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Hydro-Hegemony, Water Governance, and Water Security: Palestinians under Israeli Occupation in the Jordan Valley, West Bank

Michelle Rudolph

International Institute of Social Studies (ISS), Erasmus University Rotterdam, The Hague, The Netherlands;
michelle-rudolph@outlook.com

Rachel Kurian

International Institute of Social Studies (ISS), Erasmus University Rotterdam, The Hague, The Netherlands;
kurian@iss.nl

ABSTRACT: 'Hydro-hegemony' typically refers to the power-related tactics and strategies used by stronger states in transboundary water disputes that prioritise their access to water and compel weaker entities to submit to these conditions. Such asymmetrical power relations also have a bearing on the nature of water governance, and thereby, the water and human security of vulnerable water users, as detailed in the conceptual framework of this article. Our analysis of the case of the West Bank, and more specifically the Jordan Valley, shows how Israeli control over the region – most visibly manifested in superior weaponry along with greater economic and technological capacities – influences the institutions of water governance as well as decision-making and implementation processes in favour of Israel while deliberately generating water and human insecurity for Palestinians. During fieldwork in 2019, we interviewed Palestinian water users in the Jordan Valley as well as representatives of water governance and other related institutions in the West Bank. Their 'voices' highlight the different dimensions that lead to water insecurity being structural, systemic, and pervasive in the daily lives of Palestinians. Their water insecurity in the context of military occupation is linked to their overall human insecurity. As a result, Palestinians are denied not only their right to water but potentially also their right to life.

KEYWORDS: Hydro-hegemony, water governance, water security, human security, Palestinians, Jordan Valley, West Bank

INTRODUCTION

The West Bank, a landlocked territory of about 5700 km² bordered by Jordan in the east and Israel in the north, south, and west, has been under Israeli military occupation since 1967. In 2019, it had an estimated population of 2.99 million Palestinians, and an additional 0.69 million Israeli citizens lived there in settlements (including East Jerusalem) (PCBS, 2019; PCBS, 2020). These settlements are illegal under international law, as Article 49(6) of the 1949 Geneva Convention IV – also signed by Israel – prohibits an occupying power from transferring its civilians into the occupied territory (ICRC, 2018). There are two abundant freshwater sources in the West Bank, both of which are under Israeli control: the Jordan River, and three aquifers that are collectively referred to as the 'Mountain Aquifer' and that extend through the West Bank and Israel (World Bank, 2009). Israel's control over water resources and its influence on the system of water governance have resulted in serious challenges to Palestinians' access to sufficient and safe water; such access is a human right acknowledged by the United Nations General Assembly in 2010 (UNGA, 2010). Likewise, lack of access to water has had direct consequences for Palestinian agriculture, which was the mainstay of the economy until the 1970s (FAO, 2008). Agriculture also embodies social,

historical, and national intangibles (MA'AN, 2012), as expressed in the popular Palestinian proverb: "If agriculture is fine, then the country is fine" (MOA, 2017: 9). Under current conditions, many Palestinians experience low returns on agriculture, and they are forced to abandon their farming land and seek alternative forms of livelihood (OCHA, 2020; Hareuveni, 2011).

This article examines how laws, policies, and practices of water governance in the West Bank have affected the water and human security and rights of Palestinians in the region. It begins by developing a conceptual framework that links hydro-hegemony, water governance, and water/human security and that specifies the relational and power-imbued processes influencing users' access to water. Using this framework, it analyses how prevailing forms of material, bargaining, and ideational power, as aspects of hydro-hegemony, have manifested in water governance in the West Bank since the start of Israel's military occupation in 1967. The article focuses on the experiences of Palestinians in the Jordan Valley, a region with favourable groundwater resources, land, and climatological conditions for large-scale irrigated agricultural production (HRW, 2015; Melon, 2018). On the whole, it argues that asymmetrical power relations in water governance have resulted in water and human insecurity becoming structural and systemic in the daily experiences of Palestinian people. As a result, not only are Palestinians denied their right to water, but the cumulative effect is a more fundamental existential insecurity that challenges their right to life.

While historical and contemporary research and data are used in this article, special attention is given to information based on 27 in-depth interviews conducted in 2019 in the West Bank, mainly with Palestinian women and men from various communities in the Jordan Valley (locations indicated in Figure 3). Interviewees included water users as well as representatives of key institutions, such as the Palestinian Water Authority (PWA), the Union of Agricultural Work Committees (UAWC), the Palestinian development and training institution MA'AN, and the Water and Environmental Development Organization (WEDO). Most of the interviews were conducted in Arabic, with English interpretation provided by colleagues from the Jordan Valley, and permission was given by the interviewees to use the information that they offered during interviews. This primary data is triangulated here with available secondary research and statistical material on the subject.

This article contributes in four ways to research on water conflicts. First, it broadens the scope of the hydro-hegemony framework to analyse how water governance influences water/human security and the rights of water users. Second, it extends the framework's application beyond transboundary water conflicts to the field of water governance within an occupied territory or a conflict zone. Third, it uses the extended framework to understand how water governance influences water insecurity and how the latter, in turn, results in human insecurity and the denial of rights in the daily lives of Palestinians in the Jordan Valley. Fourth, it highlights the 'voices' of the Palestinian people, giving significance to their own experiences, opinions, and reflections. This directly responds to the concern expressed by Edward Said (1984: 38) about the "absence of a Palestinian narrative" and the significance of "valuable testimonial".

The outline of the article is as follows: Section 2 presents the conceptual framework linking hydro-hegemony, water governance, and water/human security. In Section 3, this framework is used to analyse water governance in the West Bank. Section 4 focuses on prevailing water insecurity dimensions experienced by Palestinians in the Jordan Valley and their impact on Palestinians' overall water/human security and related rights. Bringing together these different aspects, Section 5 concludes on the structural nature of water insecurity and the fundamental existential insecurity for the Palestinians in the area.

HYDRO-HEGEMONY, WATER GOVERNANCE, AND WATER/HUMAN SECURITY

The conceptual framework of hydro-hegemony as put forward by Zeitoun and Warner (2006) is an important contribution to understanding transboundary water conflicts in contexts of physical and structural water scarcity. According to the authors (Zeitoun and Warner, 2006: 436), hydro-hegemony

outlines a "suite of power-related tactics and strategies" exercised by stronger riparian states to control water access, supply, and quality. Such practices have resulted in what could be viewed as a form of enforced cooperation, in effect hiding key power asymmetries that can, for example, lead to inequitable distribution of resources and benefits (Zeitoun and Warner, 2006). Cascão and Zeitoun (2010) subsequently developed the 'four pillars of power' in hydro-hegemony: geography (location to control the flows of water), material power (military might, economic and technological advantages, and international financial and political support), bargaining power (who sets the rules of the game and enforces compliance with them), and ideational power (the capacity to legitimise ideas through knowledge structures, discourses, and narratives). These fields of power can be used concurrently or in different combinations (Cascão and Zeitoun, 2010). The framework of hydro-hegemony has been developed further over the last decade and used to analyse transboundary water conflicts in different contexts, its significance being that "it scrutinizes discourses and underpinning power structures" (Warner et al., 2017: 4). While the 'four pillars' of hydro-hegemony identify important power-related spaces and processes, they assume somewhat different dynamics in the context of an occupied territory or a conflict zone. The military strength and superior weaponry of the 'occupier' (the hegemon), whether used in practice or as a threat, are decisive in enforcing its interests in water access and distribution. Since such demonstrations of force by the occupier are usually backed by other aspects of material power, the non-hegemon may find that its bargaining power to gain access to water is seriously compromised.

Such power asymmetries also influence the nature of water governance in an occupied territory or a conflict zone. Practitioners and researchers have argued over what constitutes water governance (Jiménez et al., 2020). The technocratic focus of water governance – which concentrates on the procedural arrangements between the actors and structures involved in designing and implementing water policies – has been criticised for not considering how water governance functions in specific contexts and the consequences that this has for local water users (e.g.; Cleaver and Hamada, 2010; Durán-Sánchez et al., 2019). Some have stressed that distributional issues are integral to water governance and that these can reflect broader structures of dominance and injustice (Zwarteveen, 2015; Zwarteveen et al., 2017). Zwarteveen et al. (2017: 3) also suggest that water governance should consider people's "everyday dealings with water". We propose that the framework of hydro-hegemony can be extended to analyse how water governance responds to the influence of material, bargaining, and ideational power in decision making and in implementation processes, and the consequences these hold for water distribution and the right to water. Such an extended framework would allow for a deeper understanding of how water governance under military occupation, and more specifically hard power, can structurally deny or promote water access to specific individuals and groups, influencing, as discussed below, their water/human security and human rights.

Definitions and assessments of what constitutes water security vary (Cook and Bakker, 2012; Zeitoun et al., 2016). According to United Nations Water (UN-Water, 2013: 1), water security is "the capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability". A limitation of this definition is its focus on reproductive needs (domestic use and human health) and conservation (ecosystem services); it gives little importance to productive needs despite the fact that, worldwide, most water is used for agricultural and industrial purposes. In addition, and although it provides important standards for water security, such a definition may be used to promote a depoliticised perspective of the concept. This gives way to the 'naturalising tendency' to find physical reasons – such as the lack of rainfall – for the problem of water insecurity while failing to challenge unfair water distribution processes (Loftus, 2015). The use of indices and measurements of related concepts, such as water scarcity and water stress, to understand water insecurity also has limitations. Water insecurity is more comprehensive and, therefore, difficult to quantify (Grafton, 2017). Moreover, an exclusive focus on indices risks overlooking power relations that can result in water security

or insecurity (Empinotti et al., 2019; Loftus, 2015). Indices also cannot fully capture how political and other forms of exclusion in society, including those related to income, gender, religion, and nationality, affect access to water and water insecurity (Zeitoun et al., 2016).

Zeitoun's 'global web' of national water security is a useful tool that helps bring together the range of natural security resources such as water, energy, and food, on the one hand, and social groups (individuals, communities, and nations) that interact through political, economic, and ecological processes to influence water (in)security, on the other (Zeitoun, 2011). Water security understood in this way means a balance between the natural resources and equitability between individuals, communities, and nations involved (Zeitoun, 2011). The relational aspect of water security is also emphasised by Jepson et al. (2017a: 47), who suggest that water security should be viewed as a "hydro-social process rather than a static goal or objective". Drawing on Amartya Sen and Martha Nussbaum's 'capabilities approach' (e.g.; Sen, 1999; Nussbaum, 2009), Jepson et al. (2017a: 50) characterise water security as "a relationship that describes how individuals, households, and communities navigate and transform hydro-social relations to access the water that they need and in ways that support the sustained development of human capabilities and wellbeing in their full breadth and scope". Such a perspective incorporates the "interconnectedness of water rights and water responsibilities" as a core to water security (Jepson et al., 2017a: 50). While these discussions of water security emphasise important normative standards and processes, they fail to consider the conditions within an occupied territory or a conflict zone. That is because they assume that the state is key in enhancing capabilities and providing water and human security in the context of sustainable human development. Such principles of development are in contradiction with the very nature of hard military oppression and the use of unilateral force for the appropriation of water.

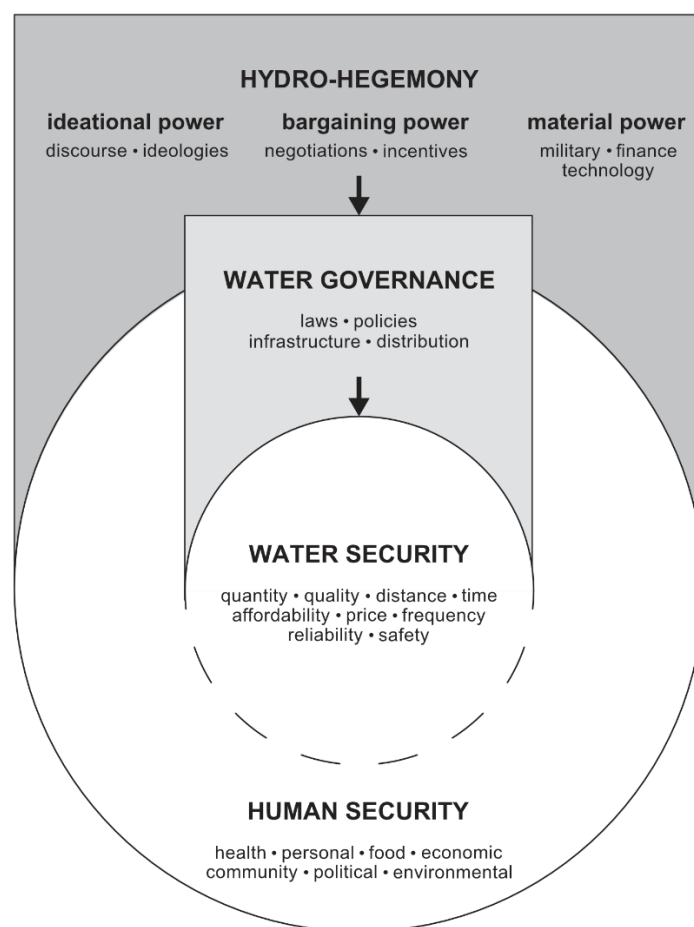
What is overlooked in the previously discussed definitions of water security is how the notion is perceived and experienced by water users in their daily lives. Water security of individuals and groups is dependent on their specific social, economic, and political contexts, which are further intersected by other power relations, such as those based on class, gender, and ethnicity, all of which influence access to water (Zeitoun et al., 2016). A more nuanced and authentic understanding of water (in)security would consider a range of water-related parameters, their interlinkages, and cumulative day-to-day impacts in order to assess how water (in)security is experienced by different individuals and groups. For water users, water security involves accessing adequate quantity and quality of water at an affordable price, parameters that are widely acknowledged as essential to all water users (Jepson et al., 2017b). Other water security parameters include the acceptable frequency and reliability of water supply as well as the ability to access it within a reasonable distance and time (Jepson et al., 2017b). In addition, physical safety of individuals and communities is also a key dimension of water security for those living under military occupation. Under such circumstances, the hegemony of the occupying force over water governance could favour water access for its citizens while working against the water security of the occupied group(s). These parameters of water (in)security, and their combinations and interlinkages, are included in this article's analysis of the everyday experiences of Palestinians in the Jordan Valley.

Water security is also part of human security, a concept introduced by the United Nations Development Programme in 1994 with its seven key dimensions of food, health, economic, environmental, political, personal, and community security, and their 'links and overlaps' (UNDP, 1994). Human security is closely linked to human rights as it constitutes the necessary social condition that allows individuals to realise their human rights (Estrada-Tanck, 2016). The right to water is essential to the right to an adequate standard of living, including adequate food, as enshrined in the 1966 International Covenant on Economic, Social and Cultural Rights (OHCHR, 2021). In addition, water and sanitation were declared fundamental human rights by the United Nations General Assembly in 2010 (UNGA, 2010). It can, therefore, be argued that water insecurity constitutes a violation of people's human rights. Taken together, we argue that a more dynamic and authentic assessment of water (in)security includes the daily experience of water users. It brings into discussion the power asymmetries in water

governance and how the resulting patterns of water distribution impact water/human (in)security and rights.

Figure 1 outlines the framework that guides our analysis in this article. Hydro-hegemony, reflected in potential combinations of material, bargaining, and ideational power, permeates water governance, which itself is expressed in the laws, policies, infrastructure, and distribution of water. This process influences the water security of water users that, in turn, has a bearing on their human security. While Figure 1 provides the details of hydro-hegemony, water governance, and water/human security, it underscores in particular their connectivity. The objective is not just to analyse these concepts as separate processes and outcomes, but also to recognise their cumulative effects on the security and rights of water users.

Figure 1. The Hydro-Hegemony, Water Governance, and Water/Human Security Framework.



HYDRO-HEGEMONY AND WATER GOVERNANCE IN THE WEST BANK

Power imbalances in the West Bank stem from a history of conflict that escalated with the creation of the State of Israel in 1948 out of the former British Mandate of Palestine. The 1948 Arab-Israeli War led to the expulsion of more than 700,000 Palestinians from their homeland. The Green Line, or Armistice Border, was established in 1949, dividing historic Palestine into three: The State of Israel, Gaza under Egyptian rule, and the West Bank annexed by the Kingdom of Jordan (Khamaisi, 2008). From June 1949 onwards, Jewish migration to the region increased. In 1964, the Palestinian Liberation Organisation (PLO) was formed to mobilise Palestinians to recover their homeland. This was followed in 1967 by the Six-Day

War, during which Israel captured Gaza and the Sinai Peninsula from Egypt, the West Bank including East Jerusalem from Jordan, and the Golan Heights from Syria. Military occupation gave Israel "the opportunity to freely formulate its policies towards the use and exploitation of water resources" in these regions and to restructure water governance in its favour (Tadevosyan, 2019: 89). In 1967 and 1968, Israel passed Military Orders No. 92, 158 and 291, placing all waters in the West Bank under the control of the Israeli military, and introducing a permit system for any new water infrastructure, while declaring all prior water agreements invalid (Messerschmid, 2014). Israel gave itself the "power to approve, revoke or amend without justification" any water license (Selby, 2013: 7). The year of 1967 also witnessed the establishment of the first illegal Israeli West Bank settlement, Kfar Etzion.¹ This was followed by other settlements, which were provided with plentiful supplies of water (Kelly, 2006).

Material power, most directly visible through the use of military force, enabled the establishment of institutions of water governance that were controlled by Israel. The West Bank Water Department – which prior to 1967 had fulfilled several infrastructural, administrative, and regulatory tasks, such as drilling wells – was taken over, placed under the Israeli military, and "effectively de-institutionalised" (Selby, 2003: 128). In 1981, the wells that formed the main source for the West Bank Water Department were placed under the control of the Israeli national water company Mekorot, which became the main decision-making body on water distribution in the West Bank, including on matters related to allocations, tariffs, and maintenance (Messerschmid, 2007). It has functioned in ways that have promoted Israeli interests, drilling for example some 36 wells between July 1967 and 1981, 20 of which were in the Jordan Valley, servicing the Jewish settlements in the West Bank (Lowi, 1993). The West Bank Water Department became an intermediary institution, providing water to Palestinians and billing them, while itself being billed by Mekorot (Selby, 2003). The staff members of the West Bank Water Department were hired by the Civil Administration, the Israeli civil-military body that operates in the West Bank (Messerschmid, 2007). The changes seen in the West Bank Water Department are but an example of Israel's influence on Palestinian water institutions.

In addition, technological advantages were used to create inequality in water access between the Israeli settlements and the Palestinians. When Palestinian villages were connected to Israeli water networks in the 1980s, they were provided with pipes that had smaller diameters compared to the pipes of the neighbouring settlers (Messerschmid, 2007). In some cases, flow reducers were introduced into the Palestinian pipes to render them ineffective and prone to pollution while the 'joint reservoirs' for Palestinians and the settlements were created such that Palestinians had access to outlets that were located at a higher altitude and that dried out in the summer months (Messerschmid, 2007). Such physical discriminatory measures were accompanied by the use of ideational power in the form of supportive narratives and discourses that endorsed Israeli control over the region. An example is the Zionist claim that historic Palestine was the Jewish homeland, and that Jewish farmers deserved water to develop the desert lands on the basis of the Old Testament and the Tanak, in which water had symbolic value as a sign of God's grace (Tadevosyan, 2019). The role of Palestinians in developing the region has been also systematically downplayed by narratives that emphasise the "sustained encomia on Israel's pioneering spirit, democracy and humanism" (Edward Said (1984: 37). While 'water scarcity in the region' seems nowadays so dominant a view that it often appears unnecessary to provide any evidence for it, Alatout (2008) explains that from the 1930s to the 1950s, it was in fact 'water abundance in the region' that was the dominant perception, allowing experts to argue that Jewish immigration would not pose an economic threat to the original inhabitants of historic Palestine. What Alatout (2008: 960) calls the "Israeli network of water scarcity" emerged after 1959 and it justified and enabled "wide-ranging technical and political effects on the Israeli style of government and on water resources of the state and their

¹ Kfar Etzion was established as an Israeli Kibbutz settlement in 1943, but it was not included as part of the Jewish state in the United Nations Partition Plan of 1947 (Ohana, 2002). It was taken over by the Jordanian army in 1948, with religious Zionists returning after the Six-Day War (Ohana, 2002).

management" (Alatout, 2008: 960). While water scarcity is a very powerful fact and reality for Palestinians in the West Bank, it is important to recognise that it is also "politically-induced" and it is a false narrative to suggest that it is a natural pre-condition (Messerschmid, 2014: 53). Nevertheless, such false hegemonic hydro-political narratives continue to be produced and reproduced as demonstrated by Messerschmid and Selby (2015) in their critique of the systematic bias towards a favourable presentation of Israel's role in the Jordan River Basin.

Historical and political developments in the region further entrenched the existing power asymmetries. The first major Palestinian uprising against the Israeli occupation, the First Intifada, took place between 1987 and 1993. This was followed by the peace agreements commonly known as the Oslo Accords: Oslo I *Declaration of Principles on Interim Self-Government Arrangements* (1993) and Oslo II *Israeli-Palestinian Interim Agreement on the West Bank and the Gaza Strip* (1995). Under Oslo I, the PLO recognised Israel as a state while Israel recognised the PLO as the sole representative of the Palestinian people. The accord aimed to set up an interim Palestinian government – the Palestinian National Authority (PA) – with the expectation that a permanent settlement would be negotiated over a five-year period (no later than May 1996). This settlement would include decisions regarding, among other things, the situation of Palestinian refugees, Israeli settlements, and Jerusalem. Oslo I also created joint Israeli-Palestinian committees for 'mutual security' and economic cooperation on several aspects, including water. Furthermore, it called for the withdrawal of the Israeli Defence Forces (IDF) from parts of the West Bank and Gaza. In 1995, under Oslo II, the West Bank was divided into three administrative zones, Areas A, B, and C, each with a different governance system. Area A, covering about 18% of the area of the West Bank, came fully under control of the newly established PA. Area B, which included 22% of the area of the West Bank, came under full civilian control of the PA and joint Israeli-Palestinian security control. Area C, constituting some 60% of the West Bank and containing the majority of the agricultural lands and water resources of the Occupied Palestinian Territory, came under full Israeli civil and security control (HRC, 2021). Significantly, Oslo I and Oslo II did not guarantee Palestinian statehood, nor did they forbid Israeli settlements in the West Bank and East Jerusalem. Oslo II also led to the establishment of the Palestinian Water Authority (PWA) to manage the water resources on behalf of the PA.

In her *Oslo Autopsy*, Sara Roy (2002: 9) highlighted the fundamental unfairness in the Accords and the processes that led to strengthening and reinforcing the "structural relationship between occupier and occupied", and the "gross asymmetries in power" that allowed Israel's continued control over the Palestinian resources. Oslo I legitimised Israel as the sole authority to decide which lands would come under Palestinian control, and left open the resolution on key areas of conflict such as borders, refugees, Jerusalem, and the settlements (Roy, 2002). Meanwhile, the PA had no legal power to stop the expansion of settlements and roads in the West Bank (Roy, 2002). Shortly after Oslo II, land was taken from Gaza for Israeli settlements, and this arrangement was also implemented in the West Bank, with Palestinian areas becoming non-contiguous and isolated cantons under Israeli jurisdiction (Roy, 2002). Israel's domination in the West Bank further intensified through multiple land designations, such as 'state land', 'nature reserves', and 'military firing zone', which heavily restricted Palestinian land use in Area C (HRW, 2015). Israel's control over the border between Jordan and the West Bank – the only international land crossing in that region – also hindered Palestinians' mobility and restricted trade with neighbouring countries (Melon, 2018). Palestinians were not allowed their own currency, independent trade, or taxation policies, or even control over electricity and water supplies; this meant that "Israel retained de facto control over the very lifeblood of the Palestinian economy", granting or refusing "permission to move people and goods around between and within the Palestinian territories, and into Israel itself" (Wake, 2008: 120).

Water governance was given special attention in Oslo II through Article 40 on water and sewage (MFA, 1995). According to its principles, Israel and the PA would cooperate in managing the water resources in the West Bank and Gaza. Israel also formally recognised Palestinians' water rights in the region. At the same time, Principle 1 of the Article noted that these rights were to be "negotiated in the permanent

status negotiations and settled in the Permanent Status Agreement relating to the various water resources" (MFA, 1995). Under Article 40 of Oslo II, specific quantities of the water resources of the 'Mountain Aquifer' were allocated to Israel and the PA. While the 'Mountain Aquifer' – the Western Aquifer, the North-Eastern Aquifer, and the Eastern Aquifer – derives most of its recharge from rainfall and snowmelt within the West Bank, approximately 20% of allocations were granted for Palestinians and 80% for Israel and the settlements (Zeitoun et al., 2009), as detailed in Figure 2. The Jordan River, the only permanent river in the region, was excluded from the Accords. Prior to 1967, Palestinian farmers had access to some 150 pumps extracting water from the Jordan River (World Bank, 2009). Since then, Palestinians have been denied any share or any access to the river (Koek, 2013). Article 40 also provided for the establishment of a Joint Water Committee (JWC), with an equal number of representatives from the Israeli and Palestinian water authorities. An important insertion was that all decisions, such as setting the agenda, procedures, and other matters, were to be made on the basis of consensus.

The system of water governance set up under the Oslo Accords might seem to be based on a degree of equality between Israel and the Palestinians in the decision-making and implementation process. A more detailed reading of the Accords, however, provides insights into the unfairness that was embedded within them. Although water rights for Palestinians were formally recognised in the Accords, their realisation was effectively postponed on the grounds that such rights were part of the negotiation process, and they are yet to be achieved in practice. At the same time, Israel was able to control water access and distribution in its favour, notably to meet the needs of growing numbers of Jewish settlements which, as noted previously, are considered illegal under international law. Oslo II further transferred the debts that the West Bank Water Department had built up as it faced non-payment by Palestinians from Israel to the Palestinian Ministry of Finance (Selby, 2003). It has, therefore, been argued that the "formalisation of Israeli-Palestinian cooperation [through Oslo] had enabled Israel to divest itself of some of the most onerous burdens of occupation" (Selby, 2003: 131) while allowing it to keep control over not only the water resources and supplies of Israeli settlements but effectively also those of Palestinians. As noted by Selby (2003: 138), the Oslo Accords were essentially "dressing up domination as 'cooperation'". Although Oslo II was intended to be a five-year interim agreement when concluded in 1995, it remains in place still today as the key agreement on regulating water resources in the West Bank (HRC, 2021).

The Post-Oslo period continued to witness serious obstacles for Palestinian water projects, especially in Area C where such projects required authorisation by the Israeli Civil Administration as well as by the JWC, the former being extremely difficult to attain (Giglioli, 2013). In addition to continued military control in the West Bank, Israel asserted its hydro-hegemony, and particularly its bargaining power in water governance in the decision-making processes of the JWC. For example, as noted earlier, JWC decisions are, in principle, to be reached by consensus. However, in reality, approval rates are significantly lower for Palestinian projects than for Israeli projects (Selby, 2013). The PA has often felt compelled to approve water infrastructure proposals for Israeli settlement because Israel demanded such approvals as a condition for any approval of Palestinian water projects (Selby, 2013). Israel also maintained the right to veto projects in the West Bank, whereas the PA received no equivalent veto powers for projects in Israel (Selby, 2013). In his analysis of JWC meetings from 1995 to 2008, Selby (2013: 16) notes: "The overall record of Israeli non-approvals and delays of Palestinian projects, combined with its large number of applications for settlement infrastructure, indicates that territorial-settlement considerations have been at least as important to Israel as its interest in maintaining hegemony over the Mountain Aquifer". According to him, the Oslo II regime was a case of "joint mismanagement and premised on a chimera of 'cooperation', which differed in little more than name from the occupation regime that predated it" (Selby, 2007: 203).

Since the 1990s, the Palestinian water sector has experienced two cycles of governance reforms, leading initially to the Water Law of 2002 (PWA, 2002) and later to the Water Law of 2014 (PWA, 2014). While these laws have their limitations in ensuring water security, it is important to also recognise that the PWA faces challenges in implementing any reform, given its limited power and the fact that it is forced

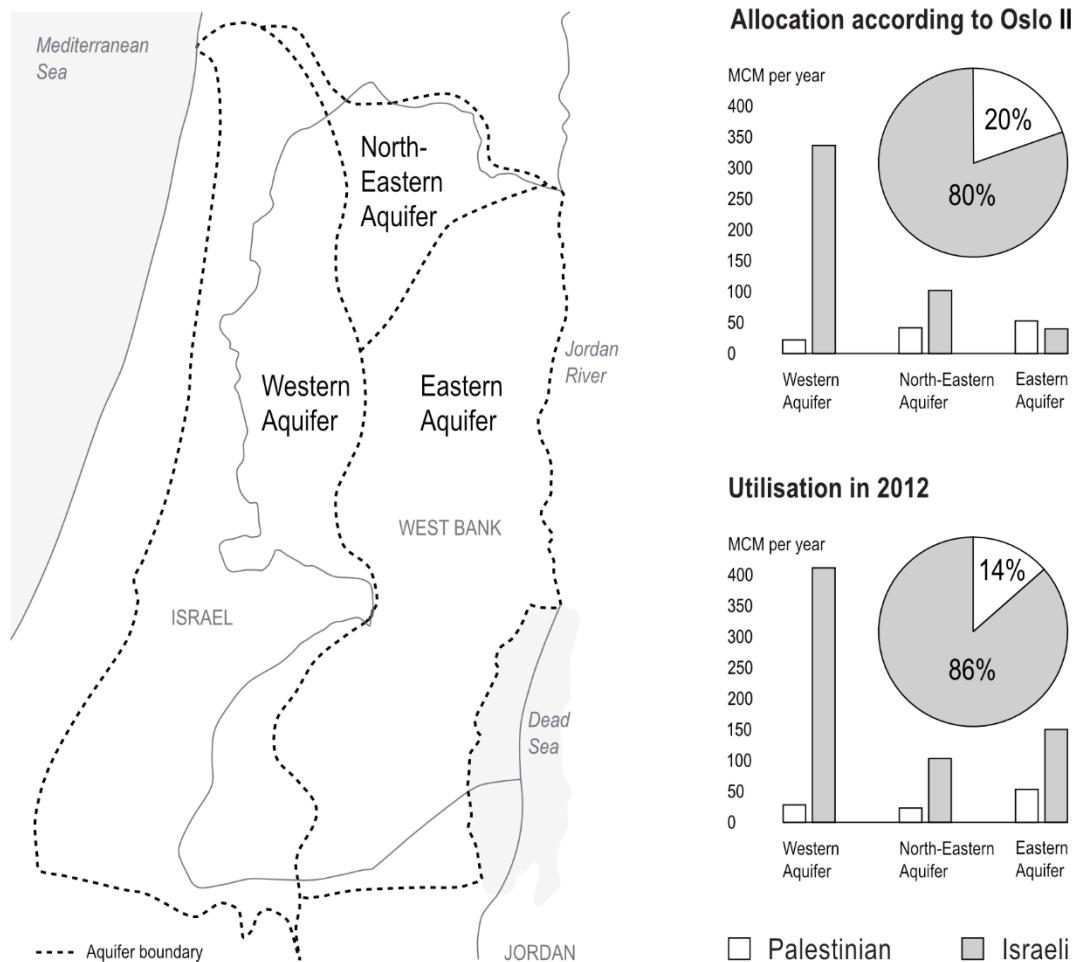
to rely on Israel for water supply and on foreign assistance for its functioning (Zeitoun, 2008; World Bank, 2009). As noted by a member of the Netherlands Representative Office to the Palestinian Authority (NRO): "Basically, you expect a bird [the PWA] to fly but you have cut off its wings". A recent report of the United Nations High Commissioner for Human Rights (HRC, 2021) noted that the constraints placed on the PWA were a consequence both of the JWC's practices and of Israel placing restrictions on access to water. The West Bank Water Department, as the implementing organisation of the PWA, remains the main water provider; it manages wells, purchases bulk water from Mekorot (constituting more than 80% of the annual water supply of the West Bank), and sells water to several hundred service providers (HRC, 2021; World Bank, 2009; World Bank, 2018). A technical advisor from the PWA summarised the situation as follows:

We are doing management of a water crisis rather than actual water governance. We are not fully in control. We have a water crisis, and we try the best to manage it with our potential in local staff and international help. We do the best to survive rather than the best and most strategic development.

In order to survive in the wake of lack of water and confronted with regular refusals of applications to build water infrastructure, some Palestinians construct storage facilities, many of which are routinely demolished by the Israeli Defence Forces (IDF) on the grounds that they are unlicensed (Selby, 2013). Such demolitions also concern projects supported by international aid, as well as domestic wells and home cisterns to collect rainwater for domestic use, raising serious questions about what constitutes (un)licensed water facilities. In 2020, 84 of the 849 structures that were destroyed in the West Bank by Israel were water and sanitation structures (HRC, 2021). As concluded by the United Nations High Commissioner for Human Rights (HRC, 2021: 9), such demolitions are contrary to Israel's duty as an occupying power "to restore and maintain public order and civil life in the occupied territories, and to respect the rights to water and property". Although Israel also constructs unauthorised infrastructure without JWC approval, the PA cannot demolish these facilities in response. Both sides undertake unilateral actions. However, as Selby (2013: 18) points out, a crucial difference is that on the Israeli side such actions are "government-implemented and sanctioned, whilst the Palestinian unilateralism has been nongovernmental, and often in Area C, beyond PA control". Moreover, Israel does not have to account for its use of water resources. The PA, in contrast, depends on financial support from international donors and has to satisfy donors' demands that all projects obtain prior JWC and Civil Administration approval (Selby, 2013). Concurrently, Israel uses ideational power to support and justify its unilateral – and under international law, illegal – control over water. Examples include the depiction of the West Bank as a desert area and Israel as being the responsible, state-of-the-art water manager in the region (Messerschmid, 2007). These myths serve to justify the "development of water resources and services for Palestinian people below levels expected at the time of Oslo" (World Bank, 2009: ix).

While Oslo II officially lapsed more than 20 years ago and in spite of the Second Intifada – the popular Palestinian uprising that took place between 2000 and 2005 amidst the lack of progress on the Oslo Accords – Oslo II's key concept and routine of 'coercive cooperation' has been maintained, reinforcing the status quo and giving Israel control over most water resources (Selby, 2013). In 2012, Palestinians used 14% of 'Mountain Aquifer' water, while the remaining 86% were exclusively controlled by Israel (Figure 2) (PWA, 2013). This 14% share is lower than the proportion of water resources allocated to Palestinians in Oslo II, and the Palestinian population has doubled in size since the Accord was signed (HRC, 2021). Israel has also used the Jordan River water which has caused the near complete depletion of the river and, consequently, the Dead Sea and damage to dependent ecosystems (ARIJ, 2015; Koek, 2013). In effect, material, bargaining, and ideational power combine and permeate water governance in the West Bank, deliberately generating the water and human insecurity of Palestinians in the West Bank, as discussed in the following section.

Figure 2. The 'Mountain Aquifer' and water allocation according to Oslo II as well as utilisation in 2012 (after Zeitoun et al., 2009 and PWA, 2013).



WATER AND HUMAN INSECURITY OF PALESTINIANS IN THE JORDAN VALLEY

The Jordan Valley covers about one third of the total area of the West Bank and extends from the 1949 Armistice Border in the north to the Dead Sea in the south, bordering the Jordan River in the east. Almost 90% of the Jordan Valley is Area C, comprising about 40% of Area C in the West Bank (Kadman, 2013). The rest of the land, designated as Area A or B, is contained in enclaves of Palestinian communities, including the city of Jericho, as indicated in Figure 3 (Kadman, 2013). In 2016, about 65,000 Palestinians lived in the Jordan Valley, the majority in Jericho city, and about 10,000 of them in more than 20 communities located in Area C, including small Bedouin² and shepherding communities (B'Tselem, 2017;

² The term describes Arab people who have traditionally inhabited desert regions.

Kadman, 2013). In addition, there are about 11,000 Israeli settlers living in settlements and outposts³ that have been established throughout the Jordan Valley (B'Tselem, 2017).

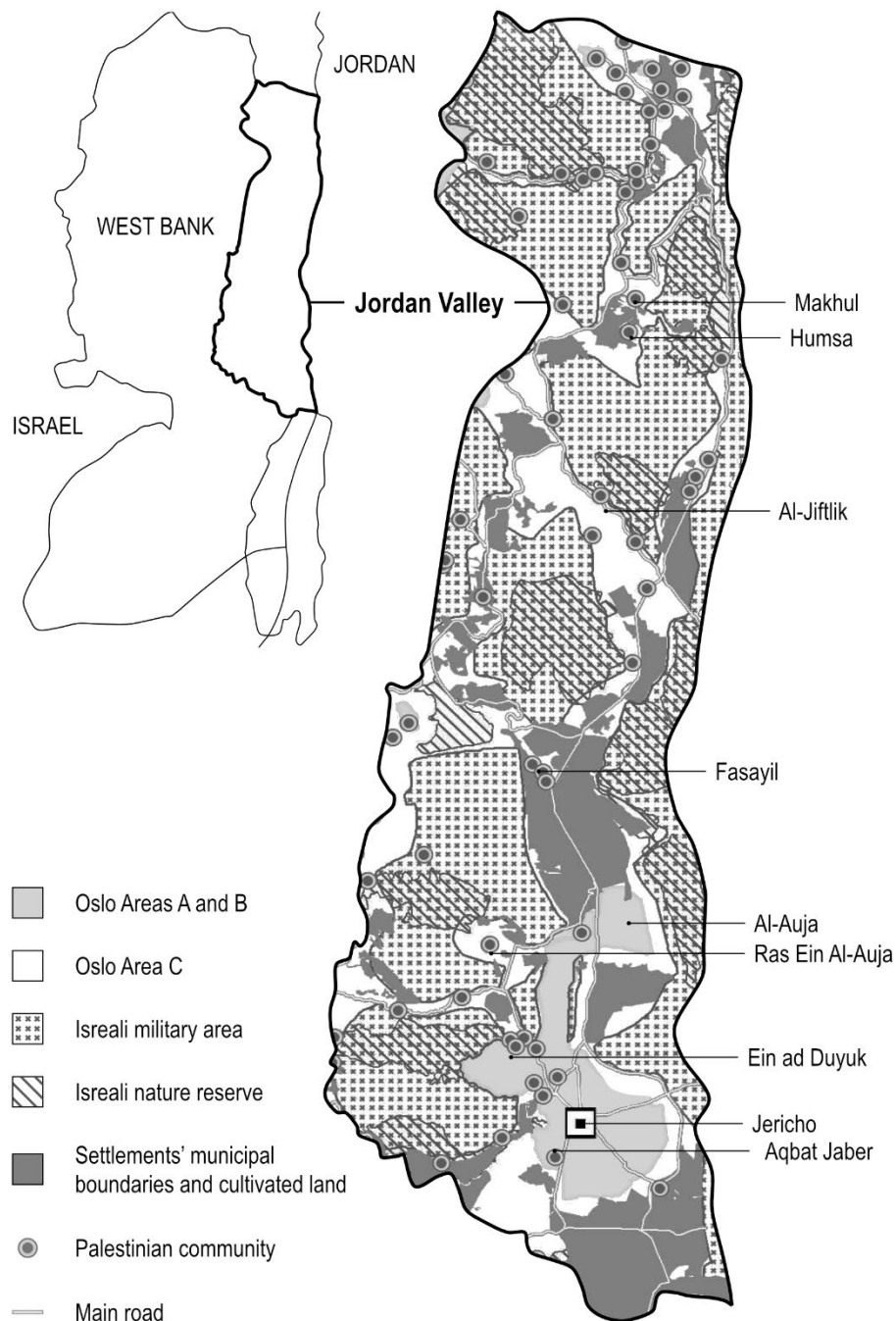
The Jordan Valley is ideally suited for irrigated agricultural production, with fertile soil, groundwater resources, sun, and heat. It has been termed a 'giant greenhouse' that can contribute to food security, poverty reduction, and economic growth, all crucial for the sustainability and viability of Palestinian independence (MA'AN, 2010; Melon, 2018). However, the restrictions imposed by the Israeli Civil Administration on developing the land and water resources have had major consequences for Palestinians' livelihoods. The contribution of agriculture to the Palestinian gross domestic product has declined throughout the duration of the Israeli occupation, from more than 50% before 1967 to about 30% in the 1980s, and further to around 5% in recent years (OCHA, 2020). At the same time, the total land area cultivated by Israeli settlers in the West Bank has increased by 35% between 1997 and 2012 (HRW, 2015).

Our discussions with Palestinians in the Jordan Valley (locations detailed in Figure 3) and with representatives of organisations that work with them shed light on the different water problems that people face and the consequences of these problems for people's daily lives. Although water access varied across spatial, temporal, and socio-economic boundaries, insufficient water *quantity* was considered the most significant insecurity affecting local Palestinians. In addition to quantity, several other water insecurity dimensions were identified, such as water *quality*, and the *distance* to water supplies, which also implies the *time* taken to collect water. Other issues were *affordability*, given the water *price*, the *frequency* and *reliability* of water supplies, and even the personal *safety* of individuals when collecting water. Analysed along these dimensions, the following examples speak of how water insecurity is experienced by Palestinians and how it impacts their livelihoods.

Having been denied access to the Jordan River since 1967, Palestinians in the Jordan Valley mainly rely on groundwater from the Eastern Aquifer, which consists of a shallow aquifer system of the Plio-Pleistocene age and two deep Cenomanian subaquifers (Marie and Vengosh, 2001). The groundwater is accessed through springs and wells, some of which are privately owned (Melon, 2018). This is the case in Jericho city, for example, where the municipality supplies water from the Ein as-Sultan Spring. In some villages (e.g. Al-Jiftlijk, Fasayil, Al-Auja, and Aqbat Jaber), Palestinians are supplied water through a network managed by Israel's national water company, Mekorot, the water being purchased by the West Bank Water Department under the PWA. Many smaller villages in Area C, especially Palestinian Bedouin communities (e.g. Makhul, Humsa, and Ras Ein Al-Auja), are not served by any water network whatsoever as a consequence of Israel's deliberate decision to restrict direct access for Palestinians (UN, 2021). These communities are forced to rely on water trucking, obtaining water from wells, springs, or (legal) filling points in other communities (UN, 2021). One Bedouin herder of 150 sheep in Humsa in the north of the Jordan Valley (Area C) noted: "The Mekorot pipes run under our tents, but we can't use the water from them". The problem of connecting Palestinian villages to water is not technical but political, the reason being, as it has been argued, a "lack of political will, and indeed outright discrimination by Israel" (EWASH and Al-Haq, 2011). This is underlined by Israel's official rejection of the international community's assertion that it has legal obligations as an occupying power, including ensuring that Palestinians enjoy the right to water (UN, 2019).

³ Outposts are Israeli settlements in the West Bank that are constructed without formal authorisation from the Israeli government.

Figure 3. The Jordan Valley with indication of interview locations (after OCHA, 2012).



The number of Palestinian wells in the Jordan Valley has declined under occupation. Prior to 1967, they numbered more than 200; by 2011, just 90 were supplying water (Hareuveni, 2011). Most of these wells were a few dozen metres deep, in contrast to Israeli wells that regularly go down hundreds of metres to reach the aquifer (Hareuveni, 2011). The groundwater levels in the shallow local aquifer of the Eastern Aquifer have dropped significantly in past decades, mainly as a result of over-extraction, and the water

of that aquifer has become brackish. As a consequence, pumping rates of most local Palestinian wells have decreased and, given its high salinity, the water derived from these wells can only be used for agricultural purposes (Hareuveni, 2011). When Palestinian farmers have applied for permission to deepen their wells in order to regain access to fresh groundwater, their applications have often been denied by the JWC or the permission that they have received has not allowed them to dig as deep as required. Moreover, digging deeper has not always produced the expected results, as one palm tree farmer from Al-Auja village (Area A) noted:

The first well in this village was dug in 1954. My father dug it. The depth of it was 40 m only. At that time, they reached the water at the level of 17 m. In 2011, I lost all the water from the well. It was sweet water, good water. From 2011 until 2015, I waited to receive a permission from the Israelis to dig deeper. I received permission to dig until 84 m. When I dug, the water was salty.

The difficulties faced by Palestinians in obtaining permits from the JWC to construct and deepen wells are a manifestation of power asymmetries in water governance at the local level. At the same time, the water infrastructure in the area favours Israeli settlements. This combination reinforces unequal access of water between settlers and Palestinians in the Jordan Valley, which is clearly reflected in the statistics; settlers are estimated to have up to 18 times more water available for personal and agricultural purposes than Palestinians (Hareuveni, 2011). The World Health Organization (WHO) recommends a minimum of 100 litres per capita of domestic consumption per day (lpcd) for basic drinking and hygiene needs (Howard and Bartram, 2003). Palestinians living in the West Bank consume 73 lpcd of water on average, while settlers in the Jordan Valley consume 487 lpcd of water and settlers in the Northern Dead Sea Area consume 727 lpcd of water (Hareuveni, 2011; Isaac and Hilal, 2011). Palestinians' domestic water consumption in the Jordan Valley varies from as little as 20 lpcd to 160 lpcd in Jericho district (Hareuveni, 2011). The huge discrepancy between the quantity of water allocated to settlements and nearby Palestinian communities is even clearer when comparing the situation in adjacent communities. For example, in the Ro'i settlement and the Beka'ot settlement in the northern Jordan Valley, the average household consumption was more than 400 lpcd, compared to 20 lpcd in the neighbouring Bedouin community of Al-Hadidiya (Hareuveni, 2011). The quantitative supply gap is the starkest expression of the discriminatory water regime, enforced by and under Israel's occupation.

A young Palestinian man in the refugee camp of Aqbat Jaber in Area A, which is connected to the Mekorot network, noted that they were provided with "the quantity they want to give us and not how much we need". Many interviewees noted that this problem was especially acute in the summer, when high temperatures meant domestic needs were greater and the possibilities for falling back on alternative sources, such as spring water, were more limited. Many farmers faced problems as less and less water could be extracted from wells and springs for farming. Consequently, many were forced to find alternative sources of income to sustain their livelihoods.

In addition to water *quantity*, another important dimension of water insecurity concerns water *quality*. While groundwater quality in the West Bank was reported to be generally acceptable in 2016, many wells in the Jordan Valley have concentrations of chloride that exceed the acceptable values set out in the WHO (1993) Guidelines for Drinking-Water Quality (HRC, 2021). The quality of the groundwater is further compromised through contamination of agricultural return flows and sewage effluents (Kool, 2016). Our interviewees explained that since water from Palestinian wells was unsuited for domestic use, it was used almost entirely for agricultural purposes. They considered the quality of the water from springs and that of the water purchased by the West Bank Water Department from Mekorot to be good overall. There was one exception, namely in Aqbat Jaber, where the water supplied through the network was considered too salty for domestic use. One woman from this village reported that: "[our dog] has been sick from this water. What about us?". A Bedouin herder from Humsa said he filled the tank of his truck with freshwater from a Palestinian well. However, when he stored the water in smaller tanks at

home, it became contaminated and, as he said: "sometimes my small children drink from that water and become sick". This is an example of how water insecurity can directly affect people's health.

Water insecurity also results from the *distance* to water sources and the *time* required to collect water. Several accounts from different areas across the Jordan Valley indicated challenges in this respect. One member of Aqbat Jaber Women's Centre explained that her family accessed Mekorot water through the network once every week, but due to the salinity of the water, her family needed to pay a man to regularly bring freshwater in a tanker from Ein as-Sultan Spring in Jericho. One Bedouin herder from Mak-hul, who depended on water trucking – collecting water from different farmers in the surrounding area – reported that they offered him their surplus water for free. He said, however, that in winter 'searching for water' took him at least three hours every three days. In summer, he often spent hours up to a full day every second day searching for water. Other Palestinians in the area mentioned that the location of houses in relation to water pipes and the condition of roads affect access to clean water for household use; those who live off the main roads and away from wells, springs, and pipes are negatively impacted and experience decreased quality of life.

Insecurity relates also to the *price* of water, which differs considerably among localities. In principle, water prices depend on the cost of the electricity needed to pump groundwater; the cost of water distribution; and the cost of transporting the water, which in turn is linked to the *distance* to water sources. For privately owned wells, water utilisation is based on individual agreements between the well owners and the water users. *Affordability* was not regarded as a serious issue by most interviewees, but some Palestinians from the Jordan Valley highlighted that socio-economic status mattered, and for certain people, clean water was not even affordable. One Bedouin farmer from Humsa mentioned the economic insecurity that resulted from having to pay for water. He paid to access water from agricultural wells owned by Palestinians. However, he added: "There is a period in the year where there is no milk from the goats because of pregnancy. In this time, we don't get money, but we [still] have to pay (...). It is a lot of money that we must pay for water every day". It has been estimated that in some Palestinian communities in Area C, water accounts for 15% of household expenses; a cost which undermines the ability of herder communities to maintain their livelihood (HRC, 2021).

Many Palestinians in the Jordan Valley indicated that they refused to pay for the water purchased by the West Bank Water Department from Mekorot. Two main reasons were given for this. First, people said they were unwilling to pay for insufficient services: "If you want us to pay, you need to give us the services that we pay for". Second, people explained that the former political leader Yasser Arafat had called upon them to stop paying for the water but remain on the land. According to them: "If we had left the land, the Israelis would have taken it, so the PLO needed people to stay. (...) [The call not to pay for the water] was, in effect, an incentive for people to stay". While some Palestinians considered not paying for water an act of resistance against the occupation, others rejected this strategy since, among other things, Israel deducts the amounts due for unpaid Mekorot bills from the taxes it collects on behalf of the PA (World Bank, 2018). One of the interviewees explained that Palestinians who tapped Israeli pipes or refused to pay for the Mekorot water "think they have access to water and simultaneously they do damage to Israel. (...) They are not aware that the PA is actually paying for it, so there is no understanding that they are shooting themselves in the foot. (...) Or maybe, because Area C is often completely overlooked, they don't care".

Several of the issues discussed above show how Palestinians in the Jordan Valley experience water insecurity in relation to both the *frequency* and *reliability* of their water supplies (for example, they rely on uncertain water supplies belonging to others). One mother of four from Aqbat Jaber explained that water was being supplied through the network just once a week, and even this was uncertain. As she said: "I know it will come today or tomorrow (...) because since last Thursday it has not come". During the interviews, it was highlighted that frequency and reliability of water access were also compromised through the use of military force by Israel's Civil Administration, as when construction and movement restrictions were imposed on Palestinians. Such use of material power have also been previously

reported, including the demolition of Palestinian water-related supply systems (e.g. water tanks and pipes) by Israeli soldiers (Kurian et al., 2016). Testimonies given to the human rights organisation B'Tselem suggest that water tanks and other water containers were repeatedly confiscated by the Civil Administration on the grounds that they were in 'firing zones', areas designated for Israeli military exercises (Kadman, 2013). As noted by the United Nations High Commissioner for Human Rights (HRC, 2021: 10), these demolitions and confiscations, alongside forced evictions, continue to create "additional challenges for vulnerable Palestinian communities in accessing water". A more recent example is the forced displacement of the Bedouin community Humsa, mentioned earlier, that was carried out in November 2020, February 2021, and July 2021 and included the demolition and confiscation of mobile water tankers, plastic water tanks and hygiene facilities (UN, 2021; HRC, 2021). In these ways, material power enforces local compliance with Israeli interests as part of its hegemonic control over the wider region.

Finally, enforcement of military power in a context of conflict and occupation creates insecurity with regard to *safety* of water access. One Bedouin father of eight in Mak-hul explained that he had been arrested several times by the Israeli military for unknowingly letting his sheep graze on closed-off land. As he said: "There are no borders. Only by experience you learn where (...) you can't go". He added that collecting water often took him several hours up to a full day; getting arrested could aggravate matters, resulting in his family and his animals not having access to water. Another Bedouin herder in Humsa highlighted that his safety was threatened whenever he let his goats graze in the mountains. Israeli military training with live ammunition could be taking place and warnings of such activities were not always given. In addition, acts of violence committed by settlers against Palestinians (including shootings, physical violence, and acts of vandalism to property) are a daily occurrence in the West Bank, with record levels of violence being reached in 2021 in the midst of the COVID-19 pandemic (OCHA, 2021). Under such conditions, movements in the Jordan Valley, including to transport water (given insufficient or poor-quality local supplies), can constitute a safety risk for Palestinians. This illustrates how water insecurity can link, both directly and indirectly, with other forms of human insecurity. The following paragraphs focus on this link by building on the reflections of Palestinians in the Jordan Valley. They demonstrate how the cumulative nature of water insecurity poses challenges for Palestinians' wider human security and their right to life.

Water insecurity has a negative impact on people's psychological and emotional health as well as their physical wellbeing through the lack of proper sanitation conditions and the occurrence of water-related diseases (UN, 2021). The personal security of Palestinians, especially Bedouins in Area C, is further endangered through the risks that they face as they move around to transport water. Community security and social relations can also be jeopardised in view of the risk of conflict over water resources with neighbours or within families. Furthermore, declining agricultural productivity, linked to water shortages and increasing water salinity, poses economic insecurity for Palestinian farmers and may also compromise their food security. Water-related economic hardship and falling incomes disrupt livelihoods and force Palestinians to move, change professions or leave the area altogether. Besides that, as mentioned earlier, the extensive use of water from the Eastern Aquifer and the Jordan River results in serious environmental damage to the area, in the process compromising people's environmental security. Finally, given the overall context of military occupation and the systemic violation of the human right to water and sanitation, one could argue that political security is also absent for many Palestinians in the Jordan Valley.

In the accounts that they offered during interviews, Palestinians in the Jordan Valley highlighted that women often face relatively greater burdens due to water insecurity compared to men. This was explained by women's reproductive as well as productive roles, and their need for access to water for a range of uses – not only agricultural but also cleaning, cooking, and bathing. In this respect, one Palestinian health professional working with the Palestinian Medical Relief Society said:

You can imagine the situation with twelve members in the house without water. It will affect them psychologically and will cause conflicts. (...) The woman is the main root in the house. (...) Everything is connected to her. If there is no water – "You are responsible!" (...). So, she is the blame taker in the house.

Furthermore, women's physiological water needs are higher, due to the water needed during menstruation or pregnancy, and the needs determined by social norms involved in wearing long hair and all-enveloping clothes. One member of an NGO, working with Palestinian farmers in the Jordan Valley, added:

If there is no water, (...) for the women, it is something serious and critical, especially (...) [for] the young girls at school. When she starts to have her menstrual cycle, she needs the water. It is related to her psychological status if there is [none] (...). Sometimes she goes with a dirty body, with dirty clothes and she feels uncomfortable for the smell and everything.

The existence of such gendered impacts highlights the importance of capturing the intersectional dimensions of water/human insecurity. Water/human insecurity in the Jordan Valley, however, negatively affects both men and women. In addition, many Palestinians do not have any other option but to remain under these circumstances. A member of MA'AN Development Center said of Palestinians in Jordan Valley that they "stay because they don't have any other option. (...) They are feeling threatened all the time. They are feeling insecure all the time. They have a lack of everything all the time". Emphasising the gravity of the situation, a doctor from a health clinic in Al-Jiftlik in Area C noted:

People here die twice in their lives. They die when they are alive, and they die when they are dying. And people ask, "Why do Palestinians have heart diseases, diabetes etc.?" It is because everything is connected with their physiological problems. It is a cycle. The physiological affects the psychological and the psychological affects the physiological – no water, no cleaning, no hygiene, problems, conflicts (...).

Through these narratives and voices, one can see that there are different dimensions of water insecurity that have far-reaching consequences on the livelihoods of Palestinians in the Jordan Valley. While each is significant, they overlap and combine to generate overall water and human insecurity as a structural feature of people's everyday lives. The experiences of the Palestinians in the Jordan Valley demonstrate that they are not only denied their fundamental right to water, but also their right to livelihoods and to life itself. Palestinians do not accept the hegemonic narratives that support Israel's domination of the region. For them, it is the material power of the occupation that is ultimately responsible for their insecurity and the violation of their rights.

CONCLUSIONS

The Hydro-Hegemony, Water Governance, and Water/Human Security Framework, which we propose in this article, facilitates the analysis of how Israel uses material, bargaining, and ideational power to influence water governance in the West Bank in its favour. While Israel's military coercion is the dominant form of material power that it exercises, its economic and technological advantages also generate water insecurity for the Palestinians. Through these means, Israel compromises the bargaining power of the Palestinian National Authority in water governance; it sets the rules of negotiation and enforces compliance with its terms in the decision-making processes. Israel's policy of limiting water access to the Palestinians demonstrates the structural nature of water insecurity and its overall objective to force Palestinians to give up and leave their land. At the same time, Israel justifies its actions through supportive narratives and discourses at national and international levels. Local Palestinians as well as critical researchers, activists, and NGOs working in the region are, however, fully aware of the deliberate generation of water insecurity, including the inequities and injustices embedded in the nature of water governance.

The Palestinians in the Jordan Valley recognise and articulate the multiple dimensions of water insecurity they confront on a daily basis, including the inadequacy of supply and the poor quality of water, as well as the problems related to distance, time, affordability, reliability, and safety in accessing water. Water insecurity leads to Palestinians experiencing difficulties with regard to different aspects of human security, associated with food, health, economic, environmental, political as well as personal and community security. While each aspect is significant on its own, cumulatively, they generate a more fundamental existential insecurity for the Palestinians in the area, violating international human rights standards, including Palestinians' right to water and their right to life. These injustices underscore the need for the international community to pay urgent attention, as Edward Said (1984: 36) demanded, to the "perhaps humble narrative of native Palestinians".

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