polity in question. 'Interdependence' is a state of affairs where a society or polity is heavily constrained by, and requires the material support of other societies or polities. Plus – and this is what distinguishes 'interdependence' from

‘dependence’ – where these other societies or polities are constrained by, and do require material support from the society or polity in question. Finally, ‘independence’ (or ‘autonomy’) is a state of affairs where a society or polity is not heavily constrained by, and does not require material support from other societies and polities. Linked to these categories are distinct policy strategies: unilateralism typically being associated with independence; multilateralism and bilateralism with interdependence; and elite accommodation or collaboration with dependence. These three different states of affairs and their associated policy strategies are of course not absolutes for there are many different shades or degrees of independence, dependence and interdependence.

With regard to internal relations, there are many ways in which these relations could be characterized and typologised, but one of the most important, and most relevant to Palestine (even though it is often overlooked) is provided by the distinction between ‘homogeneity’ and ‘heterogeneity’. ‘Homogeneity’ refers here to an internal state of affairs where resources, costs and opportunities are distributed relatively evenly across different regions and social groups. By contrast, ‘heterogeneity’, denotes a state of affairs where these resources, costs and opportunities are unevenly distributed. Linked to these definitions are distinct policy strategies: nationalism or developmentalism typically being associated with relatively homogenous internal relations, and neo-liberalism and internal political division with greater heterogeneity. Again, these two states of affairs and their associated policy strategies are not absolutes.

This paper utilizes these distinctions to analyze Palestinian water governance under three conditions: present-day conditions of limited ‘autonomy’ and Israeli encirclement and colonization; an extended and stagnant political status quo, in which Israeli policies continue broadly unchanged, but in which the PA adopts or considers a more activist and oppositional stance towards current arrangements; and under (or in the negotiation of) full Palestinian statehood. The paper examines these three different conditions respectively.

Before this, however, two further introductory premises need to be established. First, the political economy of ‘water’ should not be taken to refer just to ‘natural water resources’. Rather, in considering current and potential realities we need to attend to three distinct aspects of water governance. The first aspect of governance is the political economy of local natural surface and groundwater resources (most importantly the West

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Bank Mountain Aquifer, the Israeli-Gaza Coastal Aquifer, and the Jordan River system). Second, we must consider the political economy of non-conventional water resources (especially treated wastewater, desalinated water, imported water, and virtual water – water used in the the production of agricultural and industrial commodities elsewhere in the world). And the final aspect of governance is the political economy of capital, technology and expertise relating to water (for instance, the sources of funding for water sector infrastructure investments, or access to information about water resources and supplies). Contemporary Palestinian water dependency is rooted in dependency relations in all three aspects of water governance, and it follows that we need to consider all three when examining future possibilities.

The second premise that must be established is that, water is not and will not in the future become the defining element of the political economy of the West Bank and Gaza. While some think that water, and especially water scarcity, are of crucial importance in determining patterns of economic and political power, and patterns of war and peace, I argue that this is wrong. Water is of course a biological necessity, but modern states and societies can manage fine with the most meager of natural water resources if they have the necessary economic, technological and governance capacities (think for example of the small Gulf states). It follows that future Palestinian water security will be more defined by developments outside of the water sector (for instance, terms of trade with Israel and the rest of the world, the capacity of the Palestinian government in taxation and capital investment, the availability of revenues from say gas production or tourism, and the security of electricity supplies) than by developments within it. One issue that this raises is how much priority Palestinian policy makers and negotiators should assign to water issues: in certain respects, it may be a sensible strategy not to assign them the utmost importance. However, whether this is sensible or not depends primarily on an overall economic strategy, especially in relation to agriculture. If Palestinian policy makers envisage agriculture being central to national economic development, then it becomes imperative that this is supported by relatively plentiful and cheap water supplies. If, on the other hand, agriculture is considered secondary in national economic development, then access to plentiful and cheap water supplies potentially becomes much less of a policy priority.

## PRESENT-DAY CONDITIONS

At present, the Palestinian water sector is characterized by high dependency plus high heterogeneity (or fragmentation). This applies to natural resources, to non-conventional sources, and to capital, to technology and to expertise. And it applies to both the West Bank and Gaza Strip, albeit to different degrees and in different ways.

First, with respect to natural water resources in the West Bank, an extremely high state of dependency prevails. The West Bank has a high natural groundwater potential of over 600 million cubic meters per year (mcm) – most of which falls as rain over the West Bank before flowing westwards and northwards into Israel, and over 80% of which is consumed by Israelis. Between 1967 and 1995, Israeli policy was to limit Palestinian exploitation and consumption of these natural resources in order to ensure their continued flow into Israel. Since 1995, this restrictive policy has continued albeit now within a formally ‘cooperative’ institutional framework, as laid out in the Oslo II Agreement (especially Annex III, Appendix 1, Article 40). Under the terms of this agreement, an Israeli-Palestinian Joint Water Committee (JWC) holds complete decision making power over development of water resources and systems in the West Bank: as such every new well that is proposed and everything including the smallest pipeline requires prior JWC approval. In addition to this, under Oslo II, the Israeli military government in the West Bank (the ‘Civil Administration’) holds complete decision-making power over land use and planning in the 60% of the West Bank designated Area C, such that all new water facilities in this area require not just JWC but also Civil Administration approval. Finally, Israeli-Palestinian Joint Supervision and Enforcement Teams (JSETs) are meant to verify compliance with JWC decisions, and to prevent unilateral water development (though in practice these have not functioned since the breakdown of Israel-Palestinian security cooperation in 2001). The only areas in which Palestinian institutions (the Palestinian Water Authority, PWA, the West Bank Water Department, and various municipal authorities and companies) have a small semblance of freedom of operation from the Israeli authorities lie in the actual construction of water facilities (albeit following Israeli approval through the JWC and Civil Administration) and in the local day-to-day maintenance of water systems and supplies (one very important exception being wells: under Oslo II permits are required for all well rehabilitation).



In practice this system is one that grants Israel veto powers (and for most of the West Bank double veto powers – first through the JWC, then through the Civil Administration) over Palestinian development of water resources and supplies. Among the many consequences of this, the following three are perhaps the most significant.. First, there have been some very significant delays in the approval of new Palestinian wells, of over 8 years in some cases, with clear effects on the capacity of Palestinian authorities to increase water supplies. Second, there has been a stalemate over the construction of wastewater treatment plants: only one such plant has been approved and fully constructed since 1995 (wastewater is discussed further below). Third, PWA and PA negotiators have felt compelled to approve substantial infrastructure development for Israeli settlements because in many cases this is all that has ensured potential Israeli approval of Palestinian projects. As a result, while there have been some improvements in Palestinian West Bank water supply infrastructures since 1995, per capita household consumption has barely risen, if at all (according to the World Bank, per capita consumption has edged up from 88 liters per capita per day in 1997 to 97 lpcd in 2005, though these figures are contested);<sup>1</sup> water supply cuts and water rationing remain ever-present realities; the overall supply disparity with Israel has actually increased; and there has been an absolute decline in water available for irrigation, strangulating the Palestinian agricultural sector. In addition, wastewater treatment facilities remain very poor. Meanwhile, Israeli settlements continue to receive ample water supplies and, in terms of their supply and wastewater networks, are increasingly integrated into the central Israeli system.

The fact that the PA has no equivalent veto powers over the Israeli water sector is why I argue that these contemporary realities should be considered within the category of relations of dependence, rather than interdependence. The JWC has powers only in the West Bank; hence the PA has no say in relation to Israeli development of the Israeli Coastal Aquifer or the Jordan River. Israel has significant freedom to undertake unilateral actions in its water sector, whereas the PWA in the West Bank has no such freedom, both because of the Oslo II Agreement and Israeli enforcement thereof, and because international donors (who provide most of the funding for water sector infrastructure work) require that their projects first receive JWC approval. More than this, even within the West Bank there exist dependency relations. Israel continues to control every well and

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<sup>1</sup> World Bank, *Assessment of Restrictions on Palestinian Water Sector Development*, Report No. 47657-GZ (Washington: World Bank, 2009), 16.

pipeline that supplies both Palestinian communities and Israeli settlements. As a result, Palestinian communities are often dependent for their water supplies on sources controlled by Israel, whereas Israeli settlements are hardly ever dependent on sources controlled by the PA (there are only a couple of exceptions to this rule). Gaza is home to an entirely different water governance regime. Under the terms of the 1994 Gaza-Jericho Agreement, decision making, development and management in relation to both water and wastewater is the Palestinians' responsibility exclusively (until 2005 this applied only to areas under PA control; since Israel's 'disengagement' it has applied to the whole of the Gaza Strip). There exists no joint decision-making or compliance-monitoring regime for Gaza. The obvious reason why Gaza is subject to such different water governance arrangements is that, unlike the West Bank, it is downstream of and lacks water resources of strategic interest to Israel. Moreover it is home to chronic levels of over-exploitation – such that Israel is entirely happy to have Gaza's water problems be a sole Palestinian rather than joint responsibility. Gaza is located above the southern portion of the Coastal Aquifer, this portion having a naturally available sustainable yield of only around 70 mcmy (only half of which is derived from rainfall within Gaza, the other half coming from rainfall in Israel that subsequently flows 'downstream' into the Gazan portion of the Coastal Aquifer). These quantities are far from sufficient for Gaza's population, irrespective of any kind of future economic strategy. Moreover, Gaza's aquifer is very shallow and thus, unlike the West Bank Mountain Aquifer, is readily accessible using shallow wells and relatively simple technology. In combination with weak regulation and enforcement of the water sector, the consequences of this are that there currently exist thousands of small wells in the Strip that have an overall abstraction that is more than two times sustainable yield. Moreover, Gaza's groundwater is subject to severe seawater intrusion and salinisation. Most networked water supplies in Gaza are, in turn, highly saline. In addition to this, the condition of Gaza's water supply and wastewater infrastructures is poor; a result not only of the historical legacy of Israeli occupation and under-investment, but also of the post-2007 Israeli and international blockade, and of continuous Israeli strikes on infrastructure, especially in 2009.

In sum, in both the West Bank and Gaza there are grave water resource and supply problems. However, in the West Bank the problems are essentially a product of water sector dependency, in Gaza they are, at least in part, a product of water sector 'independence' – albeit within an overall political context of Israeli encirclement and internal economic de-development.

Unilateral water sector governance in Gaza has not been associated with an amelioration of Gaza's ecological and supply crisis, but with its future deterioration. As this suggests, independent water governance is not necessarily a panacea. Indeed for Gaza, the ideas of water 'independence' and 'self sufficiency' are potentially dangerous illusions.

Non-conventional sources play, with some exceptions, only a limited role in the contemporary Palestinian water sector. Owing to the lack of approval and construction of wastewater treatment plants, sewage from Palestinian towns and villages in the West Bank remains either untreated, or is treated and then reused over the Green Line. Israelis alone, then, reuse this potentially valuable resource. In Gaza, meanwhile, there are three treatment plants, but these plants function only intermittently and, hence, most sewage is either discharged into the Mediterranean, or else seeps directly into the Coastal Aquifer. There is some small-scale desalination in Gaza (including, according to the World Bank, an estimated 20,000 home desalination plants), but most water is not desalinated.<sup>2</sup> Moreover, neither the West Bank nor Gaza make use of water imported from abroad – unless, that is, we include water 'imported' from Israel (the West Bank being reliant on significant and growing volumes of water conveyed through Israel's national water network). The only non-conventional source on which the West Bank and Gaza are completely reliant is virtual water. By Yasser Nassar's calculations, the West Bank and Gaza import around 2,200 mcm of virtual water annually – many times higher than Palestinian consumption from local natural sources.<sup>3</sup>

These patterns of non-conventional water use (or non-use) are all rooted in dependency relations. The JWC-Civil Administration decision-making regime in the West Bank has, as discussed above, directly obstructed Palestinian wastewater treatment and the consequent potential for reuse. In Gaza, Israeli control of and restrictions on the import of construction materials, plus periodic large-scale military actions, have prevented the development and full operation of wastewater and desalination plants. Palestinian reliance on virtual water imports also involves dependency – not only upon Israel, but also upon global agricultural markets.

Last, but by no means least, the present-day Palestinian water sector is also heavily dependent upon externally derived and controlled capital,

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2 Ibid, 29.

3 Yasser Nassar, 'Virtual water as a policy instrument for achieving water security in Palestine,' in *Water Resources in the Middle East: Israel-Palestinian Water Issues – From Conflict to Cooperation*, eds. Hillel Shuval and Hassan Dweik, (Berlin: Springer-Verlag, 2007), 140-6.

technology and expertise. International donors provide the large bulk of the finance for water infrastructure developments, as well as for the day-to-day operations of the PWA (most of this financing is in the form of loans). Virtually all technology and materials for water infrastructures are imported (and are often delayed for months at Ashdod port), partly because of established donor practice to support their own economies, but also because of the extreme weakness of Palestinian manufacturing. Moreover, the PWA's institutional structures, formal regulatory systems, and policy priorities are all heavily influenced by international donors and consultants.

Both because of these relations of water dependency, and because of the broader political and economic realities (especially: Israeli hegemony, the territorial and political separation of the West Bank and Gaza, internal territorial fragmentation within the West Bank, the weakness of many central PA institutions, and the prevailing neo-liberal and rentier inclinations of most of the Palestinian elite), the contemporary Palestinian water sector is characterised by high internal variability and fragmentation, what at the outset I termed 'heterogeneity'. The differences exist on a range of scales – most obviously between the West Bank and Gaza, but also between individual towns and villages, between urban and rural areas, and between the relatively wealthy and the poor. In the West Bank, the volume and reliability of water supplies varies widely: from Ramallah, with relatively high per capita consumption and relatively restricted rationing, to those areas of Hebron and Bethlehem which still face severe rationing and may go weeks without water, to the several hundred West Bank villages which are either not network-connected, or have no water in their pipes for a duration of several months each year. In Gaza, water quality varies widely, with those households or communities with their own desalination capacities, or who can afford tanker or bottled supplies and, therefore, have access to much higher quality water. Of equal importance, in both the West Bank and Gaza the price of water varies widely, there being variations not only in the price of piped water supplies, but also, and more urgently, between piped supplies and the much more expensive tanker water, on which many – often amongst the poorest – have to rely. As Clemens Messerschmid has correctly observed, these huge variations in supply and pricing are an internal Palestinian scandal.<sup>4</sup>

This Palestinian condition of high dependence and heterogeneity contrasts sharply with the relatively high independence and homogeneity of the Israeli

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<sup>4</sup> Clemens Messerschmid, "The silent stakeholder: the role of the public in the Palestinian water sector" paper presented to Water: Values and Rights conference (Ramallah, April 2009).

water sector. Israel is, of course, dependent on sources of water originating beyond its boundaries; but the West Bank is effectively controlled through the JWC and the Golan Heights remains under direct occupation, meaning that Israel's only current source of vulnerability is those headwaters of the Jordan River in Lebanon. Israeli water policy is resolutely unilateralist, all the more so since the collapse of the Oslo process. Since then, Israel has invested heavily in non-conventional sources, most importantly in desalination (current desalination capacity is around 250 mcmy; plans are to develop desalination capacity of 750 mcmy, more water than Israel currently obtains from the Jordan River), and to a lesser extent in wastewater treatment. The results of this high investment and independence are that Israel currently has surplus water supplies, and still-increasing domestic per capita consumption. It also has relatively even water supply provision (with the important exception of provision to Palestinian and especially Bedouin communities): whether one lives in Tiberias, Kiryat Shmona, Beersheba or Kiryat Arba, household water supplies are constant (though levels and patterns of water consumption of course vary). This is not, however, simply a function of the availability of resources. It is also a policy choice that arises from Israel's nationalist and settler-colonial politics and developmentalist political economy. Israel has not only adequate water supplies, but it also has the most integrated national water supply system in the world, as well as policies of state ownership of water resources, and relatively uniform water pricing (municipal authorities buy water at standard rates from the national network irrespective of whether they are located on the coastal plain or geographical peripheries – though these municipal authorities do add their own variable fees for consumers). In short, with the important exception of its Palestinian Arab minority, Israel has a highly homogenous (or highly unified, or standardized) water sector. The essential reasons for this are that Zionist thought has long emphasized the importance of maximizing the Jewish presence on land under Israeli political control, and that agriculture, and in turn, water, have been deemed crucial to achieving this political-territorial objective. Water, in short, has long been treated within Israeli thinking and practice as a means of consolidating the Zionist state's hold over the entirety of the territory under its control.

## OPTIONS UNDER AN EXTENDED POLITICAL STATUS QUO

Given these present-day contexts, what chance is there, and what opportunities exist, for a transformation of Palestinian water dependency and heterogeneity in the absence of full and meaningful statehood? Or, as a less ambitious aim, what opportunities currently exist that might help ameliorate water supply shortages in the West Bank, and the ecological and water quality crisis in Gaza?

The answer to both questions is unfortunately: very few. In the West Bank, the PWA has very limited freedom of manoeuvre: it cannot increase well abstraction levels, or construct a new supply networks, without Israeli (and donor) consent. And there is little reason to think that Israel is suddenly going to start increasing its consent for such water supply developments. On the contrary, given that Israel claims to have fulfilled all of its commitments under Oslo II, there is every reason to believe that it will be even more hawkish in the years to come than it has been since 1995 (unless, that is, it is somehow compelled or persuaded to change its policies). As for Gaza, amelioration of the ecological and water quality crisis there requires that significant new quantities of water be made available, whether this is natural water from Israel or the West Bank, or non-conventional water (most obviously through desalination). But large-scale water imports from the West Bank to Gaza are inconceivable in the absence of a water-sharing agreement with Israel granting Palestinians significantly increased access to the Mountain Aquifer – something that is extremely unlikely prior to a final status peace agreement. Moreover, the large-scale importation of water from Israel to Gaza is inconceivable under present political conditions, with the former not recognizing the government of the latter (that said, increased water imports from Israel would be conceivable if working political relations between Israel, Gaza and the West Bank were re-established, say through implementation of the May 2011 Reconciliation Agreement, and the unification of the PA). Finally, desalination, whilst an option, would be both prohibitively expensive and practically unfeasible within the contexts of the Israeli blockade and international sanctions. Hence, I would argue that the ‘less ambitious aim’ of water crisis amelioration without transformation of, or challenge to, the political status quo has negligible chance of achieving anything very substantive. Indeed, in the absence of a wholesale transformation of, or challenges to, existing structures of Palestinian water dependency, it is more likely than not that water conditions will deteriorate further in both the West Bank and Gaza.

Thus, the proper question to ask is what opportunities exist for transforming or challenging existing relations of water dependency and heterogeneity in the absence of Palestinian statehood. My answer to this would be that while these relations cannot be transformed under an extended interim period, they can be challenged much more forcefully than they have been hitherto. This, however, would require that the PA adopts a much more strategically oppositional stance towards present-day arrangements than it has to date.

Unilateral withdrawal from the JWC would be one such option, but would not in my view be a sensible strategy. Unilateral withdrawal from the JWC would leave the Oslo II Agreement and the existing powers of the Civil Administration in place. All Palestinian water developments in Area C (which currently includes most of the unconnected villages in the West Bank, and where most Palestinian wells and wastewater plants need to be located) would still require Civil Administration approval. It is inconceivable that the Civil Administration would respond to PA withdrawal from the JWC by loosening its planning restrictions on Palestinian water development. In all likelihood it would respond by further tightening restrictions. The JWC is very far from perfect, but at least the PA has a voice within it – whereas it doesn't within the Civil Administration.

However, short of this withdrawal, several strategies could be pursued (or at least considered more fully). First, planning for independent statehood could and probably should be accorded greater priority by the PWA, including in relation to the JWC. The PA could learn from Israel in this regard. For Israel, water policy has always been an arm of territorial policy. If the PA were to adopt this principle, this would suggest at least three priorities: first, that the PA and PWA develop and enact a strategy for contesting and, if possible, limiting water provision to Israeli settlements; second, that the PA and PWA prioritize the enhancement of water supplies for Palestinian villages in Area C (indeed, because Area C villages have the worst water provision, enhancing their supplies would support humanitarian goals as well as territorial ones); and third, that the PA and PWA should consider whether they want a future independent state to be relatively homogenous and standardized in its water supplies, pricing and governance, or to be relatively fragmented or decentralized. If the former, they should start working towards this goal. To illustrate just on the first of these issues, the PWA could veto all proposals for settlement water infrastructure placed before the JWC. Alternatively, it could veto all such proposals relating to settlements in strategically important areas. Moreover, it could, in coordination with Palestinian or Israeli civil organizations, consider the

possibility of legal action on the subject of settlement water infrastructures that have been constructed without JWC approval. Under Oslo II, every new water facility within the West Bank requires JWC approval; however, not a single network within an Israeli settlement has received or even applied for such approval since 1995. This may also be in violation of Israeli planning law. It is worth emphasizing in this regard that the JWC is, to the best of my knowledge, the only instrument within the entire Oslo II framework that grants the PA a legal means of restricting settlement growth. The implications or potential of this fact have not yet been tested.

Second, the PA and PWA could 'go public' to an extent they have not done thus far on the limitations and inequities of current water arrangements. These limitations and inequities are, of course, no secret. They have been compellingly documented, for instance, in recent reports by the World Bank, Amnesty International and B'Tselem.<sup>5</sup> However, the extent to which the PWA has been (or felt) compelled to approve water infrastructure for Israeli settlements is not widely known, and is not adequately represented in these and other such reports. My personal view is that nothing better illustrates the shortcomings of the Oslo II water agreement than the fact that it has led to the PA giving its formal approval to settlement expansion, that is, giving its formal assent to its own colonization. In my view, international donors and Israeli and Palestinian publics should know about this. International donors to the Palestinian water sector should be informed that many of their projects have only received Israeli approval because of simultaneous PWA approval of settlement projects, projects that most of these donors consider illegal under international law. The PWA could also fruitfully engage the Israeli public and Israeli water sector on this issue.

Finally, the PA and PWA could promote internal Palestinian public debate on water issues. Water issues can and should be a matter of democratic debate and even party politics. They pose questions such as: whether the state (or government) should be required to ensure minimum standards of water supply and quality, or not; whether the state (or government) should be working towards uniform supply provision and pricing, or not; whether water should be a national developmental and human rights priority, or not; whether and how informal water markets should be regulated; whether and how water supplies should be subsidized to meet national, development

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<sup>5</sup> World Bank, *Assessment of Restrictions on Palestinian Water Sector Development*; Amnesty International, *Troubled Waters: Palestinians Denied Fair Access to Water* (London: Amnesty International, 2009); B'Tselem, *Dispossession and Exploitation: Israel's Policy in the Jordan Valley and Northern Dead Sea* (Jerusalem: B'Tselem, 2011).



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or human rights objectives; whether water supplies should be governed as a public or as a private good; and how ownership, control, construction and profit-making in relation to water infrastructures and supply should be regulated. Internal Palestinian public debate on such questions has thus far been very limited. Debate, when it has occurred at all, has mostly been with either Palestinian water experts or international donors. Amongst other things, this is perhaps an opportunity missed, since strengthening Palestinian public understanding of and discourse on water issues, and in turn potentially strengthening Palestinian legislation, would be one way of strengthening the PA and PWA in their negotiations with both Israel and donors. If the PA cabinet or better still a revived Palestinian Legislative Council were to rule, for instance, that no new water infrastructure for settlements should be approved, this would most likely strengthen the position of the PWA in its negotiations with Israel and donors, and help as the PWA presses for wide-ranging reform of the JWC regime?

On the first two of these issues, at least, the PWA has recently been moving in a more activist and oppositional direction. Since 2009 it has undertaken a full review of JWC negotiations, and has established a dedicated JWC unit (tellingly, earlier PWA institutional structures, driven by donor assessments of international good practice, were designed as if the JWC and Oslo II did not exist). Its input to high-profile reports on the water sector, including those mentioned above, have been minor propaganda victories. Whether a more assertive water diplomacy has the potential to seriously challenge existing structures of Israeli water hegemony and Palestinian dependency under conditions of an extended political status quo is impossible to say. There are clearly risks involved: if Palestinian water policy were to become more oriented to final status issues, then this could potentially be at the expense of short-term crisis amelioration objectives. But my assessment would be that a failure to challenge existing conditions carries greater risks. Without such challenges, water supply and quality conditions in the West Bank and Gaza will only get worse.

## OPTIONS FOR INDEPENDENT STATEHOOD

Statehood – even full statehood over the whole of the West Bank and Gaza – would not necessarily resolve these water problems. Indeed, it is readily imaginable that faced with an array of difficult issues and considerable geopolitical pressure, Palestinian final status negotiators might likely make huge concessions on water, just as they did during the Oslo II talks in 1995. Under such a scenario, it is readily conceivable that Palestinian water dependency – or more correctly, hydrological dependency in the West Bank, combined with hydrological isolation in Gaza – might continue, even under full political independence. This could involve, for instance, a continuation of JWC-like arrangements granting Israel veto powers over water development in the West Bank; a continuation of Gaza's water 'independence', requiring it to turn to the incredibly expensive option of desalination to prevent the complete salinisation of its groundwater resources; and a continued lack of Palestinian access to Jordan River water resources. It is noteworthy that current Israeli policy favours the continuation of just such dependency relations, albeit with one new component: that Israel would construct desalination facilities on its Mediterranean coast, and that this water would be conveyed from there to the West Bank – in other words, that an extra layer of dependency would be constructed! Irrespective of the importance accorded to agriculture and water in a future independent Palestinian economy, any such continuation or extension of water dependency relations would be a disaster.

On the premise that continued dependency is possible and perhaps even likely, but would be far from optimal, Palestinian policy makers and negotiators preparing for statehood face a fundamental strategic choice regarding whether they would favour relatively high water independence, or instead relatively high interdependence. Complete water self-sufficiency and independence are of course fantasies: all Middle Eastern states are dependent on world markets for 'virtual water' imports, and this will inevitably remain the case until such time as it becomes economic to use non-conventional water in agriculture, or until local populations or per capita consumption levels decline several times over. The choices available are matters of degree, and are well short of full self-sufficiency. But roughly speaking, a high independence water governance regime would involve the two states, Israel and Palestine, each having autonomous national water authorities, each of which would be responsible for the separate management and development of particular bodies or allocations of water resources. Conversely, a high interdependence water governance regime

might, in extreme, involve the creation of a single bilateral water authority, responsible for all decision-making relating to water (this has in fact been proposed for the trans-boundary basins of the Mountain Aquifer by David Brooks and Julie Trottier, for Friends of the Earth Middle East).<sup>6</sup> There are, of course, a world of options in between these two extremes.

The simplest option in governance terms would be a high independence regime. Under such a regime, the various water resources of Israel-Palestine would be allocated to one or other of the parties, and managed separately by them. The division of the Indus waters between India and Pakistan provides a model, for good or ill, of this sort of water management regime. Under such a regime, a future Palestinian state would have the right, for instance, to exploit all of the water resources within the West Bank and Gaza. Now, this would not help Gaza, since it already exploits all of its naturally available water, and more. It would, however, help the West Bank considerably, increasing local water availability several times over. At present, Israeli policy makers would be implacably opposed to such an option. Israel would certainly not consider such an option whilst the security of its other key natural water resource, the Jordan River, remained uncertain and contested with Syria. It is conceivable, however, that this may change once – and if – Israel’s Mediterranean desalination plants are providing it with secure, unilateral and affordable water supplies. Admittedly, this is far-fetched. Moreover, under international water law, Israel would be on very strong grounds to argue that it possesses significant ‘existing and potential’ and ‘equitable and reasonable’ use rights to water from the Mountain Aquifer. And, in any case, such a high independence regime may not be optimal from a Palestinian perspective either. The logic of such a hypothetical high independence regime would be that Palestine forego rights to water from the Jordan River basin, as well as rights to the Coastal Aquifer upstream from, and to the north of Gaza. Such a regime would require that Gaza turn either to large-scale desalination to meet its water needs, or to ‘imported’ water from the West Bank – neither of which would be particularly efficient options economically. Indeed, under such a scenario it is hard to imagine that Gaza could have an agriculture-led future.

Given this, it seems to me that at least some degree of water interdependence will need to be built into any rational future Israeli-Palestinian water regime. ‘Interdependency’, to recall, involves a situation of mutual dependency, where parties are dependent on one another, and can both potentially hold

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<sup>6</sup> David Brooks and Julie Trottier et al, *A Modern Agreement to Share Water Between Israelis and Palestinians* (Jerusalem: Friends of the Earth Middle East, 2010).

the other hostage. There is, in my view, one obvious way to construct such a situation. An independent Palestinian state on the West Bank and Gaza would hold riparian rights to shares of three trans-boundary water resources: the West Bank Mountain Aquifer, the Coastal Aquifer, and the Jordan River basin. Both Israel and a Palestinian state would possess riparian rights to each of these resources, and would rightfully receive at least some share of each of them. Crucially, of these three resources, in one of them (the Mountain Aquifer), Palestine would be the upstream riparian and Israel downstream; while in the other two (the Coastal Aquifer, and the Jordan River), Israel would be upstream and Palestine downstream. This provides the perfect hydro-political geography for constructing a ‘mutual hostage’ regime, where each party would be wary of taking advantage of the other’s dependency for fear that its own dependency could equally be exploited. Under such a regime there would have to be water rights allocations for each of the three trans-boundary resources (preferably with some flexibility to take account of changing environmental and climatic conditions). There would have to be some mechanism for verifying both parties’ compliance with their allocations, and perhaps also for monitoring pollution and ensuring water quality. It would make sense, within such a regime, to permit the effective ‘swapping’ of allocations (so that, for instance, part of the Palestinian West Bank allocation could be taken by Gaza, leading to an increased Palestinian share from the Coastal Aquifer – and preventing the need for construction of an economically and technologically inefficient West Bank-Gaza pipeline). Beyond this, however, the two states could operate basically autonomous water sectors. It would be up to each state to decide, for instance, how much they wanted to invest in non-conventional resources; what internal infrastructures they wanted to develop; how water should be regulated and charged; and so on.

In my view, an optimal and rational two state water governance regime would need to be structured along the lines described above. Of course, this would require Israel to recognize Palestinian rights to the Jordan River and the Coastal Aquifer north of Gaza, and to accept a future Palestinian state receiving a much increased share of the Mountain Aquifer – all of which Israeli policy makers have thus far refused to countenance. It would also require undoubtedly complicated and protracted negotiations on each parties’ allocations from each of the three trans-boundary resources. It would also demand carefully phased implementation of new allocations. My argument here does not attempt to resolve or downplay these issues. However, in my view, existing final status proposals for the water sector

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focus too much on the issue of allocations, and insufficiently on questions of regime design (and specifically of how relations of dependence, independence and interdependence are built into it any final status water agreement). If I have one major piece of advice for Palestinian water negotiators, it is that they should strive to ensure that any final status water regime replaces the existing dependency relations with Israel, not with an independence regime, but instead with relations of mutual interdependence.

The successful negotiation and implementation of a fair and equitable final status water agreement would some way towards resolving Palestine's water problems. However, it would not resolve them all, for at least three reasons. First and most obviously, because existing water problems will inevitably leave a historical legacy, which will take time (and money, and political will) to overcome. At worst, it may prove impossible to fully rehabilitate Gaza's highly saline aquifer. Second, because problems of internal water governance, especially the internal fragmentation and 'heterogeneity' of the Palestinian water sector, could to a degree continue after independence, even within the context of a relatively benign water agreement with Israel. In the absence of strong central regulation, newly available water supplies could easily be monopolized by powerful local agro-industrial interests or by particular towns or regions, leaving peripheral rural communities without adequate water and, in turn, dependent upon expensive tanker supplies. Even if this were not to occur, any reversal of the current fragmented state of the Palestinian water sector would require significant capital investment and political will, potentially within circumstances where other issues might be of far greater political and economic urgency. Finally, a relatively benign water agreement with Israel may conceivably be of only limited value if the broader context was one that continued or consolidated Palestinian political and economy dependency. If a nominally 'independent' Palestinian state were to remain heavily dependent on Israel for its imports, currency, exports and tax revenues, as the PA is today, then in all likelihood water dependency would remain too – irrespective of the precise terms of any water agreement. For as observed in the introduction, water is not and will not in the future become the defining element of the political economy of the West Bank and Gaza.

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## BACK TO THE BASICS – Policy Options for Palestinian Water Sector Development

Clemens Messerschmid

### INTRODUCTION

This paper was produced as an intervention at a water workshop in the Abu-Lughod Institute for International Studies at the Birzeit University which formed the first part of a series of workshops on *The Political Economy of Dependence and Independence: The Case of Palestine* and with the intent to provide a policy and strategy oriented, rather than academic presentation to serve as basis for comments and discussion by decision and policy makers.

This paper sets out to discuss the different technical options of the Palestinian water sector to face and overcome the long-standing and continuously deepening water crisis in the occupied territories. This introduction (chapter I) presents some background information on the hydrological and hydro-political conditions in the West Bank and Gaza, which face very different conditions and challenges. The paper is therefore divided into two main parts. Chapter II discusses the West Bank, chapter III the Gaza Strip. The paper draws on the 20 years of on-the-ground experience with technical water projects under the Madrid-Oslo process, falsely labeled the peace process in most literature. In both of the main chapters (II and III), different types of interventions in the water sectors are analysed, compared and weighed in two different ways, a) technically – as to how affordable, realistic, promising, adequate, effective and efficient they have been and can be in the future and b) as to their political implications in the context of the deeply entrenched conflict and competition over shared water resources between the occupying power Israel and the population in the occupied Palestinian territories. Such typical interventions to be tested here are network solutions, sanitation efforts, cistern construction, small-scale humanitarian interventions and large-scale new well drilling projects in the West Bank. In Gaza, wastewater treatment, wells, brackish groundwater, seawater desalination and large-scale water imports are presented and discussed.

Special attention is given to the role of the international community which finances most of the projects and, thus, largely shapes the approaches and outcomes under conditions of a relentlessly ongoing, but all too often

overlooked occupation. The paper concludes at various stages that – if not by intent, then at least as an outcome – the international donor agencies, and implementing institutions, whether governmental or from the NGO sector, end up colluding with Israeli interests and conditions laid down on the ground. The problem is fundamental; projects are not only progressing too slowly, but worse, individual projects and the sector as a whole is moving backward, as the crisis deepens and supplies shrink and deteriorate.

Projects have almost entirely lost track of their historic mission and original task, since the eve of the Madrid Peace Conference, which should have been to provide Palestinians with a better deal and increased share of water after 24 years of overt occupation from 1967 until 1991,. The paper argues that a reorientation and return of focus to the basic tasks and duties is what is most painfully missing at present. Out of this, some very basic but radical recommendations for Palestinian water leaders, decision makers and the population at large are developed. As desired by the organizers of the workshop, Chapter IV briefly touches on some additional aspects of a political negotiated solution, its general options and the current strategy of a win-win scenario.

“Liars! They have enough water to drink ... There are water tankers in Amman and Damascus, too. That’s how they do things. In the interim agreement they were given at least 70 to 80 million cubic meters of water [a year] from the eastern aquifer. They did nothing. They want us to bring them water and to live at our expense. They want Lake Kinneret, the Coastal Plain, what don’t they want? ... We let them dig [wells] in the eastern aquifer; there is water there, so let them dig, God damn it. Why aren’t they digging? For no reason, because it’s easier to cry. Do they care about their nation? They want to be miserable.”<sup>1</sup>

The West Bank is water-rich; there is enough natural water. The unshared<sup>2</sup> basins (Eocene, Jordan Valley, Wadi Fari’a) yield little and are fully used – mostly by Palestinians. The shared mountain aquifer has large resources, currently under near exclusive use by Israeli wells and Jordan Valley settler wells. The limit is due mainly to one factor – in the words of the co-Director of the Israel Palestine Center of Research, Gershon Baskin,

1 Chief water negotiator in Oslo and Israeli representative in the Joint Water Committee; Answer to the question “The Palestinians claim to suffer from an acute water shortage”; in Haaretz: “A dry and thirsty land”. (Noah Kinarti, 2009) [www.haaretz.com/hasen/spages/1107419.html](http://www.haaretz.com/hasen/spages/1107419.html)

2 According to Oslo-II agreements, only the ‘mountain aquifer’ is shared, this excludes the Eocene (Jenin), Pleistocene (Jordan Valley) or Neogene (Wadi Fari’a) local shallow aquifers.



“It’s the occupation, stupid!” The costs of the occupation are currently estimated at \$1.9bn.<sup>3</sup> The first concern is domestic supply that today lies roughly at 50l/c/d<sup>4</sup> average net consumption, which is half of the WHO recommended minimum. The second concern is for agriculture, which in the near future will be of high economic importance in the West Bank. At this time, only 6% of irrigable lands are irrigated despite the fact that the Palestinian economy depends on agriculture for 30% of its GDP a record value in the Middle East (compare: Israel 2%, Jordan 7% of GDP). The West Bank is also a record holder among semi-arid countries with respect to the low input of agricultural water. Of all Palestinian controlled water, agriculture only uses 47%<sup>5</sup> (see Table 1a/b). There is definitely potential for agricultural expansion provided additional water is made accessible. In the long run, however, agriculture will not be the most promising economic option in either the West Bank or in the Gaza Strip. But for the time being, Palestinians must increase irrigation.

**Table 1a:** Palestinian Water availability under the occupation. **Source:** after Isaac, 2011

West bank	Wells	Springs	Sub-total	from Mekorot	Total
Agricult.	30.1	12.8	<b>42.9</b>		42.9
Domestic	36.1	12.4	<b>48.5</b>	48	<b>96.5</b>
	66.2	25.2	91.4	48	139.4
Gaza	Wells	Springs	Sub-total	from Mekorot	Total
Agricult.	75.3	0	<b>75.3</b>		75.3
Domestic	84.2		<b>84.2</b>	4.8	<b>89</b>
	159.5	0	159.5	4.8	164.3

*PCBS (2009a) – Note, internally controlled well & spring flows in the West Bank meanwhile have dropped from 91.4 to 84mcm/yr or less.*

3 For the year 2010 mainly as indirect costs from foregone productive irrigated agriculture – see, (Isaac et al. 2011, 53). <http://www.mne.gov.ps/pdf/EconomiccostsofoccupationforPalestine.pdf>

4 According to the World Bank (2009) Nobody can quantify this amount with certainty and precision as long as hundreds of thousands of Palestinians every summer depend on an atomized supply through tankers, jerry cans, etc...

<http://siteresources.worldbank.org/INTWESTBANKGAZA/Resources/WaterRestrictionsReport18Apr2009.pdf>

5 And of all water consumed, including the purchase from Mekorot, only 31%.

The Gaza Strip is in almost every respect the opposite of the West Bank. There is a low availability of 300mm rain over a tiny area with only 35 million cubic meters (mcm) of rainfall recharging the groundwater. An additional 36mcm of lateral brackish groundwater inflows from Israel and currently an estimated 54mcm of return flows (mostly agricultural returns and wastewater effluents) and some estimated 18mcm of net seawater intrusions.<sup>6</sup> Access to water through internal wells is not restricted by the occupation, but, contrary to the West Bank, there are too many wells that over-abstract the portion of the Coastal aquifer underneath the Gaza Strip. Also, unlike the West Bank, Gaza suffers from extremely bad water quality (95% of municipal wells provide undrinkable water).<sup>7</sup>

**Table 1b:** Palestinian & Israeli Abstractions from commonly considered shared\* resources. **Source:** PWA Data Base, HSI (2008)

	Palestinian			Israeli			xx
	All	Wells	Springs	All	Wells	Springs	Mekorot purchase
WAB	26	24	2	404	365	39	
NEAB	25	7	18	150	61	89	
EAB	43	5	38	154	34	120	
shared Mt. Aq.	<b>94</b>	<b>37</b>	<b>58</b>	<b>708</b>	<b>460</b>	<b>247</b>	<b>54</b>
Eocene	23	9	14	23	16	7	
Shallow	12	11	0.6	5	5	0	
unshared Aq.	<b>35</b>	<b>20</b>	<b>14</b>	<b>27</b>	<b>21</b>	<b>7</b>	
CAB	<b>177</b>	177	0	<b>466</b>	466	0	5
JR	<b>0</b>	0	0	<b>718</b>	622	96	
Total	<b>305</b>	<b>234</b>	<b>72</b>	<b>1919</b>	<b>1569</b>	<b>350</b>	<b>59</b>

6 Gaza values for 2008/09 mostly based on (HWE 2010), (CAMP 2000) and (Vengosh et al. 2005, 4).

7 Agricultural wells are probably even more salty.

\* It should be noted that flow connections between all aquifers in Historical Palestine exist and thus, a more updated approach would consider all aquifer basins as shared including Mt. Carmel, the Western Galilee, Lake Tiberias (upper Jordan River) basin and Naqab/Araba basins.

*Note: All West Bank figures are cross-calculations from PWA-data and Israeli data from the Hydrological Service of Israel (HSI – Development and Utilization and Status of Water resources in Israel until autumn 2007) and represent the average outflows between 1995 and 2007.*

*Upper Jordan River abstractions include the Golan, Lake Tiberias, stream abstractions, spring abstractions and local wells and of course the National Water Carrier, average values for the years 1983/84-95/96. Source: HSI-yearbooks ('Development of Utilisation and Status of Water Resources in Israel until autumn of 2005, 2006, 2008') of the years 2006, 2007, 2009 (original in Hebrew)*

*Coastal aquifer after PWA (2010: 8, 10) for the year 2009 (Gaza) and Israeli pumpage for the year 2006/07 after HSI (2008, 107-110);*

The water crisis in Gaza is anything but 'natural'. Gaza is arguably the most unnaturally supplied place in the world. The main conceptual mistake is the widespread assumption that Gaza is and should be organised as a self-sufficient country. Instead, compare Gaza with the City of Munich, my home town, which has a surface of ~360km<sup>2</sup> and 1.3mio inhabitants. Seen in that perspective, Gaza is simply a city<sup>8</sup> approximately the size of Manhattan (Figure 1). It would be comical if anybody suggested that Manhattan be self-sufficient in securing water supplies. New York is supplied from outside its perimeter (Figure 1), just like Munich, Tel Aviv, Jerusalem or Beer Sheva with their respective large hinterland. Who would suggest that Manhattan should drill wells in the Central Park, or in the alternative, dig cisterns under the Empire State building or use its sewage to secure all supplies needed? Yet, many if not all proposals so far bank on supplying Gaza from within. Gaza cannot and will never be self-sufficient, and more importantly why should anyone expect it to be?

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<sup>8</sup> On a global scale not even a very large city; it only is extremely poor and cut-off from its hinterland, an island without access to the Sea!

Figure 1: Supply from outside: Gaza is Manhattan. Catskill reservoir & Lake Tiberias...



Note: New York's Catskill watershed is as far from the city as Lake Tiberias from Gaza

## CURRENT POLICIES IN THE WEST BANK

The West Bank is unique in that it never went through the 'blue revolution.'<sup>9</sup> Almost every village in India has what villages in the West Bank lack – a village well. As long as this situation prevails, and Palestinians don't catch up in this first, most basic development intervention, all other recipes for the water sector employed world-wide – no matter how *modern, creative, state-of-the-art* and *sophisticated* they may appear – are simply inapplicable and will fail. This paper will present four examples below of typical interventions and assess their benefit for Palestine.

### Networks

Ailing networks and resulting losses of up to 50% are often blamed for the chronic water crisis.<sup>10</sup> In 2010, German Minister of Development Dirk Niebel<sup>11</sup> answered a parliamentary inquiry (Q&A) on why Germany had abandoned the water supply sector<sup>12</sup> by responding "As water availability in all three aquifers is limited, for reasons of sustainability, Germany, by agreement with the Palestinian Water Authority (PWA), is now prioritizing development projects which aim to reduce water losses and conserve groundwater resources."

But what is the real potential of gains through network loss reduction? Physical (not administrative, UfW) losses lie at approximately 35%. Domestic gross network supply in the West Bank is ~70mcm/yr (Figure 2). Very optimistically, Palestinians could aim at reducing this figure to approximately 20% (the rate of the city of London).<sup>13</sup> By doing this, a potential of 11mcm/yr could be gained, but of course this would fall 6 times short of the minimum additions required to reach the WHO minimum (100 l/c/d).<sup>14</sup> If, theoretically, Palestinians had zero losses, then domestic consumption would still only be 83 l/c/d. Loss reduction everywhere in the world is, and can only be, a complimentary tool to priority interventions for optimizing supplies, and never a means to replace resource development and basic conventional supplies. This remains the central task.

9 The global phase of systematic development of groundwater resources that took place in the 20<sup>th</sup> century, and was terminated in most countries by the 1970s. Alternatively, it is also addressed as the 'hydraulic mission'.

10 By Israel, since long time (IWA 2009) and increasingly by donors as well.

11 BMZ – German Ministry for economic cooperation and development.

12 "Why was groundwater development by deep wells abandoned (after '99, Ein Samia)?" (Question 28); "Why was the already committed-to Hizmeh well project not implemented?" (Q 29); "Why the new focus on waste water only, despite gross undersupply (domestic & agricultural)?" (Q 30); "Why investments in networks, laying empty due to Israeli enforced lack of water access?" (Q 33).

13 Donor agencies like KfW aim at 25% UfW, including physical and administrative losses.

14 More realistically, less modestly, Palestinians should aim for 125 l/c/d, still less than half of Israeli supplies.

**Figure 2: Net and Gross Supplies and additional water through loss reduction [mcm/yr and l/c/d]**

Is	absolute	Per capita
<b>Gross</b>	<b>70 mcm</b>	<b>83 l/c/d</b>
35% losses	25	
<b>Net</b>	<b>46 mcm</b>	<b>54 l/c/d</b>
20% losses	14	
<b>→ Net</b>	<b>56 mcm</b>	<b>67 l/c/d</b>
<b>Gains</b>	<b>11 mcm</b>	
<b>Needed</b>		
<b>Net</b>	<b>84</b>	<b>100 l/c/d</b>
<b>Gross</b>	<b>105 mcm</b>	<b>125 l/c/d</b>
<b>Gains</b>	<b>60 mcm</b>	

*Note: From 70mcm/yr of domestic water consumption in the West Bank (including Mekorot purchases), 25mcm/yr are 'lost, but the water does not disappear; it mostly seeps into the ground and recharges the groundwater*

*If the loss reduction program was complete and only 14mcm (20%) would leak out of the networks annually, some 11mcm/yr could be gained.*

→ Focusing on loss reduction at the current stage of Palestinian water supply is a distraction from the central task. The advice to emphasize loss reduction programs as a priority measure by Minister Niebel and all other development institutions – without also including a policy and program of interventions which directly supports hydraulic development – is a contribution to furthering the ongoing inequitable and unreasonable water allocations between Israelis and Palestinians, which is a result of wantonly installed and actively maintained discrimination in water distribution by the Israeli occupation.

## Wastewater, Marginal Water

Donors active in the sector have abandoned water resource development and moved towards the development of marginal water, and herein, chiefly wastewater. This is a long-standing Israeli demand from day 1 of the Oslo Agreement, in order to safeguard Israeli privileged use of existing shared water resources (Figure 3).

### Figure 3: Chronology of some wastewater projects

- Not a single modern WWTP during occupation (1967-1993) *(occupier should pay)*
- Since day 1 of Oslo, Israel demands new TP
  - To protect its use
- 16 TP applied for:
- 1 new TP in 17 years of „Oslo“ (*El-Bireh: 1.1mcm*) ✓
  - Salfit (1996) – „security & Ariel“ - X
  - Nablus (1997) – „security“ – approved...
  - Hebron (1999) – „modifications“ → € 75 mio – X
  - Tulkarem – planned ... in Israel! *...reuse...*

For example, German Minister Niebel is willing to second: “The improvement of sanitation in the Palestinian territories is of particular importance, because by this, existing drinking water resources are protected and at the same time, additional water supply for agricultural use of treated wastewater reuse can be created. Since the water shortage will worsen further, due to climate change in MENA region, it is absolutely necessary to protect the renewable resources (relevance of German priorities). Wastewater collection, purification and re-use, e.g. in agriculture, are particularly important in this context.<sup>15</sup>

Not the occupation, but climate change is the new and only culprit. For Palestinians, there is only one water source which is wastewater and not – God forbid – “*additional raw water abstractions.*” This is the new philosophy prevailing in donor policy. With such donor friends, Palestinians don’t need occupiers. Of course, Palestinians should not be against wastewater treatment, per se. The question is whether it should be a Palestinian

<sup>15</sup> (Niebel 2010).

priority? Can Palestinians expect considerable amounts of additional water from this costly intervention? Is wastewater reuse an option to free such quantities of freshwater from use in the agricultural sector that the water supply crisis in the domestic sector will be solved?

### *Ladies and Gentlemen,*

Our priority now lies in implementing wastewater projects. The PWA ... places the issue of wastewater treatment and reuse within its top priorities, especially due to the low water availability which has been caused by the continued occupation mainly, as well as increased water demand, climate change, desertification and pollution of available water resources.<sup>16</sup>

Everywhere in the world treated wastewater is a classical type of 'marginal water' that complements and optimises, not replaces, existing domestic bluewater supplies. Why not in Palestine? If the Palestinian Authority has succumbed to the donors' emphasis of wastewater treatment and reuse, then the critical question is how much additional water quantities can wastewater provide towards the available water supply? All forecasts depend on many uncertainties (Figure 3 lists some outstanding examples):

- In Salfit, Israeli demands of treatment standards above Israeli levels, in combination with expansion plans for the illegal settlement of Ariel and other 'security concerns' resulted in a total collapse of the project. The German donors abandoned the project and moved on.<sup>16</sup>
- In Hebron, the Civil Administration imposed design 'modifications' that caused unnecessary, immense delays and raised the expected costs to € 75 million.
- East-Jerusalem is not only under exclusive Israeli control but even annexed by Israel as part of 'forever united Jewish capital'. However, services in general, and sanitation services in particular could not be more divided. While West-Jerusalem enjoys a modern treatment plant, Israel has not even drafted plans to build such a facility for the eastern half of the city. All sewage of this biggest Israeli city continues to flow eastward into the West Bank – Wadi Nar<sup>17</sup> is the single-largest polluting Wadi filled with raw sewage in the entire occupied territories.<sup>18</sup>

16 World Water Day Speech of Dr. Shaddad Attili, Head of Palestinian Water Authority (March 2010) <http://www.pwa.ps/desktopmodules/newsscrollEnglish/newsscrollView.aspx?ItemID=141&mID=11850>

17 Kidron Valley in Hebrew.

18 11.8 mcm/yr of untreated flow according to official Israeli statistics (Cohen, A. et al 2008, 5) "West Bank streams Monitoring -Stream pollution evaluation, Based on sampling during the year 2007"; by: Ministry of Environmental Protection, Israel Nature and National Parks Protection Authority and Israeli Civil Administration).



These and countless other Israeli obstructions regularly turn all Palestinian plans for construction of sanitation infrastructure into debacles. Consequently, a particularly high margin of error is attributed to all forecasts of treatment and reuse rates under the occupation. Therefore, the differences in Tables 2 and 3 have to be understood as an expression of the large divergence in expectations, (Hebron TP - 0.37 vs. 8.9 mcm/yr). All currently planned, proposed and even cancelled treatment plants would have a combined inflow of 9.2mcm/yr; even at 3 times the capacity (population by the mid 21<sup>st</sup> century) this would be a mere 28mcm/yr (Table 2).

Other optimistic estimates for all (primary, secondary or tertiary) treatment reach an expected 28mcm/yr, assuming full capacities everywhere (Jerusalem, Hebron in Table 3), 80% connection rates and importantly net domestic consumptions of 111 l/c/d – conditions and quantities which Palestinians are very far from achieving, which is exactly the problem. Total net domestic supply input in the West Bank would need to be 119mcm/yr. After 18 years following the signing of the Oslo Agreement, Palestinians have one small functioning tertiary treatment plant (1.8mcm/yr) in El Bireh and even these effluents are not used currently by any farmers.<sup>19</sup>

**Table 2: Currently planned Wastewater Treatment Plants – Projected Effluent Inflows**

City	capacity (m <sup>3</sup> /d)	capacity (mcm/yr)	source
El-Bireh/Ram.	5,000	<b>1.83</b>	actual
Nablus	7,500	2.74	planned (GTZ)
Tulkarem	500	0.18	planned (GTZ)
Salfit	800	0.29	cancelled (GTZ)
Bethlehem	3,500	1.28	inferred
Hebron	1,000	0.37	inferred
Qalqiliyah	6,000	2.19	inferred
Jenin	1,000	0.37	inferred
<b>SUM</b>	25,300	9.2	mcm/yr
triple population		27.72	mcm/yr

<sup>19</sup> Either for lack of demand for such effluents or of Palestinian communities downstream El Bireh WWTP.

**Table 3:** Wastewater Treatment Plants –Effluent Inflow Capacities of Operational, Pending and non-functioning/inexistent WWTPs (including plants with primary and secondary treatment only); **Source:** Al-Sa'ed et al (2009: 7).

District	Capita (#)	mcm/yr	Year	Status	Activity Type
Al-Bireh	42,900	1.7	2000	Operational	Upgraded 2008
Ramallah*	26,110	1.0	1973	Overloaded	Rehabilitated 2003
Nablus*	124,350	5.2	2000	Tendering 09	New WWTP/2020
Hebron*	210,997	8.9	2001	Pending	Regional WWTP
Tulkarem*	63,519	2.3	1975	Pending	Upgraded 2000
Salfit	16,400	0.5	2000	Pending <sup>1</sup>	No funding
Qalqilyah*	14,100	0.4	2000	Pending	Regional WWTP
Jenin*	34,580	1.3	1972	Pending	Upgraded 1994
Bethlehem	76,608	3.2	2001	Non	No funding
Jerusalem (E)	92,920	3.9	2001	Non	No funding
	702,484	28.5	mcm/yr		
Beit Lahia	204,845	6.0	1979	Overloaded	Upgraded 2008
Gaza city	430,550	17.6	1977	Overloaded	Upgraded /86/98
Rafah	175,335	7.3	1978	Overloaded	Upgraded 2009
Khan Yunis	90,000	3.8	2000	Non	No funding
	900,730	34.7	mcm/yr		

*Note: \* means, Pal. upstream have transboundary ww treatment in Israel, Wadi connected to Israel, → Pal. Treatment directly serves Israeli interests; says 'pending' but was cancelled by German donors (KfW, GTZ).*

The Director General of the Applied Research Institute-Jerusalem (ARIJ), Dr. Jad Isaac, recently quoted an agricultural demand of 381mcm/yr. Even if hypothetically Palestinians would reach the Israeli reuse coefficient of 49%,<sup>20</sup> Palestinians would need 771mcm domestic net use – more than Israel's 731mcm domestic net use – to meet all agricultural demand. In the near future, all planned wastewater treated capacities (9mcm) would only satisfy 2.4% of the total agricultural need, and thus 98% of agricultural demand for water would remain unmet<sup>21</sup> by this intervention.

- If Palestinians can see that the water sector benefits from marginal water can at best be exactly that: marginal, then how can the donors or the Palestinian Water Authority declare it as priority, not a marginal side issue?
- In the West Bank however – and as with the case of networks - there should be no output-based interventions (effluent reuse) without first securing the input needed.

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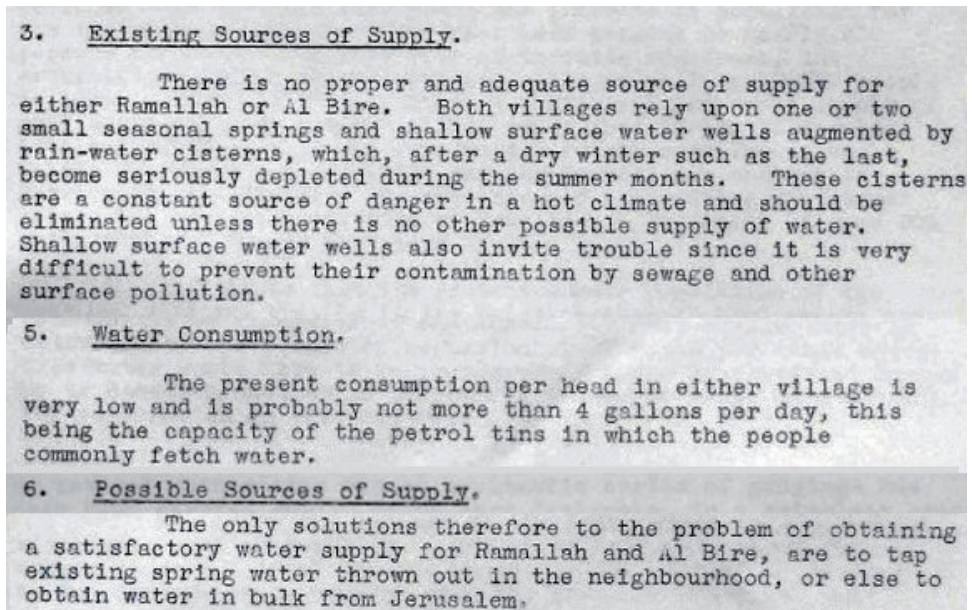
20 Currently 360mcm reuse out of 730mcm domestic supply; Israeli water economist Yoav Kislef quotes a slightly divergent figure of 55% of reuse of effluents (Kislef, Y. 2011, 91).

21 With a theoretically tripled capacity in order to serve a triple population by the mid 21<sup>st</sup> century, some 27mcm/yr could be expected.

## Cisterns

Another intervention type that has been shooting up since the 2<sup>nd</sup> Intifada are rainwater harvesting cisterns, especially through WaSH-cluster projects (European and Palestinian NGO's, Red Cross, UNDP, UNICEF). Some Palestinians also are filled with expectations and praise for this de-centralized, and presumed inexpensive, traditional water supply type. However, British Mandate water supply officer Humphreys characterized this technology as *outdated, insufficient, inadequate* and *inviting trouble* (Figure 4) as early as 1936.<sup>22</sup> Cistern water is neither idyllic, nor romantic, as described by Humphreys, "*These cisterns are a constant source of danger and should be eliminated.*" Cistern supply guarantees us our annual summer supply crisis<sup>23</sup> and poses tremendous additional risks to public health<sup>24</sup> (see ch.4).

**Figure 4:** Cistern supply as seen in 1936 (Howard Humphreys & Sons)



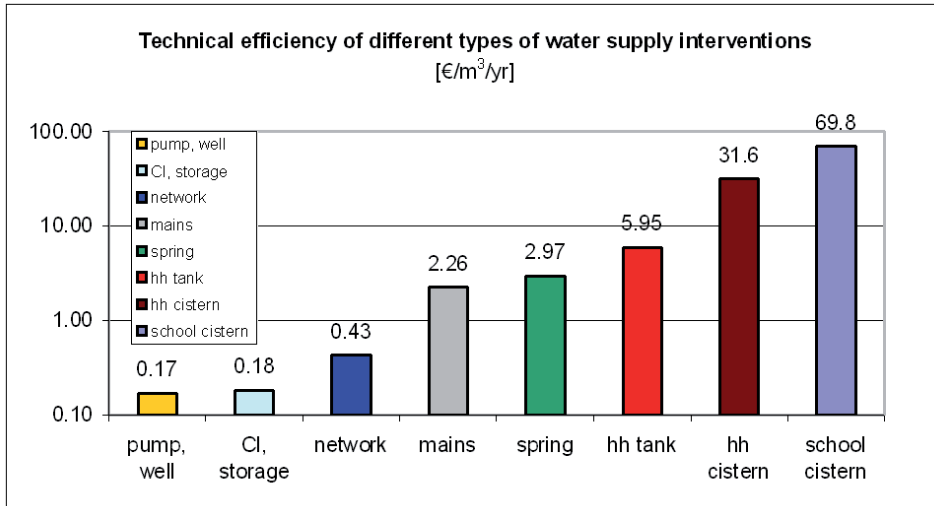
22 (HOWARD HUMPHREYS & SONS 1936, 27).

23 Most cisterns run dry by May, or latest June each year.

24 Almost all WaSH project surveys engaging in household cistern have found problems – partly severe – in handling and operation of these drinking water supply sources. In addition, although much less documented and reported, in most communities, such problems continued or re-appeared after the conclusion of the project, including the short-term household training of chlorination, storage and other cistern handling.

The real costs of cisterns are prohibitively high (see Figures 5 and 6).

**Figure 5:** Technical efficiency of water supply interventions. **Source:** Evaluation of a WaSH-project by a European NGO (Other NGO's in the WaSH cluster show near identical results.)



*Note: Chlorination (Cl) is not really an activity that provides additional water, but only makes available water consumable; also note the logarithmic scale of the Y-axis!*

**Technical Efficiency** is understood as the unit investment cost of water gained by an intervention, reference to the first year of use. This, admittedly is somewhat of a crutch because of the very different life-times and running costs of supply types. Depending on the water level depth and pump head of a well, such O&M costs can differ largely. Cisterns usually are seen as free of running costs. However, a 2009 study by ARIJ calculated for a specific community cistern in Bethlehem (150m<sup>3</sup> capacity) rather considerable costs of maintenance every few years and – after the initial rehabilitation investment of \$ 9,172 and after a 25-year life cycle, a cubic-metre cost of \$ 1.27 (Koelbel, 2009).

A household cistern costs between € 1,250-1,950 for initial investment ('fixed costs'),<sup>25</sup> or 25-39 €/m<sup>3</sup> if costs were to amortize during the

<sup>25</sup> Initial capital investments to develop a source can be considered as 'fixed costs', while operation and maintenance efforts (pumpage, repair and other running costs) can be considered as 'flexible costs' of supply from a water source and for terms of comparison.

first year of operation.<sup>26</sup> By comparison, apparently expensive new deep wells with US-\$ 1-2 mio of drilling costs, deliver some 1-2 mcm/yr, which equals a cube-metre cost of \$ 1-2 US-\$, again over the first year of operation.<sup>27</sup> Cisterns usually are seen as free of running costs (zero '*flexible costs*'). However, a 2009 study by ARIJ<sup>28</sup> calculated for a specific community cistern in Bethlehem (150m<sup>3</sup> capacity) rather considerable *flexible costs* of maintenance every few years<sup>29</sup> and over a 25-year life cycle, a cubic-metre running cost of \$ 0.53 \$/m<sup>3</sup>. These costs come of course on top of the initial rehabilitation investment of \$ 9,172.<sup>30</sup>

Figure 6 presents a calculation from PWA for sector strategy planning (2010). It shows in red (figures below the graph) the amount of water targeted in this strategy. But more importantly, the length of the bars represents the costs for 1m<sup>3</sup> of water won by the respective intervention.

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26 Not including depreciation.

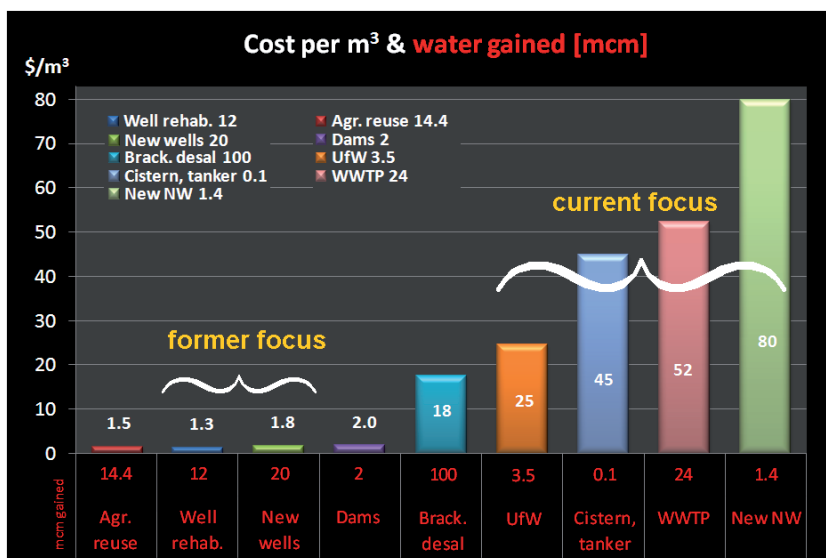
27 Again excluding depreciation costs.

28 (Koelbel J. 2009) Survey and assessment of ancient Cisterns in the West Bank (ARIJ, 32 pages).

29 (Koelbel 2009, 20) "The proposed restoration activities involve 4 layers of plaster and a final layer of watertight material as well as the removal of adjacent trees {...} apart from sediment removal and roof cleaning, which is easily done for 100\$ a year. After 10 years it may be necessary to add a new layer of cement and watertight material at the cost of 1400\$." Only the annual roof-cleaning and sediment removal in addition to new layers of cement every 10 years will result in additional 'flexible costs' of 0.53 \$/m<sup>3</sup> in the rather unrealistic 'optimal case' that the cisterns fully fills up three times each season (450m<sup>3</sup>/yr) and over a life-time of 25 years. These additional (flexible) running costs would even reach 0.8 \$/m<sup>3</sup> in the more realistic assumption that the cisterns only fills twice a season (300m<sup>3</sup>/yr).

30 The initial repair is considerably cheaper than construction of a new cistern from scratch! Fixed costs have to be assumed much higher than \$ 9,172 in this case.

**Figure 6:** Water intervention type efficiency (\$/m<sup>3</sup>) and effectiveness (mcm). **Source:** PWA (2010): “National Sector Strategy for Water and Waste Water in Palestine, 2011 – 2013.”



Note: The quantities of water to be added by each intervention are not the limits of availability but were the inputs discussed in the study. For example the very high yield of 100mcm additional water from brackish springs is the upper theoretical limit of spring flow in the Dead Sea springs (Fashkha etc.). Waste water treatment depends on the input of domestic consumption. Israel currently has a wastewater treatment of 360 or 400mcm/yr out of (and in addition to) some 2000-2100 mcm/yr overall water budget, or ~19% of total. Israel often announces a figure of 72% reuse. (As noted above, Kislev (2012) quotes a total reuse coefficient of 55% of all effluents)

However, this is the ratio of reused water out of the already treated sewage, not of all used or consumed water! In addition, the single largest reuse facility is actually the Dan reclamation project, where wastewater is not reused from the plant but recharged into the Coastal aquifer and simultaneously pumped out somewhere else from the Coastal aquifer. Hence it is rather a ‘replacement of blue water abstractions’ than reuse. The West Bank, unlike Gaza, lacks such hydrogeological conditions.

The amount of only 1.4 mcm added by new networks is also somewhat misleading. It refers to the currently realistic plans of expanded water supply in unserved communities. If new wells were added, this figure would shoot up. In particular, the two well interventions are much more promising in yield, than indicated in the graph. As discussed in the beginning, the ‘limit’ here is purely political, not technical.

If we assume that some 6,000 cisterns operative and functioning, this amounts to a total capacity of 300,000m<sup>3</sup> in the West Bank or 0.3 mcm/yr. One single successful deep well delivers 1.7 mcm/yr. This is more than five times all cistern water and still more than all potential cistern water even if we would multiply by five the number of all cisterns in a fifty-million-dollar mega-project.

### Overall Costs

Figures 5 and 6 give a short overview and two examples of the costs of different interventions. The specific targets of PWA's Sector Strategy (2010) and the NGO's project (in 2006) vary largely, in type and quantity. This explains the differences between the graphs. But the trends are clear and the same in both calculations: both graphs show the enormous cost of cistern water, especially household cisterns (~45 \$/m<sup>3</sup>) and the extremely low costs of well interventions, due to their large water output (0.5-1.3 \$/m<sup>3</sup>).<sup>31</sup> In the PWA sector strategy, administrative loss reduction (UfW) costs 25 \$/m<sup>3</sup>, WWTPs 52 \$/m<sup>3</sup> for reusable treated sewage and new networks 80 \$/m<sup>3</sup> . . . that is, if we had the water to fill them.

So, the only remaining question is: *Why don't Palestinians apply this knowledge? Why do Palestinians continue to accept policies and programs of interventions that can't meet objectives of a state or demands of the population? Why don't Palestinians tell the European WaSH donors: "Thanks, but no thanks! We don't want to invest in cisterns and jerry cans. Our priority has changed – some where between the late 1930s and the mid 1950s."*

Why doesn't the head of the Palestinian Water Authority and the Minister of Planning say to the donors, "Why don't you French, German, and British apply what's good enough for Palestinians in your respective countries? Why don't you erect some 25 filling points around London and then buy an armada of tanker trucks and hand out emergency jerry cans to the 12 million Londoners?"

What would the donors answer? This is not really sustainable? It is not really efficient? It is not easy to sell to their public at home? So then, why do the donors insist and support these solutions for Palestinians?

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<sup>31</sup> Why don't we produce such studies on a regular basis? They would deliver very good ammunition in bi-lateral government consultations (where MONEY for projects is talked and chosen...) for our priorities...



→ Thanks, but no thanks. Palestinians do not want your money for 5,177 hygiene workshops in schools (this year, 2011) only because your 'emergency' water supply isn't hygienic. We are blessed with excellent water right under our feet. If you want to help us, help Palestinians gain access to it. Full stop.

## Humanitarian Emergency 'Scarcity Relief' Measures – WaSH Interventions

Since the 2<sup>nd</sup> Intifada, the WaSH<sup>32</sup> and (EWaSH) cluster has grown to the largest actor in water supply projects, largely funded by ECHO. WaSH as a worldwide water project platform imports its vocabulary<sup>33</sup> from other regions. Its application to Palestine is truly worrying (**Figure 7**). This summer, the WaSH Scarcity Task force<sup>34</sup> listed the "Triggers of Scarcity" (excerpts):

- I.) The restrictive permit regime leaves little to no room for mitigation<sup>35</sup> measures to increase the resilience of water scarce communities, often in Area C.
- II.) Continued demolition of infrastructure, (exponential cisterns demolitions since 2010), exacerbate the problem for communities most at risk of water scarcity by increasing the reliance on water tankering.
- III.) Limited rainwater catchment: on average, households have been able to fill cisterns at only 1/3rd of capacity: (up to 18 m<sup>3</sup> - 64 last year).
- IV.) The served communities will also be prone to scarcity over the summer with increase(d) cueing time at Filling Points with no or limited replenishment of wells, springs, etc.

The occupation is no longer the root cause of the water crisis, scarcity is. Specifically in 2010/11, cisterns are being destroyed<sup>36</sup> and don't fill up, but WaSH banks on more cisterns. The problem is described as lack

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32 Water, Sanitation and Health.

33 We now don't have to deal with hydro-apartheid, water discrimination, artificially induced water 'scarcities', but instead see a boom of new vocabulary, like 'drought response', 'scarcity task forces', 'emergency scarcity responses', etc.

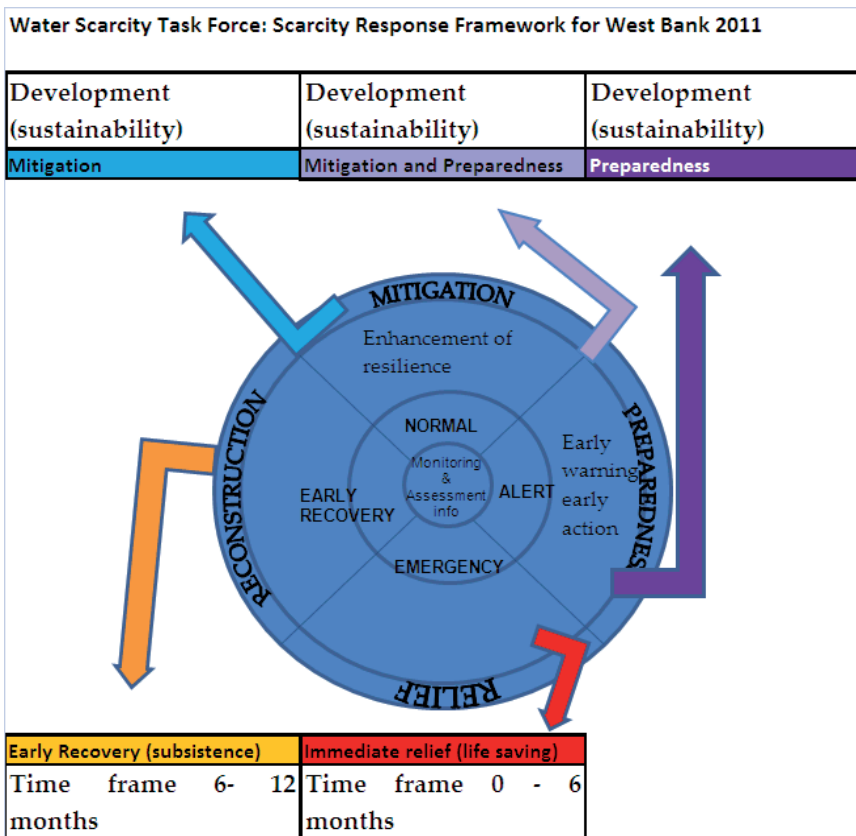
34 (WASH 2011).

35 The aim of this mitigation is not to end the water crisis, once and for all – but to "*increase resilience against water 'scarcity'.*"

36 Needless to add, this doubles and triples the 'fixed costs' of such interventions.

of replenishment. But why do Palestinians have to depend on *outdated*, *insufficient* and *inadequate* cisterns (Humphreys, 1936) in the 21<sup>st</sup> century? Finally, limited aquifer recharge (wells and springs) is blamed for scarcity, not our blatant lack of wells. If in a typical Mediterranean climate, Palestinians face a regular 5-year drought cycle, then there is no reason for panic, as long as Palestinians can rely on the natural buffer that retains, conserves, stores and yields fresh water in sufficient quantities during such lean years – these natural large storage containers are called aquifers. The Palestinian’s lack of access to their autochthonous groundwater is the only reason for the crisis; there is no other. The simple proof is that settlements continue to be served or their supply even augments during such ‘drought’ years.<sup>37</sup> But to WaSH, the Palestinian water crisis is caused by a cruel ‘mother nature’, not the occupation.

**Figure 7:** ‘Scarcity Response Framework and Vocabulary (WaSH, 2011)



37 We are not in the ‘heart of Africa’ with the next road or power line hundreds of kilometres away. Sure enough, the next settlement, a stone-throw away, is amply supplied all year round. Their response to ‘summer scarcity’? Their consumption doubles each summer, plain and simple.

To meet the needs under this 'sudden scarcity',<sup>38</sup> the Task Force devised an immediate relief response plan. But do Palestinians need "immediate relief response plan"? And what does it entail?

1. An 'immediate relief' phase (life saving); duration: 0-6 months – as if the West Bank was hit by a sudden volcano eruption; (water tankers in the southern West Bank)
2. An 'early recovery' phase (subsistence); 6-12 months of "re-construction," as if the concerned villages had possessed a safe network supply, which was hit by a natural catastrophe and must be 're-constructed' now. . . Activity: Filling points (to fill the tanker trucks), temporary network connections and cisterns
3. A 'mitigation' phase (enhancement of resilience); Activity: More filling points, more network expansion, alternative water sources (ww & desal) and new well development;<sup>39</sup>
4. A 'mitigation and preparedness' phase; Activities: Well rehabilitation & upgradation, spring rehabilitation and more cisterns (large community cisterns)
5. Preparedness; no activities filled in the worksheet. With 'preparedness' the cycle closes (Figure 7), until the advent of the next catastrophe.

Translated for Palestine – 'catastrophic outbreak' reads 'the occupation', already for 533 months and ongoing. The next summer scarcity 'event' is guaranteed, which also ensures that WaSH projects will never run out of work. This is where we stand, not at the beginning of Oslo, but 17 years later and ten years into the 'humanitarian' emergency responses: a vicious circle that feeds itself.

The 'WaSH Scarcity Response' (June 2011) targeted 50,000 people and 250,000 animals<sup>40</sup> in 35 high priority ('high risk') clusters in the southern and eastern West Bank. By far the largest sum (1.8 mio \$)<sup>41</sup> was spent on water tankering over 5 months with ~4000 m<sup>3</sup>/day. This is in total 0.5 mcm of water. The tanker water comes at 13NIS/m<sup>3</sup> and was "covering the domestic consumption (30 l/c/d for 150 days) and animal consumption (9 l/c/d for 150 days) up to 60 sheep as maximum coverage." 150 days from June to October – until the next summer. For the cost of 1.8 million dollars, Palestinians could

38 The Task force also produced a "Risk of water scarcity" map, in which 87 communities are found as 'High Risk' areas (<30 l/c/d), of which 16 communities lie in Jerusalem district. 11 out of these 16 communities (70%), lie in the area of prime rainfall in the West Bank and, no coincidence, along the 'separation barrier'.

39 None were drilled, see also footnote 34 below.

40 38,706 people and 267,700 livestock; " (WASH 2011).

41 In addition to 0.29mio\$ for distribution & operation and of course 0.67mio \$ for administration & contingency costs (total: >2.5mio \$).

have drilled a deep well, supplying some 1.5 mcm/yr. The costs for drilling would have been written off by the WaSH expenses within 4 months, providing each beneficiary with 82 l/d of high quality water all year long – not for 150 days, but forever.

The “methodology” stresses that “Infrastructure and capacity building projects should only be included if their primary purpose is to directly address humanitarian needs or directly facilitate immediate assistance.”<sup>42</sup>

Palestinians should be frightened that this is to become the new mantra of the water sector: Immediate emergency assistance to directly address humanitarian needs. Any long-term infrastructure development (wells to fill networks) is deemed an unaffordable luxury, and so are any activities for communities with 50-60 l/c/d (compare Kinarti quote).<sup>43</sup> Such programmes are at best a temporary band-aid that doctor the symptoms, or at worst even compensates for ongoing Israeli destructions. Palestinians never reach the point where the actual causes would be tackled and the patient healed. Should Palestinians continue with life-support systems and keep the patient in the intensive care ward forever?

Let’s look at “the positive results” of the 2011 summer ‘Water scarcity program’ at the tune of 3.4 mio US\$, and its “planning of sector-wide strategies in combating the most challenging issues.”<sup>44</sup> “‘Water quality/treatment’ is by far the most reported activity (>1/3 or 113 out of 301 interventions). Second largest activity is ‘WASH in schools’ representing (>1/5 or 69 WASH activities with 5626 toilets, 30 taps) and ‘water harvesting/storage’ (>15% or 48 interventions with 1461 cisterns rehabilitated and 302 built).”

By contrast, ‘water sources development’ counts for 6 activities (2%).<sup>45</sup> Total beneficiaries were 970,687 persons, and of these, only 725 (0.07%) enjoyed spring rehabilitation.<sup>46</sup> Why is this? Why do Palestinians suddenly focus on quality treatment? Is natural water (groundwater) quality in the West Bank worse than in Gaza? Not at all, it is because of the unsafe sources of water on which marginalised communities continue to depend, especially water from cisterns that remains a grave concern. The policy decision to promote this *outdated, dangerous, inadequate* activity made it necessary to fund 6,256 monitoring samples, 551 disinfection units and 471 disinfection awareness workshops and will continue to do so.

What is the answer? More cisterns and much more ‘quality treatment’ or getting rid of the cisterns altogether and instead securing an ordinary centralised water supply from deep groundwater wells with excellent quality? What is the prescribed answer for Palestinians? Funding and

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42 (WaSH 2011).

43 “‘They have enough water to drink’ – the infamous ‘minimum needs’

44 (WASH 2011b; CAP 2011).

45 Of these 6 activities 4 were on springs and 2 on wells. In total, 9 springs and 7 wells were rehabilitated, zero wells were drilled.

46 wells were not specified but left as “N/A.”

expanding the unsafe, unsustainable, insufficient and inefficient marginal supplies<sup>47</sup> that are forced upon the water sector by the occupation, or instead focusing on finally replacing these interventions with a modern, conventional water supply? Subsidizing the occupation or ending it! What are the Palestinian priorities?

### BENDING TO OR ENDING THE STATUS-QUO?

Hanan Ashrawi recently said, “We don’t want (them - the donors, the Quartet) to FUND the occupation, we want to END the occupation”.<sup>48</sup> There is nothing to add to this simple statement. This is the policy advice and approach that the Palestinians should demand from the Palestinian Authority and the international community.

### ‘Emergency’ Measures – in Israel

On 25 Feb 2009, Haaretz announced, “The intensifying water crisis will force Mekorot, ... to start emergency drilling for groundwater sources, mainly in the Galilee. ... to increase the supply of freshwater ... expected to produce 73 million cubic meters of water a year” (Figure 8), or maybe only as much as 70mcm/yr!<sup>49</sup>

**Figure 8:** Announcement of Israeli ‘emergency’ measures (Haaretz 25/02/2009)



What are 73 million cubic metres? Now, let’s evaluate this “Emergency” by applying a Palestinian framework (as Palestinian WaSH projects in the

47 The number of 93,744 WaSH interventions in 2011 sounds impressive. Yet, they are not a sign of success, but of failure and defeat for a water supply in the 21<sup>st</sup> century...

48 (Ashrawi 2011).

49 Chairman of Mekorot A. Wiznitzer in an interview with World Water (Volume 34/ Issue 6) reports a slightly different figure of 70 mcm/yr of additional water from ‘drought boreholes’. <http://edition.pagesuite-professional.co.uk/launch.aspx?referral=other&refresh=7Py1Z04b2Ym1&PBID=bb6f12d2-a038-476c-9c57-6dea71410d85&skip=>

West Bank also distribute jerry cans as 'emergency relief measure'). How many jerry cans would be filled by 73mcm/yr? This "emergency" volume for Israel produced from wells would fill 3.65 billion jerry cans. A jerry can is ~38cm high. You know how high a mountain that would form? Mount Everest?... Wrong, it would be 173 thousand times the height of Mount Everest, or 35 times around the earth (1.39 mio km) or two times to the moon and back. That's what Israel does in times of 'emergency' or what qualifies as such in Israel.

Scarcity? Emergency? WaSH is "planning sector-wide strategies, combating the most challenging issues." Are Palestinians getting it right with this policy of the donors, followed by the Palestinian Authority and NGOs?<sup>50</sup>

### New Wells

The past ten years carry the sign of a lost decade. Instead of catching up with water resource development, Palestinians have gotten stuck, were side-lined, distracted or – when Palestinians tried - failed. In the past ten years, only 4 new deep drinking water wells were added in Meithaloun, Rujib, East Herodion and Tammun,<sup>51</sup> In the past 5 years, since 2006, zero have been added.

In 2009, the World Bank published its study on Israeli obstructions on the Palestinian water sector. This made Israel and its Civil Administration somewhat nervous. As a result, Palestinians were suddenly granted four 'new' wells.<sup>52</sup> This connection is quite interesting. It shows us the value of one good, factual high-level report: four new wells. By this, we can aptly calculate the number of such donor reports required. Now, let us be realistic (pessimistic)<sup>53</sup> and assume that only 3 of the 4 wells get drilled.<sup>54</sup>

50 Let's also be fair to WaSH. Most of these colleagues do know that they are giving band aid instead of making a lasting difference and they personally don't like it. They will say, they simply don't get funding for other projects and that is true. So, this is the sticking point and we must be allowed to ask: Why should foreign NGOs be more Palestinian than the Palestinian themselves?

51 Another four 'replacement well' permits were obtained as well. These permits usually come with the short, dry sentence: "With no additional quantities allowed."

52 Not that new – these applications have been pending for ten and more years in the different corners of the Joint Water labyrinth, sub-committees, committees, Civil Administration, IDF etc and were released shortly after publication of the World Bank study.

53 Under the cruel routines of the occupation, Palestinians have no room to manoeuvre according to the findings in such new drillings. If the well was applied for the Lower Aquifer, but this Lower Aquifer turns out dry, salty or otherwise non-usable, while the Upper Aquifer promises some yield, Palestinian drilling projects are not allowed to use this Upper Aquifer as a replacement. Instead they would have to apply for a new well drilling permit – wait another ten years etc... Under conditions of the occupation, 'rules' are made to obstruct progress – the here mentioned new USAID-funded well projects in the remote and uninhabited desert above the Dead Sea were stopped half an hour upon arrival on site by the ubiquitous IDF army jeep, because of a typo: It turned out that the mast of the drill rig was a few metres higher than specified in the permits.

54 The Civil Administration and IDF have already created a lot of new obstacles of course...

Let's assume, only 2 of these are successful and deliver a pumping rate of 150m<sup>3</sup>/h as a long-term yield.<sup>55</sup> This would be together 300m<sup>3</sup>/h or 2.7mcm/yr. This amount is equivalent to one-fourth of all gains from network repair (reduced to 20% losses) or to one-third of all WWTP inflows currently planned (operational by the year 2020, assuming full tertiary treatment). If we assume a short project duration of only ten years per treatment plant, this amount of 2.7mcm/yr would reach 3.3 times the gains from wastewater as high quality water and not as treated sewage. The amount also equals the current WaSH cistern construction rate over 174 years (302 cisterns à 50m<sup>3</sup> built = 0.015mcm/yr capacity). The data speaks for itself. The 2.7mcm/yr of course are much too little – a sign of failure, as mentioned above. Two wells a year falls far short of the minimum needs for development. (Compare Israel's emergency drilling programme at 30 times the speed in 2009). But it clearly shows us the direction – the one and only orientation that is promising to lay the foundations of a healthy water sector.

→ Without new wells, on a massive scale, any and every other intervention remains a band-aid, marginal, insignificant, at best, or a dangerous distraction, lost time and lost ground, at worst.

## West Bank Summary

The problems, limits, and obstacles in the West bank are political, not natural. It's not a natural scarcity. It's the occupation, full stop! Palestinian responses must take this into account. They must be 'political' as well. A re-orientation to the main task, a much larger focus on this battle, inside and outside the JWC, is urgently needed together with a clear, unequivocal message to the donors: "We want – we need – we have no choice but to drill wells, not one or two, but at a massive scale (still modest compared to Israel), to catch up for 63 years lost. This must be the Palestinian priority." This technically sound political approach necessitates constant work on organising political support – among Arab states, among European and American governments and donor agencies, among the public, internal, foreign public, even including the Israeli public. These remain paramount tasks that can be started today, under the dead but still kicking Oslo agreements. This is also the only way to prepare the grounds for negotiations, just in case they should ever come up.<sup>56</sup>

<sup>55</sup> We should never look at the initial pumping test results as the reliable indicator, but should come back after two years of operation and then accurately read the de-facto yield of the well. Ein Samia well No. 6 showed initially stabilized with a pump rate of 396mcm/h (4<sup>th</sup> pump test, 18 July 1999) and showed pumping test 'results' of 250-300 m<sup>3</sup>/h a year later (my very own 'realistic' assumptions by Oct-1999!). Our GTZ 'Facts & Figures' sheet proudly announced 200m<sup>3</sup>/h (and 4000m<sup>3</sup>/d in Sep-2000). Today, in 2011, we are down to 17 m<sup>3</sup>/h! The well now runs exactly one hour and 20 minutes a day!

<sup>56</sup> We have already reached 20 years and will soon have reached 24 years since negotiations started

## CURRENT POLICIES IN THE GAZA STRIP

As in all water-related matters, Gaza is an entirely different case, if not even the opposite case than the West Bank. Gaza does not suffer from restrictions to develop water resources (wells), but, instead, from continued over-abstractions to meet the local water demand. Its shallow, alluvial phreatic aquifer can readily absorb treated effluents at minimal costs (similar to the Dan WWTP reclamation scheme in Israel). Gaza has long surpassed the peak of its internally accessible water abstractions. Ironically, this water-scarce strip, in terms of quantity, it is better off than the West Bank and instead suffers mainly from an appalling water quality.<sup>57</sup> Marginal water, secondary and optimising measures of demand management and integrated water resource management (IWRM) here are the call of the day.

### Wastewater Treatment

Gaza – unlike in the West Bank – is a high priority, if only as a water quality and aquifer protection measure, without gaining large quantities for agricultural reuse. Gaza has good hydrogeological conditions – not for direct reuse, but for re-infiltration into the shallow sands of the aquifer, or even for ASR – Aquifer Storage and Recovery<sup>58</sup> (Figure 9). The dumping of raw sewage in ‘infiltration lagoons’ designed to bring the waste on the fastest way back to our wells, must stop (Nitrate levels are unbearably high, especially around Khan Younis).<sup>59</sup>

Gaza cannot afford not to treat its sewage and must urgently stop using its infiltration lagoons for raw sewage<sup>60</sup> even if it wouldn’t gain a drop of additional water supply.

→ Gaza should improve its wastewater collection, purification and disposal, primarily for reasons of aquifer resource

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in Madrid in 1991. Negotiations to end the occupation will then have lasted longer than the occupation itself prior to the ending talks...

57 Water borne diseases are public health hazard No.1 in Gaza.

58 A scheme in which simultaneously the aquifer is artificially recharged and pumped, by different or by individual wells. Using the treated effluents for recharge through recharge wells, an artificial groundwater mound (or high) can be created along the coast that prevents seawater intrusions. Gaza has plenty of wells in different areas that could be used for such purposes, either along the entire coast or only along certain sections – a pilot scheme that can be linearly expanded in time. One area that looks promising for such a measure is the area of the former Jewish settlements of Gush Katif, between Rafah and the Sea.

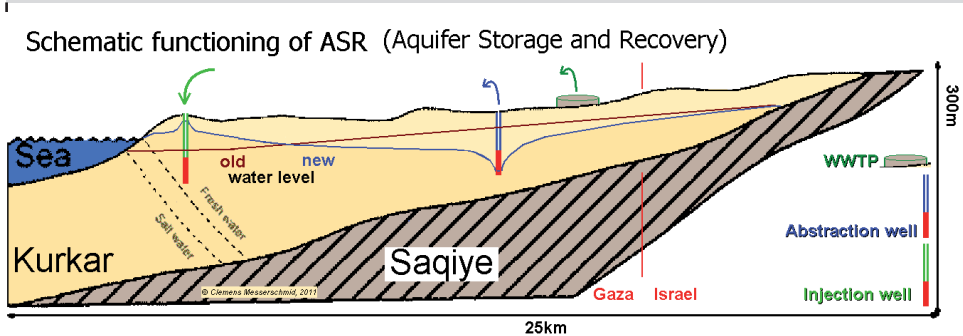
59 This indicates pollution from waste water rather than from agricultural returns

60 In the absence of functioning treatment plants, donors readily financed so-called infiltration lagoons that create preferential pathways for raw or insufficiently treated sewage right into the shallow, already contaminated and extremely vulnerable aquifer. In light of the water quality malaise, they are an irresponsible measure to get rid of sewage and prevent – in the Israeli interest – large sewage spills into the Mediterranean Sea. From a technical view-point they should be renamed into ‘enhanced contamination lagoons’.



protection and secondarily for reasons of additional supply. Donors should support Palestinians in those interventions.

**Figure 9: ASR – Aquifer Storage and Recovery**



Note: A portion of abstractions (or of other water, such as treated effluents) is re-injected along the coast to prevent seawater intrusions

## Wells

Wells in Gaza are over-pumped and overall pumpage should be reduced, and more importantly, spatially re-distributed.<sup>61</sup> The first thing Palestinians need is proper and all-inclusive monitoring, down to the last agricultural and house well. This is a very big task but without it all Palestinian plans will be literally built on sand.

## Brackish Groundwater

In Gaza, brackish groundwater inflow forms the largest factor of natural recharge and under certain conditions there is yet room for local increase of such brackish abstractions. “The desalination of brackish groundwater would be considerably cheaper than that of sea water, and would require less energy.”<sup>62</sup> Unfortunately, a recent Comparative Study of Options for an additional Supply of Water to the Gaza Strip (named CSO-G)<sup>63</sup>, commissioned by PWA, does not even start to investigate the brackish water potential in Gaza.<sup>64</sup> To the authors of this study, aquifer failure is inevitable if brackish use was envisioned. Therefore, this whole option is

61 Most areas should pump less, while other areas, especially the ones far from the coast might even see some increase in pumpage.

62 Brackish water currently has less than a twentieth of salt (and chloride) contents of seawater. At 5% the desalination and energy costs, this makes brackish groundwater very affordable, unlike seawater.

63 (Phillips et al 2011, 109).

64 The whole study does not deal with the technically vital issue of re-distributing existing abstraction wells within the strip (close some, drill others at a new better place), but instead solely focuses on “Additional Water” for Gaza. The very obvious and immediate benefit of re-organizing abstraction, storage and recharge zones of the aquifer is mistakenly categorized and thus rejected from the outset as “Status-Quo” option.

simply buried under the title “need to reduce the abstractions.”<sup>65</sup>

However, based on the aforementioned and rather urgently needed monitoring, new studies should not bury this option but rather inquire how to re-distribute wells and abstractions throughout the strip. In this case, the application of ASR (Figure 9) would create very good conditions for increased abstractions in the hinterland of Gaza. In addition, very low water levels near the border to Israel would invite increased brackish inflows into the strip.

### Large-scale Seawater Desalination

Large-scale seawater desalination is another option to be discussed. Unfortunately, the CSO-G study focuses on this intervention. By the year 2035, an incredible 130mcm/yr of desalinated seawater shall be supplied - most likely - from within Gaza.<sup>66</sup> *Ishrab al-bahr!*,<sup>67</sup> seems to be the ultima ratio of planning. The reliance on desalination is almost complete: by 2035, domestic well pumpage shall be reduced to 47.8mcm/yr, small-scale Mekorot purchase may be modestly expanded to 21 mcm/yr. Desalination alone shall provide for two-thirds of all domestic supplies, double the amount of all other supply forms combined. Here is not the space to raise all technical concerns of such mega-projects (energy, investment costs, sophisticated and vulnerable technology, operation and maintenance requirements and spare parts, etc.). Needless to say, the cost of water under the worst conceivable deal with Israel will be much lower than the best conceivable option for ‘independent and self-sufficient’ desalination within Gaza itself.<sup>68</sup>

Here the political implication of such a direction shall be stressed only because, following Israel in its demand, and shifting away from blue-water supplies from shared resources will seriously undermine the Palestinian negotiation position.<sup>69</sup> Israel can then point to its preferred ‘solution’ for

65 Sub-option under the sub-point of intervention 5a: Short term low-volume desalination of sea water (STLV). Are 36mcm/yr really a “low-volume”, and is a steady flow over hundreds of centuries correctly categorized a “short-term appearance”?

66 Cooperation with Israel and/or Egypt is discussed as well...

67 “Drink the Sea!” is a famous saying, often used by Yassir Arafat to describe a particularly miserable situation.

68 Even for a rich country such as Israel, desalination comes at an enormous price. The costs of the mega-plants mushrooming along Israel’s coast will burden the economy “with a capital investment of US-\$ 56 billion(!) by 2015” (Sanders 2009, 97). Today already 25% of Israeli drinking water are privatized and in the hands of private desalination utilities, run by the gasoline and Israel-chemicals monopolies. Is Gaza the richest country in the Middle East that it can allow itself the luxury of going for the most expensive solution as the main intervention?!

69 Israel is well aware that it owes Gaza additional water (see Kinarti quote initially). It is no coincidence that in the past decade, Israel has been re-drawing its maps. The Coastal aquifer after being shared for the past few million years, now suddenly ends right before Gaza. This is an all too transpar-

the water conflict: Let's not talk about the past, let's not talk about historical water rights. Let's be pragmatic and talk about the future. All the water Palestinians ever need can be taken from the Sea, and thus there is no need to re-allocate our shared freshwater. Blue water will simply never be enough, especially when climate change kicks in, so why waste time with sharing! Let's cooperate – Israel will allow Palestinians to desalinate all water they need or better still sell it to them, in Gaza and the entire West Bank. This line of argument is not a potential development in the future, but Israel has for years already advanced this discourse and sells it to the world. 'Reduced water availability' ranks among the top three items in the Israeli water discourse - for all too obvious hydro-political reasons.

## Water Imports

Imports are the number one priority, historically, politically and technically, from a supply as well as demand management perspective and from a hydrologic, social and economic point of view. The Gaza Strip is a city. This city cannot find enough water from within. It must be supplied from outside. Under international law, Gaza has the right to an equitable and reasonable share of the Coastal Aquifer freshwater vis-à-vis Israel (and Egypt). This share is MORE than what is sustainably extractable from within Gaza. The population of the Gaza Strip has a right to water from Israel, not as a favour, but as part of historic hydro-justice. Also the CSO-G study, concluded that, "In fact, this option represents the strong preference of the project team, amongst all of the options considered in the CSO-G." However, the study considered water delivery from Israel solely under the aspect of a final status deal as an embraced and agreed-upon right of Gaza and therefore dropped the entire option 'for the time being' and until some point "in the future, if circumstances were to change" (p. ii). Not once did the study even mention the obvious, immediately available option that is large-scale<sup>70</sup> transfer from Israel through a simple purchase deal of water, which should be paid to Israel. This omission is most surprising and difficult to comprehend. The water-rich West Bank constantly purchases water from Mekorot (55.4mcm annually)<sup>71</sup> while the water-poor Gazan population should wait until final-status talks. Should they deserve less?

There is no need for Gaza to wait another 15 years.<sup>72</sup> Israel has a water

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ent attempt to evade responsibility by claiming that Gaza and the rest of the Coastal plain were separate and unconnected groundwater basins! "May Gaza just sink into the Sea!", as Rabin wished at the time.

70 not a modest minimal extension of the 5mcm/yr under Oslo

71 Data refer to the year 2010 (PWA-Data Base 2011). Ramallah/El-Bireh now completely depends on 'Israeli' water (16.4mcm purchase in 2010).

72 until a considerable amount of additional water from desal is provided (as suggested in the CSO-G study)

surplus in its southern region, right at the doorstep of Gaza.<sup>73</sup> The main practical obstacle to such an immediate arrangement seems to be the water price.<sup>74</sup> Compared with current water tariffs in Gaza, this price will certainly be enormously high. Two, three or four sheqel per cubic-metre are certainly not affordable for an impoverished population accustomed to network water costs between 0.5 and 1.5 NIS/m.<sup>3</sup> Therefore, it is indispensable that donors participate and subsidize the deal for the ‘interim’ phase<sup>75</sup> until final status agreements (or other political solutions) are reached.

Most important however is not the technical argument, but the political perspective. Large-scale water imports from Israel would be a step into the right direction for Gaza (at the same time, they are a step into the wrong direction for the West Bank). Palestinian leaders, from the outset can and must embed this deal within the overall vision for a historic agreement over equitable and reasonable shares in trans-boundary water resources (the Coastal aquifer and other resources).<sup>76</sup> An indispensable central element of final status talks should be the transformation of such water transfers from a purchase deal into a lasting re-allocation of shared resources and as part of Palestinian water rights.<sup>77</sup> In the long run, Gaza has no alternative but to be supplied from outside the city/strip, just as Munich, Paris, London New York, Tel Aviv, Jerusalem and Ramallah.<sup>78</sup> The pragmatic immediate arrangement can act as a forerunner for a qualitatively different hydropolitical agreement. Palestinian policy makers should not fulfil Israeli hydrostrategic interests to disconnect Gaza from all water negotiations.<sup>79</sup>

Lastly, it cannot be stressed enough how potentially beneficial a shift in relations with donors this would create. By financing high Israeli prices for water to Gaza, the donors, for the first time will become directly and materially interested in overcoming this phase.<sup>80</sup> And time will work in favour of the Palestinians. The more impatient donors become, the better for Gaza. It will raise their readiness to apply pressure on Israel

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73 Beer Sheva district actually has such a surplus that it doesn't even know what to do with recently added additional quantities of water from the Ashqelon desalination plant.

74 With respect to the price, on a technical and political level, there is large disagreement between Israel and the PA about the origin of the water (conventional blue water, or desalinated ‘new’ water).

75 I expect it to be relatively easy to lure donors into such a deal because they love ‘*to promote and support cooperation of any sort, no matter how slight*’. (UNDP - Human Development Report 2006, 228).

76 A plethora of practical options for such deals exists. Gaza supplies could be exchanged against West Bank rights on the Jordan River, to name one of many possibilities.

77 While the West Bank will hopefully end its unnecessary purchases from Mekorot.

78 Ein Samia well field is much further away from the Ramallah city than the powerful Israeli pipelines from the strip.

79 In Annapolis, Israeli negotiators already tried to introduce the Coastal aquifer as two completely separated units within Israel and Gaza...

80 They will have a clear preference – that Israel supplies this water free of charge (or at a minimal affordable price), so that the donor's own contribution finally can end.

for agreements that will end the need for subsidies. Unfortunately, the twenty years of the 'Peace Process' since Madrid, 1991, teach us that the ongoing attitude of donor states is to shrug their shoulders and abandon Palestinians in the crucial question of bargaining power vis-à-vis Israel - in the best case, or to side with Israel - in the more common, worse case. The new deal has the potential to reverse this attitude. And I am not aware of any other such example in the water arena. Palestinian leadership of course must not tire of advocating their rights and their specific positions regarding this water transfer deal with Israel. Unfortunately the recent study commissioned by the PWA conditions the entire issue on the premise of successful final status water negotiations and agreements.<sup>81</sup> This is a deep conceptual misunderstanding: de-facto, for the time being, and until a positive-sum final status agreement over water sharing is reached with Israel, Gaza remains and is treated by PWA as if it was an independent and self-sufficient country, not a vulnerable city in dire need of all kinds of resources from outside.

- Large scale water transfer from Israel is the rightful, legal, efficient and sustainable solution that provides Palestinians with a 'good hand of cards' at the table for final status negotiation talks,<sup>82</sup> should they ever arise. In the mean time, high-quality water supply is secured at affordable costs, subsidized by donors.

## **Gaza Summary**

- A mix of many options and interventions must be considered in Gaza, conventional (re-organising pumpage), marginal (treating waste water), unconventional (brackish desalination on a large scale), innovative (ASR) and, last but not least, exterior supply. Almost all of them are contrary to the ones applicable in and recommendable for the West Bank. Here, the main concern is to end the profound conceptual misunderstanding that Gaza was a country, rather than a vulnerable city. In reality, Gaza can not and should not seek options of self-sufficient water supply from within its more than narrow confines. Any attempt to make Gaza water self-

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81 In this case, time will not work for Palestinians: By desalinating on a large-scale within Gaza, Palestinians will exactly follow and cement the Israeli line of arguments and hydro-political interests.

82 As in every other negotiation, the water negotiations start long before the two sides sit around a table. Palestinians can and should start today with a campaign to promote Gaza's water rights as a pragmatic interim solution, leading into a permanent status solution under an international water agreement with Israel. This requires no submissiveness but a proud Palestinian demand and announcement that this interim price will not be paid forever but negotiated as part of the overall water deal.

sufficient is prone to fail. Gaza cannot and never will supply itself out of its meagre local resources. This is a fundamental difference with the West bank, from an informed hydrogeological, economic and political perspective.

## OPTIONS FOR FINAL STATUS AGREEMENTS

### Water Imports

Time runs against Palestinians. Israel has created massive facts on the ground over the 20 years of negotiations to end the occupation – see Figure 10. Instead of an ‘optimal agreement,’ it is better to speak of a ‘realistic optimal scenario’ for an equitable & reasonable water agreement.

Technically, the agreement should be flexible in view of future economic, demand, and climatic changes.<sup>83</sup> Water allocations must be realistic and guaranteed, unlike the theoretically available Eastern Aquifer allocations under Oslo (difficult to develop even without the Israeli ‘pass system’<sup>84</sup> for well drilling). Hydro-politically, several approaches are possible, as summarized below.<sup>85</sup> Most of them, except option No. 4, would be ‘fair’ and in accordance with international water law, but only if implemented correctly. All matters of negotiations and rights – as in other spheres – remain basically a matter of power.<sup>86</sup> Under the current circumstances, this makes all prospects for negotiations appear rather bleak.

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83 A vibrant Palestinian industrial economy would lower the needs for agriculture (as main demand sector) and vice versa. If Israel’s population would quadruple but Palestine’s would stagnate, so would the relative shares in domestic allocations, and vice versa...

84 The ‘pass system’ was one of the most outstanding and infamous characteristics of South-African apartheid, just as the Israeli ‘permit system’ is in our water sector.

85 Of course, also mixes between the types could be chosen! NAD seems to be closest to Option 1, fixed shares.

86 Zeitoun here differentiates between three forms of power, with a) hard power (such as Israeli destruction of wells, cisterns, reservoirs and entire networks but also its tight bureaucratic control by the means of its permit system), b) the bargaining power – most central here as it immediately touches on the open and hidden bargaining chips of each side in joint negotiations and c) the hegemonic power (such as the discursive and political influence Israel possesses and exerts, for example over the donor agendas and approaches, but also by successfully spreading and maintaining powerful water myths).

## Possible Types of Water Agreements

TYPE	MODEL	ADVANTAGE (+)	DISADVANTAGE (-)
Fixed shares (mcm, %)	Oslo, NAD Geneva	Easy to control, enforce; No post-negotiations	Requires ultimate compromise Inflexible
Flexible shares (for example fixed per-capita)	Shuval/Assaf, Isaac	'Fair', equal	Need to update (technical negotiations); 'Equal' share be can un-fair & 'inequitable' (economic changes & needs for agriculture)
No shares at all (Bi-national)	Brooks/ Trottier	Easy to negotiate	Real negotiations yet to happen!, only delayed JWC-experience: Design for joint mis-management, delays are the norm
No agreement at all	Zionism since 1916; world-wide	No need to negotiate	Serves the strong, hegemonic, technologically advanced and earlier-on developed side
Supra-national unified Utility	Davidson (Brooks/ Trottier)	De-securitizes; Can encourage fair, efficient, ecologic, management	Very strong mechanism needed to under-cut real power asymmetries

One more lesson from Oslo: Secret negotiations directly benefit the stronger, hegemonic or powerful side. Arm-twisting and blackmail, so common in negotiations work much better and can be implemented to a much higher degree when kept away from the public eye. For the weaker side, openness, public visibility and transparency of negotiation process, positions, their handling and implications are an invaluable asset. Hiding the approaches and 'red lines' from the public is not only undemocratic and disrespectful, but it also directly weakens and undermines the bargaining position of the weaker party. Public opinion and public pressure inside the oPt, world-wide, and even in Israel is arguably the most powerful asset of Palestinians under the current extreme power asymmetry. One of the few things that can be done under Oslo (the occupation) is to work on

this public opinion, to isolate Israel's discriminative, unsustainable and colonialist policies and positions and to garner much needed sympathy and support for advancing the agenda, not only on the negotiation table.<sup>87</sup>

**Figure 10:** Israeli 'facts on the ground'

**NEW ISRAELI FACTS ON THE GROUND UNDER OSLO**

- Expansion of Israeli WAB pumpage, new Palestinian WAB wells: zero
- The wall: Separating Palestinians from their future production zones (Latrun to Baqa)
- Delay of Eastern aquifer wells: New wells in the EAB - 12.3mcm/yr
- Expropriation of the main Eastern aquifer outflow area (Feshkha springs)
- 19% of drilling projects implemented
- 166 wells await repair
- Palestinian production reduced: → 118 à 80mcm/yr
- Israeli abstractions increased: → 679 à 734mcm/yr
- Expansion of settlement supply, often with Palestinian consent (!) by 400-500%
- Well, cistern, infrastructure destruction!

### The Win-Win Solution Scenario Has Expired

As the last point, some comments on the current 'positive-sum outcome' (PSO) strategy of the Palestinian negotiation team. This strategy stands for a win-win scenario in which it is asserted that both sides will gain an absolute amount of water, and not where Israel is compelled to concede some of its illegal use.

I am critical of this approach.<sup>88</sup> This offer, from its outset, had a very short half-life time and is – as we speak – about to expire for a very practical reason in that the Palestinian Positive-Sum-Outcome (PSO) suggests a conventional re-allocation of blue water (from Israel to the Palestinians) in combination with a simultaneous increase of supplies through 'new water' added to both (Palestinians & Israel), thus enlarging the pie, and not simply dividing a pie limited to existing water resources, which are likely to be reduced under certain climate change scenarios. In return for giving up some amount, say 800mcm/yr of current use, Israel would be 'offered' an additional amount, for instance 1,200mcm/yr of additional 'new water' from desalination, wastewater reuse and importation<sup>89</sup> (**Figure 11**). The attraction for Israel being that under a peace deal, it would be

87 Israel is very successful and never tires in this – one point for a change, where we could learn a lot from them.

88 How or why should the side that uses 94% of the Western aquifers' (the largest and most contested resource), be rewarded by additional gains? It is not probable that Israel will show gratefulness for this generous offer. I am afraid that, at its core, negotiations will remain a question of give and take: Israel must give, Palestinians must receive water. This is how I read international and human law.

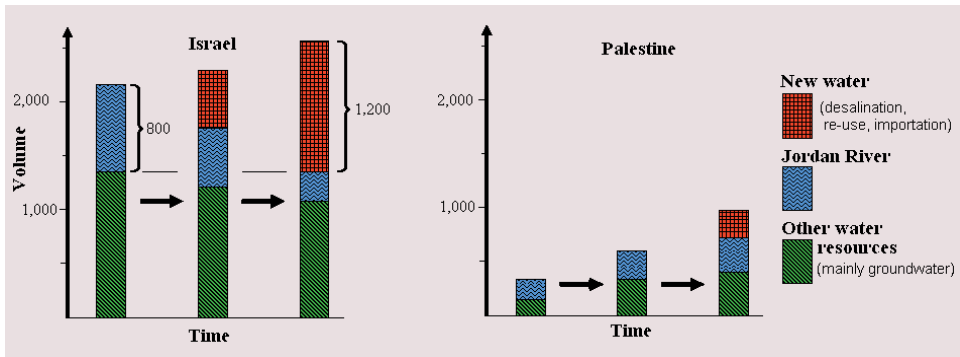
89 A multilateral offer, in which Syria, Jordan, Palestine and Lebanon would benefit from additional quantities of Jordan River use, foregone by Israel.



generously offered funding from third parties (USA) and not have to finance the enormous investment on its own. The practical problem is that this offer has already melted down and will very soon expire. Israel plans to have by 2015 desalination rates of 750mcm/yr and more than 450mcm/yr of wastewater reuse, together 1,200mcm/yr of additional water – already gained, financed on its own and even without a peace deal.

**Figure 11:** Positive Sum Outcome

**Source:** modified after Phillips et al (2008: 35)



*Note: Quantities are approximate and indicative only!*

In other words, Palestinians literally have nothing to offer any longer. Israel would laugh in their face and ask what quantities to ‘win’ are Palestinians talking about? Even if Israel were in favour of the PSO, then any attraction for Israel under the win-win-offer rapidly approaches zero. The additional problem is that after Palestinians having played the ball into the corner of large-scale desalination, it will now be more difficult for Palestinians to return back to the old, conventional win-lose scenario. Imagine that Israel can remind Palestinians of the quantities they offered to desalinate for Palestinians under this deal and STILL demand a win-win deal. This is not a feverish fantasy but already a reality as Israel does not tire in stressing reduced availability and suggesting re-negotiating down the Oslo-amounts from the Mountain aquifer. “It’s not Israel’s fault – it’s climate change”, and this is bolstered by some external analysts anxious to promote any “solution” such as the infamous Swiss/Swedish ‘Blue Peace’ plan<sup>90</sup> from 2011.

90 Written up by the Mumbai-based ‘Foresight group’; agreed-to and funded by the governments of Sweden and Switzerland!

## SUMMARY CONCLUSION

A large number of technical solutions and details have been discussed in this paper. At the end therefore, it is indicated to summarize the main political findings of this analysis.

After 20 years of so-called Peace Process, a fundamental disease has befallen the water sectors of the oPt and is further spreading at an alarming rate. This disease can be termed 'professionalitis.' This term is created to express the problem of the so-called 'professionalization' of water sector approaches, interventions and institutions, by authorities, local and regional institutions and NGOs. The major task and challenge in the water sector is not any longer to overcome the destructive effects of the occupation but rather to plan around this challenge, trying to avoid the confrontation with the overwhelmingly strong occupying power.

Instead of directing the sector along an analysis of the main political and hydro-political requirements and historic missions, seemingly a-political technical approaches are chosen that remain within the framework of what is allowed under the occupation and acceptable to Israel. This shift in the water sector over the past two decades was largely facilitated by the donors who direct their funds at projects that seem to address the water crisis but without confronting Israelis in loosing their asymmetric, one-sided and privileged access to shared natural resources. Unfortunately, Palestinians are instead following a track of stemming against the tide. In the light of the harshness and intransigence of the Israeli daily workings of the occupation, this may be somewhat understandable. This dilemma becomes most dangerous when Palestinians, whether leaders, actors of beneficiaries of water projects stop being aware that they are constantly choosing the sub-optimal option in order to avoid the ire of the occupier.

Yet the fact remains and the record shows that plain and simply, the sub-optimal options have failed. Palestinian autochthonous access to their very own water in the West Bank<sup>91</sup> has diminished, not only in per-capita, but in absolute terms. In Gaza, water quality is deteriorating at an alarming rate.

'Back to the basics' implies therefore that a genuine make-over of the current approaches, strategies and priorities is needed, from a technical as well as political point of view.

This task may seem to be discouraging and intimidating. However, the

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91 From wells and springs – the official 'existing use' according to the Oslo-II agreement in 1995 was 188mcm/yr from the 3 Mountain aquifers. Today, this extraction rate – far from having reached the modest amounts promised in Oslo – has actually shrunk. According to the PWA-data for the year 2010, all wells and springs now yielded a mere 98.3mcm/yr (West Bank water supply 2010; PWA water tables, soon to be published at: <http://www.pwa.ps>).

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facts on the ground hardly allow any other answer. A continuation with technical projects that try to accommodate the status-quo are a luxury that Palestinian aquifers and, more importantly, the Palestinian population simply cannot afford.

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# Analysis of Wastewater Management Sector in Palestine

Nidal Mahmoud and Adel Yasin

## BACKGROUND

Palestine is located in Southwest Asia on the Eastern shore of the Mediterranean, in the heart of the Middle East. Palestine, like most other middle eastern countries, are generally characterized by aridity and have very limited water resources. Therefore, pollution prevention of sparsely available water and development of non-conventional water sources, like reuse of wastewater, are receiving more attention. Unfortunately, the status of wastewater management in Palestine is extremely critical. With the very limited existing disposal systems throughout the country, Palestine is now threatened by this waste, which might soon infiltrate and pollute underground water resources unless measures are taken immediately.

Palestinian and international interest in the development and rehabilitation of the water and wastewater sector began in the early stages of the establishment of the Palestinian National Authority after the Oslo agreement in 1993. The sector's poor condition following years of systematic negligence by Israel throughout the early history of its occupation of Palestinian lands, resulted in an insufficient and completely inadequate infrastructure. Under its direct occupation, Israel also prevented the Palestinian people from controlling, developing and managing their own water resources in line with their inherent rights under international law, as well as their requirements to achieve statehood. When the PWA assumed a lead role in the sector, according to a strategic vision based on equity and sustainability, there was a weakness in the institutional structures in charge of managing water and wastewater services.<sup>1</sup>

The wastewater sector in Palestinian territories was completely neglected under Israeli occupation since 1967. The occupying power failed to develop infrastructure in the Palestinian territories according to international conventions. The sector has also been marginalized since the creation of the Palestinian Authority due to the pressing need of providing citizens with drinking water, which has monopolized most of their efforts and investments.<sup>2</sup>

To establish a realistic and applicable participatory strategy for the sector,

<sup>1</sup> World Bank, *Assesment of restrictions on Palestinain water sector developepment* (World Bank, 2009), No. 47657-GZ.

<sup>2</sup> Palestinian Water Authority, *National Sector Strategy for Water and Wastewater in Palestine* (Palestinian Water Authority, 2010).

the national team built upon the material realities of the current situation, including all basic elements that constituted and affected the sector such as the technical condition of the service, the legal framework, institutional structure and organizational framework, control and monitoring tools, as well as the participation and decision-making mechanisms at all planning and management stages<sup>3</sup>

This paper aims at addressing the status of the wastewater sector and analyzing the main challenges facing sector development.

### Water Resources

Blue water resources, including those shared with Israel, are estimated at approximately 2,989 mcm per annum. These resources include groundwater, representing approximately 1,454 mcm; surface water, especially due to the natural circulation of the Jordan River, estimated at 1,320 mcm; and runoffs, which make-up an estimated 215 mcm.<sup>4</sup> Of these resources, approximately 2,570 mcm are used for various purposes, the share that Palestinians utilize represent a mere 271 mcm, (i.e. around 11%), while the remaining 89% is exploited by Israel. In contravention of international humanitarian law, Palestinians are totally banned from accessing and making use of Jordan River water, despite their specific riparian right to do so in accordance with international law<sup>5</sup>. Average groundwater resources collected and abstracted since the Oslo II in the Western, North-Eastern and Eastern basins, located within the borders of the West Bank and Israel, are quoted by Israeli sources at 734 mcm per year. Palestinians utilized share of this water, which was only 94 mcm in 2009, is less than 13% while Israel utilized share is nearly 87% of these trans boundary waters<sup>6</sup>. Data indicates that inside the West Bank, the total abstracted water by the Palestinians from 235 wells has dropped to approximately 42 mcm in 2009, while 56.9 mcm/year is abstracted from 40 deep illegal settler wells drilled by the Israeli Occupation after 1967<sup>7</sup>. The annual supply in Gaza Strip is estimated at approximately 167 mcm used for various purposes including 82 mcm for domestic and industrial use and approximately 85 million for agricultural purposes, thus exceeding the basin's recharge capacity by three folds. This has, in turn, led to the deterioration of the water quality down to a level that does not even fulfill the World Health Organization's minimum standard requirements<sup>8</sup>

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3 Ibid.

4 Ibid.

5 World Bank, *Assesment of restrictions*.

6 Water Authority, *National Sector*.

7 Ibid

8 B'Tselem, *Foul Play-Neglect of wastewater treatment in the West Bank* (B'Tselem, 2009).



Since its inception, the PWA has inherited a situation where 423 Palestinian communities in the West Bank were deprived of water services, to say nothing of wastewater services. Selling water using tankers and other primitive means had become a major pre-occupation of citizens, with a daily per capita quota for large numbers of Palestinians less than 25 liters, representing the minimum required for human subsistence indicated by WHO standards, regardless of other human needs. The situation was not much better in communities with water networks, most of which suffered from decrepit infrastructure where losses in some cases exceeded 53%, in addition to the extremely limited quantities of water distributed intermittently. In many cases, per capita supplies never exceeded 50 liters per day, with average losses estimated at 43% in old water networks.<sup>9</sup>

## OVERVIEW OF SECTOR STATUS

The occupation forces did not build any efficient wastewater treatment plants with the exception of a few collection and primary treatment ponds in Tulkarem, Jenin, Ramallah, as well as in the centre and north of Gaza. Those ponds were built in the mid-1970s' and none of them were developed or expanded until the advent of the Palestinian National Authority and the creation of the PWA in 1996, despite the substantial increase in wastewater quantities flowing into those ponds and plants, which are all operating beyond their maximum capacities. This has led to water being discharged in areas surrounding these plants, causing multiple environmental and sanitary problems. Throughout this period, wastewater from Palestinian cities has been and is still being discharged in West Bank valleys and natural waterways. In some cases, water even flows inside of the green line, where it is collected and treated in treatment plants built at the expense of the Palestinian people. Moreover, treatment costs are directly deducted, every month, by the occupation from the Palestinian clearance account without any valuation of the treated waters, which are reused by the Israelis. In the Gaza Strip, partially-treated and untreated wastewater is pumped out into the sea, causing major damage to the marine environment and to consumers of local sea fish.<sup>10</sup>

Wastewater quantities generated yearly in Palestine are estimated at approx 106 mcm of which 50 mcm in the West Bank and 56 mcm in Gaza, in addition to 39 mcm of untreated wastewater discharged by settlements and their industrial zones into the West Bank environment. Approximately 10% of Palestinian generated wastewater is treated and a

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<sup>9</sup> Water Authority, *National Sector*.

<sup>10</sup> Ibid

small part thereof is reused.<sup>11</sup> According to ARIJ (2011) the total volume of wastewater generated in the West Bank in the year 2008 was estimated at 47.31 mcm. Of this amount, 13.5 mcm (30.1%) is collected by the sewage network. Only 63 localities, out of 510 localities, are served by a sewage network. However, the wastewater collection network is limited to the major cities and refugee camps in the West Bank. Sewage networks in the West Bank are rarely supported by wastewater treatment facilities. The main wadis that convey wastewater are Wadi Zeimar, Wadi el-Sajour (Nablus governorate), Wadi Beitunia (Ramallah governorate) and Wadi as-Samen (Hebron Governorate).

The PNA has built four treatment plants. Three of them located in the Gaza Strip have a partial treatment capacity of 35 mcm per year and one located in Al Bireh in the West Bank has a treatment capacity of up to 2 mcm.<sup>12</sup> Work is underway on completing Gaza North WWTP, Gaza Central WWTP and Rafah WWTP. Work has started on building the Nablus West WWTP, and work is also expected to start on building Ain Jeriout WWTP (Ramallah), Hebron Regional WWTP, Tayaseer WWTP (Toubas), Nablus East WWTP, Jericho WWTP. In addition, there will be six non-centralized plants in the West Bank; exact locations are not yet defined. Regarding the Salfit plant, the necessary studies and plans have been completed. The existing and proposed central WWTPs are shown in Map 1.

Most major cities are totally or partially equipped with wastewater networks, such as Hebron, Nablus, Gaza, Beit Hanoun, Jenin, Tulkarem, Ramallah, Al Bireh, Bethlehem and Salfit. As for refugee camps, UNRWA has laid down wastewater networks in the majority of West Bank camps, such as Jenin, Balata, Askar, Jalazoun, Dheisheh, etc., while wastewater collection services are still unavailable in all Gaza camps with the exception of Jabalia. Wastewater network services are thus provided to 35% of the West Bank population and 65% of the Gaza Strip population. The other major part of the population has cesspit sanitation. The situation is particularly critical in the rural communities.

There is an old existing wastewater treatment plant (WWTP) located in Ramallah city in addition to Tulkarm pretreatment wastewater plant. The old WWTP in Jenin is currently under rehabilitation and is expected to start operation at the end of 2011.

Some non-governmental organizations (NGOs) and academic institutions have established collective wastewater treatment systems in several localities

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<sup>11</sup> B'Tselem, *Foul Play-Neglect*.

<sup>12</sup> Water Authority, *National Sector*.

that lack sewage collection networks and depend on cesspits for wastewater disposal. Such wastewater treatment systems are composed of a sewage collection network or a vacuum truck collection system, plus a collective WWTP. Maps 2 shows the location of the existing collective treatment systems, the applied wastewater treatment process, the operational year of the system, the status of WWTP and the implementing institution<sup>13</sup>.

Cesspits are purposely designed and constructed without concrete lining in order to allow seepage into the ground, thus threatening groundwater quality. With time, cesspits are filled with wastewater, which necessitates periodical emptying by vacuum tankers. This is a costly task that often represents more than 20% of a family income. Due to the problems experienced with cesspits and the need for irrigation water, around 800 non-conventional house-on-site management systems have been introduced in the Palestinian rural areas since the late 1990s. Most of the implemented systems comprise separate collection and treatment of black and grey water. The black water is disposed and stored in cesspits, and the grey water is treated in grey water treatment system (GWTS). The treated grey effluents are mostly disposed by means of drip irrigation systems for irrigating homes' gardens. Those sanitation projects have been financially supported mainly by international aid agencies and implemented by local non-governmental organizations (NGOs).

According to an ARIJ survey, 25% of the sewage networks in the West Bank are in very good status, 30% of them are in good status and 8% of them are in bad status. Moreover, many of these networks are old, poorly designed and suffer from leakage. Furthermore,, many sewage collection pipes have a small diameter (8–12 inches), insufficient to deal with the input into them, making blockage and flooding a frequent phenomena. In addition, most of these networks serve part of the locality where the remaining wastewater is mainly collected through cesspits<sup>14</sup>.

Most of the networks receive industrial wastewater as product of several industries, such as the food industry, the dairy industry, quarries, olive oil mills, textile factories and car wash garages. However, a small quantity of the industrial wastewater is pre-treated before being discharged into the public sewage network .<sup>15</sup>

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13 Applied Research Institute- Jerusalem, *A proposed Environmental Sound Wastewater management- System for the West Bank: Summary report* (Jerusalem: Applied Research Institute- Jerusalem, 2011).

14 Ibid.

15 Ibid.

## Challenges Facing the Development of Wastewater Sector

Based on our accumulated knowledge and as experts working with PWA since it was established in 1996 (this work is mainly meetings with donors, meeting with JWC, surveying the needs for sanitation, reviewing technical reports and national and international studies, and scientific research reports), the following challenges were defined as the main challenges facing the development of the wastewater sector and draws the roadmap to improve the wastewater sector.

- **Absence of National Strategy and Policy for Wastewater Management**

Since the establishment of the PWA in 1996, the concentration was on developing water resources and supply, since more than 70% of Palestinians lacked enough water supply for drinking and domestic purposes. Consequently, most of the funds raised were utilized in water infrastructure, while much less was utilized to develop wastewater infrastructure. This was justified by the PWA as the primary and immediate priority was for water. Also, the Israeli delays in giving the JWC approval and the construction permit by civil administration made the donors less interested in investing in wastewater sector.

Due to a lack of investment in the wastewater sector, the PWA has failed to define a national wastewater strategy as it was not a priority. The influx of aid to the sector has pushed the Authority to take on construction responsibilities, thus blurring its nature and role, whether in its own eyes or in those of other entities. It has become difficult to distinguish between the Authority's role as a sector regulator and planner, and as an entity in charge of implementing and following up on relevant projects. The absence of a national wastewater strategy and policy has resulted in a non-optimal use of funds, absence of a master plan, absence of an action plan and prioritization, and mismanagement and overlapping of projects and efforts.

The following elements are suggested as the basis for the policy formulation:

a) National wastewater master plan

Wastewater collection methods (collective (networks) vs. individual (i.e. septic tank) [*By combining the classification criteria of the wastewater treatment plants in the West Bank with the criteria usually applied in Europe, three types of facility can be defined according to the size of the population served* <sup>16</sup>:

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<sup>16</sup> Ibid.

- *Autonomous systems: individual houses or family units not exceeding 50 p.e.*
- *Collective systems: small villages (between 50-2,000 p.e.)*
- *Centralized systems: medium-sized and larger towns (> 2,000 p.e.)].*

There is an absence of a formulated national policy regarding the envisaged Wastewater Institutional Setup (including questions regarding centralized or decentralized management setup; public or private sector; revenues –full cost recovery or operational cost recovery only; centralized or decentralized WWT systems; grey or total). Even the existing by-laws of imposed connection to the sewer system, and prohibition of the construction of new cesspits and the demolition of existing cesspits in the case of the presence of a sewer system are not enforced.

- Wastewater and sludge treatment (regional central, community based, household onsite)
- Treated effluent and sludge reuse
- Wastewater legislations (water and environment laws, bylaws, instructions)
- Institutional setup (regulator, monitoring, operation)
- Governmental and donors financial support and subsidies
- Involvement of civil society organizations (NGOs, academic, private sector)
- Public awareness
- Capacity building
- Wastewater standards, specifications and guidelines.
- Affordable tariff system

- **Selection of Appropriate Technologies**

One of the main challenges that face the wastewater sector development is the selection of appropriate technologies for wastewater and sludge treatment. The decision-making process for selecting the most appropriate technology must include several criteria (technical, economical and environmental). Considering the peculiarities of the West Bank, when selecting the adequate treatment systems those that present low-energy consumption, low maintenance and efficient operation under fluctuating conditions (load and flow) should be promoted. There is a wide range of technologies for the treatment and regeneration of wastewater that could be implemented in the West Bank.<sup>17</sup>

<sup>17</sup> Ibid.

When selecting the technology and/or the treatment system, many technical and environmental factors have to be considered. Likewise, when selecting the technology to be applied, the legal requirements for the final effluent quality, either for its discharge in the environment or its reuse, must be taken into account. It is therefore necessary to know the basic characteristics of each technology so as to be able to choose the correct option when planning a new action.

The following are suggestions for the principles for selecting the appropriate technologies:

- a) Wastewater characteristics, which are different from other countries due to shortage of water supply
- b) Land availability for construction and expansion where the land is limited and expensive
- c) Capital and operational and maintenance cost
- d) Energy consumption where the price of energy is expensive, and electricity source capacity is limited
- e) Technical operation (availability of experienced operators and technicians, electro mechanical spare parts)

The selected technology and treatment scheme should be sustainable in terms of achieving imposed effluent quality, affordability and local capability of proper operation and maintenance. It is worth learning from lessons and obtained experience from existing WWTP and neighboring countries.

- **Final Effluent Disposal**

The final disposal of treated effluent and sludge is a core concern in planning the wastewater sector. In principle, agricultural reuse is foreseen as the first choice, due to water scarcity, but conditioned by social acceptance and the potential for reuse. The second option for final effluent disposal is indirect artificial recharge. Finally, regional re-allocation of treated effluent and stabilized sludge might be considered in case there is no local potential reuse.

The following criteria is suggested for Reuse of Treated Effluent:

- a) Treated effluent should be subsidized in the short term (i.e. 3-5 years) in order to convince the farmers of the feasibility and added value of increasing productivity by using treated wastewater (content of fertilizers; supplementary irrigation)
- b) During the first period of using treated effluent try to avoid irrigating vegetables and main crops like olives in order to minimize the risk of

failure, so it should be reused in fodder and industrial crops .<sup>18</sup>

- c) Monitoring of long-term environmental impact on soil and groundwater.

- **Enforcement and Formulation of Laws and Legislations**

The current different laws namely water law, environmental law and local government law overlap.

The modified water law has not been approved yet by the Legislative Council. Several bylaws have been submitted either by PWA or MoLG to the ministerial council have not been approved yet (like water tariff, house and establishment connection to wastewater collection system, and the regional utilities and service providers bylaw).

The following points are suggested to enhance and empower legislation enforcement:

- a) The PWA should modify and upgrade the water law to overcome all weak and missing points that might arise.
- b) The structure of the water sector should be reviewed and restructured so as to separate between the regulation, implementation and policy making.
- c) PWA should utilize the incentives and penalty tools to create a suitable environment to apply the legislations.

- **Affordability and Willingness to Pay**

The Palestinian experience with the financial element of sustaining sanitation services is not very promising. For instance, in Al-Bireh City, only 40% of the running cost of wastewater services is retrieved while other cities like Ramallah, Hebron, Nablus, Tulkarm, and Jenin are still managed without defined tariff policy. Considering the fact that the pay back for drinking water supply services is limited, people's willingness to pay for wastewater services is questioned. The following points are suggested to achieve affordability (applied to guarantee a sustainable wastewater sector and achieve adequate environmental protection):

- a) PWA should select the appropriate affordable treatment technologies to be considering the socio-economic aspects of the beneficiaries.
- b) PWA should enforce the Polluter Pays Principle.
- c) The government should partially subsidize wastewater services like the capital cost and partially the operation and maintenance costs.
- d) Gradually PWA should achieve the full cost recovery as a long-term goal.

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<sup>18</sup> Ministry of Agriculture, Technical instructions of treated effluent reuse in agriculture (Ministry of Agriculture, 2011).

- e) With respect to the Palestinian wastewater treated in Israel, PWA should do their utmost efforts to minimize as much as possible the quantities crossing the borders and to treat it locally, where this will reflect positively by creating new jobs, reduce treatment cost, and provide an additional water source.
- f) The collected fees for wastewater services should be utilized only within the sector to ensure the sustainability of the services.
- g) The wastewater tariff should be variable according to level of collection services, level of treatment, and reuse of treated effluent.

- **Capacity Building and Financial Management**

A clear consequence of the poor wastewater management is the limited investment in people and institutions who are qualified to manage the wastewater facilities. The clear limited capacity in the institutions and workers in the field is evident even at the Palestinian Water Authority and Ministry (PWA) of Local Governorates (MoLG), as well as at the non-governmental organizations and the private sector. The investment in people for capacity building should include every person working in the field regardless of his/her hierarchical status, including engineers, operators, accountants, etc.

The following points are suggested as a base for capacity building:

- a) Develop education and training programs to enhance building capacity of human resources working in the wastewater sector in terms of technical, financial, administration managerial and decision making level.
- b) Develop the tools and processes that enable achieving the maximum efficiency of work like software and hardware, maintenance equipment, lab instruments, etc.

- **Institutional Setup**

PWA as the regulator of the wastewater sector in cooperation with the stakeholders will be responsible for the whole process of wastewater sector improvement in all stages of planning, fund raising, implementation, operation, monitoring and evaluation. An institutional framework will be developed to set down the respective roles, mandates and responsibilities, authority, legal provisions, systems and procedures of all sector stakeholders.



- **Israeli Impositions**

Israel's neglect is a major reason for the lack of wastewater treatment facilities in the West Bank. For a combination of reasons, described below, new wastewater treatment facilities have not been built in the West Bank.

The occupation used the second Oslo Agreement to consecrate its policy of depriving Palestinians of wastewater services by <sup>19</sup>

- a) The Civil Administration's unjustified and deliberate delay of procedures for approving treatment plant projects, for as long as ten years in some cases;
- b) Israel's frequent insistence on hooking up settlements to plants subject to licensing applications;
- c) Israel's attempts to impose upon Palestinians very high standards that exceed those used in Israel itself, thus causing a major increase in building and operation costs, while such standards are not required by the WHO;
- d) Decreasing donor funds allocated to these plants due to the aforementioned complications and delays.

Current Israeli policy exploits the fact that Palestinian wastewater is not treated inside the West Bank and flows into Israel. Israel treats some of this wastewater in facilities inside its sovereign area and uses it for agricultural irrigation and to rehabilitate streams, yet deducts the cost of building these facilities and of the treatment from tax monies owed to the Palestinian Authority<sup>20</sup>. The total accumulative costs deducted by Israel amount to approximately 220 million Israeli Shekels of Palestinian Tax Revenues for Wastewater Treatment <sup>21</sup>

- **Fund Raising**

The investment needed to build treatment facilities for Palestinian communities in the West Bank is currently estimated at 1.2-1.8 billion dollars. Mobilizing this huge amount of money is a big challenge. The obstacles imposed on constructing new wastewater treatment plants have been negatively reflected on the willingness of donors to pay for constructing wastewater treatment plants, and so PWA has more of a challenge in convincing the donors to invest in the wastewater sector. The finance of constructing wastewater infrastructure facilities will need in addition to external donation, local contribution, which is also a challenge considering the people willingness and ability to pay.

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19 Water Authority, *National Sector*.

20 B'Tselem, *Foul Play-Neglect*.

21 Water Authority, *National Sector*.



## RECOMMENDATIONS

- Wastewater management in Palestine should be on the top of the PWA agenda in order to protect the available water resources and public health, as well as to create additional water resource for irrigation.
- PWA is advised to cooperate with other national institutions including governmental and nongovernmental, as well with regional and international leading organizations to scandalize the Israeli impositions that undermine Palestinian and international efforts to prosperity manage wastewater in Palestine. At the same time, PWA should perform all possible studies and institutional arrangements.

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