8 Assessing KfW support for public water and sanitation services in the Occupied Palestinian Territories

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This paper explores the German public development bank (PDB), the KfW and its financial support for public water and sanitation services (WSS) in the Occupied Palestinian Territories (OPTs) through all KfW Palestinian WSS reports published at the time of the paper's original writing in 2022. The paper's point of departure is that PDBs are effective and appropriate institutions for the financing of WSS, and even more so in conflict contexts. In this scenario, the KfW is exemplary, having itself emerged out of World War II to support reconstruction and now functioning within conflict contexts like Palestine. At home and abroad, the KfW is active in WSS. As a PDB, the German KfW can take a long-term view to provisioning and supporting WSS as a matter of mandate rather than profit, thus privileging social impacts over profitable returns on investment. This has been the approach of the KfW in the OPT as it supports WSS as a matter of German development aid policy. This is evidenced in the four Palestinian community case studies of Tulkarem, Jenin and Tulkarem, Al-Bireh and Hebron outlined in this paper. The public projects are not perfect, but they illustrate the significance of policy-based PDB financial support for public water and sanitation in conflict situations.

Based on our case studies in the OPT, we argue that the KfW exemplifies the importance of PDBs actively supporting public WSS in development and conflict situations. We expand on this conclusion in five sections. The first positions the KfW as an "exemplary" (Marois 2021) PDB within the current literature. The second provides context for WSS in the OPT, including the weaponization of water in the OPT by Israel. The third introduces the role of the KfW in financing the development of water resources and infrastructure in the OPT. The fourth section details the KfW's own assessments of its WSS projects in Tulkarem, Jenin and Tulkarem, Al-Bireh and Hebron. A fifth section added to the original paper addresses the ongoing intensification in water weaponization since October 7, 2023, and is followed by a brief conclusion.

DOI: 10.4324/9781003475767-8

Data collection methods include secondary academic literature research on the OPT, public banks, the KfW and WSS. The four case studies are based on a critical evaluation of KfW's post-evaluation self-assessment reports on WSS in the OPT. The research is supplemented by two semi-structured interviews conducted in July 2022: one with a KfW Development Bank director working in water and climate in the Middle East and another with a Palestinian Economic Affairs Officer for the United Nations Conference on Trade and Development (UNCTAD) with experience working with the KfW while establishing budgets for the Palestinian Authority's (PA) Ministry of Finance. Interviews on the OPT are difficult to obtain given the volatile political context. In-country fieldwork could not be authorized. It has not been possible to arrange follow-up interviews given the October 2023 invasion of the OPT of Gaza.

The KfW as a public development bank

PDBs have a long-established role in WSS infrastructure financing in the Global South and North (McDonald et al. 2021; Crespi Reghizzi et al. 2022; Marois & McDonald 2023). One important reason for PDBs financing WSS is because these public institutions can function according to policy (not profit) imperatives in the provisioning of essential infrastructure. WSS is essential infrastructure in all societies, and PDBs like the KfW have for decades had an essential role in providing supportive financing (McDonald 2023; Marois 2024). PDBs have also shown willingness and competence in post-disaster and post-conflict development finance, including for reconstruction (Marois 2021). In fact, the full name of the KfW is *Kreditanstalt für Wiederaufbau*, which translates into the "Credit Institute for Reconstruction," reflecting its post-World War II reconstruction mandate. There is a clear case for exploring PDBs in WSS and conflict. To date, we are aware of no such dedicated study or research.

PDBs are a specific type of public bank that are also known as second-tier, investment, promotional and policy banks (Marois 2021; Marodon 2022). PDBs differ from retail or commercial public banks because PDBs typically do not accept personal deposits and usually refrain from providing household financial services such as chequing, credit cards, mortgages and so on. Instead, PDBs issue bonds and draw on government resources to lend longer term, support larger projects and finance public infrastructure (Griffith-Jones & Ocampo 2018). That said, public PDBs also function within financial markets and are linked to domestic policy processes (Moslener et al. 2018, 83). PDBs will also on-lend to local public and private commercial banks (rather than lend directly to clients), and many PDBs have key roles in supporting micro-, small- and medium-sized enterprises (MSMEs) as well as large corporations (Marois et al. 2023).

Yet PDBs specialize in development finance. Many have high-level expertise in doing so within their societies, functioning as legacy institutions capable of

building intergenerational knowledge and material capacity, often oriented towards accelerating economic growth. Development banks may also provide guarantees, grants and subsidies to targeted sectors and can contribute technical expertise. PDBs have the capacity to effect a "coordinated strategy of policy change" and to foster synergies between the public bank, policy and regulation (Moslener et al. 2018, 83).

PDBs continue to play a large, even growing, role in infrastructure development (Griffith-Jones et al. 2018; Clifton et al. 2021; Mertens et al. 2021; Marois 2024). This is important because infrastructure development has positive and significant impacts on economic growth and helps to reduce income and social inequalities (Calderon & Servén 2014; McDonald 2023). Despite the promises of market advocates, the post-1990s opening up of global financial markets and the financialization of development have not resolved growing investment gaps in infrastructure. In 2016, McKinsey reported an estimated need for 3.8 per cent of global GDP to be invested in infrastructure, equalling roughly US$3.3 trillion per year, most of which is in the Global South (See Woetzel et al 2016, 9; Bhattacharya & Holt 2015). The investment gap for the United Nations (UN) 2030 sustainable development goals (SDGs) is even larger. In the Global South alone, the SDG annual investment gap has ballooned from US$2.5 trillion to US$4 trillion with an estimated total gap in the US$30 trillion range (UNCTAD 2023). While neither public nor private investment levels are where they need to be, public investors are outperforming private ones in much-needed climate and SDG financing. According to Climate Policy Initiative data on trackable climate finance, private investors contributed US$463 billion, or just under 33 per cent, of total climate finance in 2022, while public institutions contributed US$730 billion, or nearly 52 per cent (CPI 2023).

It is unlikely that profit-maximizing private investors can be an appropriate source of financing for essential infrastructure like WSS (let alone grants or concessional support). Schemes like the World Bank's "cascade" approach to mobilize private capital for long-term investments have been failing due to unfavourable risk-return profiles and long-term investment horizons, which shareholders often shy away from (Carvalho de Rezende 2018, 306). Private investors often prefer established, lower-risk projects and tend not to invest in construction phases with negative cash flows, of which infrastructure is initially subject (Bitsch et al. 2010; Wilkins 2014; EPSC 2017; Griffith-Jones et al. 2018, 8). Consequently, private finance for water operators is "almost non-existent" (Kolker et al. 2016, 1). Understanding that private investors are first concerned with maximizing returns rather than achieving public policy objectives around essential WSS infrastructure helps us to understand why low levels of private investment endure—and why low private investor interest can be seen in reality as a positive trend (McDonald et al. 2021). In almost every WSS scenario, private investment is inappropriate and likely counterproductive.

The enduring empirical reality is that public financing dominates WSS budgets, and is credible (Alaerts 2019, 21). What WSS private sector involvement does exist is tied to relatively insignificant public–private partnerships (PPPs) that are predominantly concentrated in wealthier communities, reinforcing the claim that private finance is structurally averse to prioritizing social equity outcomes (McDonald et al. 2021, 118–9). Even when public and private finances are blended in WSS, only 7 per cent is aligned with SDG 6 due to little potential for expected scales of economic returns (McDonald et al. 2021, 121). Short-term, profit-oriented, private and market-based finance is inferior in public WSS infrastructure financing. PDBs, by contrast, can be adept at managing the maturity, cost and scale of infrastructure financing, which are crucial for infrastructure due to high upfront costs and long construction pay-off periods (Griffith-Jones et al. 2018, 30). Moreover, PDBs can facilitate aid, grant and concessional financing into priority sectors as a public purpose.

The challenge, as Reis (2022, 883) puts it, is "how can the need to finance [WSS] services be brought closer in line with the abundant resources of public development banks?" The approach here, however, is not to simplistically assert that PDBs are *inherently* or essentially superior at financing WSS. Our view is only that PDBs have the *potential*. This reflects a dynamic view of public banks, which is an anti-essentialist stance that conceptualizes public banks as neither inherently good nor bad institutions by virtue of being publicly owned (Marois 2022; cf. Garcia-Arias et al. 2022; Güngen 2023; McArthur 2024; Mikheeva 2024). Rather, public banks are only as good or as bad as societies make them to be—subject to time- and place-bound, gendered, racialized and class-divided power struggles over what public banks do, why and for whom within global capitalism. Understood in this dynamic (hence evolving) way, societies can credibly command their PDBs to adopt pro-public operations. Yet a pro-public orientation is anything but guaranteed, with public banks also being commanded to adopt pro-private strategies, particularly given renewed multilateral pressure for financial de-risking, blending and PPPs to drive green transitions and SDG investments (Badré 2018; cf. Marois 2021). What is required is that governing authorities make better use of known PDB capacity to function differently from market forces, which tend to "under-supply socially beneficial investments" (Mertens et al. 2021, 5). That is, PDB policy-mandated financial support helps to render infrastructure investment economically viable (Chandrasekhar 2016, 23). Historically, PDBs have often led the long-term financing of complex and expensive infrastructure projects that have been necessary for socio-economic transformations within countries and regions (Kregel 2015; Marois 2021; Mikheeva 2024).

The German KfW is known to be a promising example of a PDB that is effective, stable and well-run at the same time as being relatively "green," democratic and guided by the public interest (VÖB 2014; Ervine 2018; Marois 2021). The KfW was founded in 1948 out of a context of conflict to

support societal and economic reconstruction, as well as the refugee crisis in war-torn post-World War II Germany. An innovative response to incoming US Marshall Plan funds, the KfW was "designed to hold the incoming capital, magnify it, and then to redirect it towards post-war economic reconstruction" (Marois 2021, 195). The KfW has financed an essential part of Germany's public infrastructure (Marois 2024). It also played a crucial role in German reunification by helping East Germany integrate with West Germany. Today, the Federal Republic of Germany holds 80 per cent of KfW ownership shares, and the German federal states hold the remaining 20 per cent (Moslener et al. 2018, 66).

At the end of 2023, the KfW had over EUR 595 billion in total assets (BankFocus 2024). Over the course of 2023, the KfW raised about EUR 90 billion (USD 99.6 billion) in capital in global markets, issued over EUR 111 billion in new loans and made a profit of EUR 1.6 billion (KfW 2024a). The KfW also provided just under EUR 11 billion in promotional lending to the Global South in 2023. Backed in federal law by a formal German state sovereign guarantee, the KfW can access financial markets at the "cheapest interest rates" and then offer loans below market rates, made possible by the fact it does not have a profit maximization mandate (Marois 2021, 197). This too sets the KfW up to help distribute German development aid. The policy-based trajectory of KfW projects is possible due to the financial support of the German government, but the actualization of its social impact and development mandate is contingent on execution (as analyzed below). While the KfW maintains substantial institutional flexibility, it must obtain consent from the Ministry of Finance for a project's financial commitments (Moslener et al. 2018, 69). At the same time, the KfW has access to government officials, regulators, in-house technical and engineering expertise and financial backing to "pursue economic—rather than purely commercial—objectives" (Moslener et al. 2018, 63). While not all investments at the KfW are independent of market principles, in-house expertise frees the KfW from relying heavily on expensive consulting firms, and this in turn raises the chances of project success given institutional commitments to capacity building and fostering long-term learning amongst KfW staff (Moslener et al. 2018; Marois 2021). *Global Finance* has ranked the KfW, with a triple-A credit rating, as the safest bank in the world for the last 14 years running (Marois 2024, 9). The KfW is a public repository of development knowledge, and it is often successful at funding large, complicated infrastructure projects because it gets involved in all stages of a project, from development to elaboration, execution and assessment (Studart & Gallagher 2016; Marois 2021).

Water supply and sanitation in the OPT

Any study of water in the OPT must begin by situating Israel's occupation of Palestine, which is an ongoing process of continued annexation and

occupation up to and including plausible present risk of Palestinian genocide (as ruled on by the International Court of Justice (ICJ) on January 26, 2024). In response to Israel's invasion, the ICJ stated that Israel must "take immediate and effective measures to enable the provision of urgently needed basic services and humanitarian aid" in the Gaza Strip. As of May 2024, the Palestinian death toll is approximated at 36,000. A very brief history of Israel's occupation of Palestine provides some limited historical context for the KfW's presence and probable future reconstruction interventions.

Palestine has been under constant threat and occupation since 1947, when British rule was terminated and civil war broke out in response to the United Nation's Partition Plan to create independent Jewish and Arab states alongside an internationalized Jerusalem (United Nations 1947). Over 750,000 Palestinians, some 85 per cent of the local population, were displaced from the area that became the State of Israel (Brouma & Ezel 2011, 1001). The establishment of the Israeli State in 1948 led to the first Arab–Israeli War. In 1967, during the Six-Day War, Israel captured the Gaza Strip from Egypt, the West Bank and East Jerusalem from Jordan and the Golan Heights from Syria.

The initial Oslo Accords signed in 1993 were a chimerical "peace process" wherein negotiations "reduc[ed] the Palestinian struggle to the process of bartering over slivers of land" and reinforced the status quo of Israeli settler-colonialism (Hanieh 2013). The Palestinian National Authority was then formed to govern in the West Bank and the Gaza Strip in 1994. Israel denied acknowledgement of a Palestinian State, and the Oslo Accords in 1995 effectively banned Palestinians from 60 per cent of the West Bank, including parts of Jerusalem, which both Palestine and Israel lay claim to as its capital. Although the Oslo Accords collapsed in 2001, and Israel disengaged from Gaza in 2005, Israeli-controlled borders and siege remain in effect to the extent that the international community still considers the territory as occupied by Israel. Since 2007, the PA has been split between an internationally recognized administration in the West Bank and an "internationally isolated Hamas administration in Gaza" (Brouma & Ezel 2011, 1001).

On October 7, 2023, Hamas and other armed groups crossed the Gaza border into Israeli territory. Over three days, some 1200 Israeli and foreign nationals in Israel were killed and approximately 5400 injured. Hamas forces abducted about 200 people from Israel. In response, the Israeli government has laid siege to Gaza, killing tens of thousands of Palestinians and destroying hundreds of thousands of homes as well as demolishing hospitals, schools, universities and basic infrastructure, including water and sanitation. This is the context at the time of writing and context for the ICJ's ruling of plausible genocide by Israel.

Behind the perpetration of plausible genocide is the long-term and sustained conflict context between Israel and Palestine, wherein Palestinians have struggled to build and maintain essential public services due to Israeli sanctions. These services include public WSS.

The weaponization of water in the OPT

The two main water resources for Israel and the OPT, both transboundary, are the Jordan River and the West Bank Mountain Aquifer (Brouma & Ezel 2011, 1003–4). There is also a coastal aquifer that has become increasingly abstracted (that is, pumped out) and salinated. Gaza relies on the latter (Cahill-Ripley 2011, 4). By 2011, over 95 per cent of Gaza's water was reported unsafe to drink, with the result being negative health impacts, particularly among the enclave's poorest inhabitants (Brouma & Ezel 2011, 1005) (and the current war has only intensified the water problem; see Hall et al. 2024 and Zeitoun et al. 2024). Inhabitants of the OPT are poor. According to a 2018 OCHA humanitarian needs assessment, "some 2.5 million people are in need of assistance on a total population of 4.95 million, and 1.9 million people are targeted by humanitarian interventions" (Romano et al. 2019, 23). The continuously deteriorating political and economic reality of the OPT exacerbates poverty through lasting effects upon people's ability to pay for goods and services, let alone pay for large-scale infrastructure like WSS that is meant to endure for decades. Due to Israel's hegemony over water resources, according to the World Bank in 2018, "water consumption in the West Bank averaged only 62 liters per capita per day (LPCD), less than the World Health Organization (WHO) recommendation of 100 LPCD for full health and hygiene benefits" (Bishara et al. 2021, 70). Considering climate change and rising fossil fuel prices—not to mention the fragility of almost inexistent infrastructure due to political instability—water sources in Palestine will continue to deteriorate, placing further pressure on ensuring adequate living conditions in any near future.

Already "from 1967 to 1974…the expropriation of land in the Jordan Valley by Israeli settlers meant that 87% of all irrigated land in the West Bank was removed from Palestinian hands," with "restricted overall water use by Palestinians, while Israeli settlers were encouraged to use as much water as needed" (Hanieh 2013). Net Israeli water imports have been calculated at over three times both amounts available from local water sources and average Palestinian water consumption rates. Water was an issue designated to be dealt with under Final Status Negotiations in the Oslo Accords, but because Israel had not officially annexed either the West Bank or Gaza (at the time, although Israel began illegally annexing the West Bank in 2023), Israeli national (civil) law does not apply to the Palestinian territories (Cahill-Ripley 2011, 125). The Oslo Accords distributed 90 per cent of the shared water to roughly 7 million people in Israel while the remaining 10 per cent was allocated to 3.5 million people in the West Bank and Gaza (Zeitoun et al. 2024). The Oslo Accords are also responsible for "the Joint [in name only] Water Committee which has jurisdiction over the West Bank only (and not Israel)" (Zeitoun et al. 2024). In order to build any WSS infrastructure in the OPT, a permit must be obtained from the Israeli army. In fact, the very first

military order Israel issued in the West Bank in 1967 banned Palestinians from drilling wells (Zeitoun et al. 2024).

In stark contrast to the OPT, according to 2015 data, 100 per cent of the Israeli population had access to water sources protected from external contamination and improved sanitation facilities (Rosenthal 2020). Israel's national water supply network is highly integrated, with wastewater recycling and desalination used to provide water for irrigation (Brouma & Ezel 2011, 1003). The integration and high level of service coverage is possible in part due to Israel's limiting of Palestinian access to the Mountain Aquifer and exploiting the upper Jordan River so heavily that "the lower Jordan River now has only 2% of its natural flow" and was mostly sewage as early as 2011 (Brouma & Ezel 2011, 1004). Additionally, researchers estimate that approximately "15 MCM [thousand cubic metres] /yr of the wastewater generated in the Occupied West Bank flows into Israel and is treated or partially treated in five Israeli treatment plants," then reused in the Israeli agricultural sector without any being reallocated to Palestinians in the Occupied West Bank (Salem et al. 2021, 135).

Israel argues that Palestinian water problems are "a product of internal PA [Palestinian Authority] mismanagement and that the Palestinians are pursuing a 'sewage intifada' [rebellion] against Israel" (Brouma & Ezel 2011, 1006), essentially making a scapegoat of Israel. This has provided justifications for Israeli weaponizing water infrastructure as the Israeli military has been deployed "indiscriminately or intentionally" to extensively damage water infrastructures. For example, in 2002, over 15,000 people in Jenin went without piped water for a month (Brouma & Ezel 2011, 1007). As evidenced during the ICJ's ruling on plausible genocide in Gaza, Israel has the ability to shut off the water supply to Gaza entirely and is willing to flood Gaza's sewage systems with salt water as part of its assault strategy, which puts the health and safety of the population at risk.

Asymmetrical governance systems in Palestine, including Israeli military control over water resources (El-Fadel et al. 2001, 58), are responsible for declining investment rates and weak management in WSS (World Bank 2009, 67). Israel commands 85 per cent of West Bank groundwater resources, where "more than 220 Palestinian communities in the West Bank (25% of total Palestinian communities) are not linked to public water distribution systems" (Jad & Mohammad 2001, 18). Depletion of Palestinian water resources corresponds to severe water shortages, with even harvesting rainwater restricted as long as new collection infrastructure is forbidden. A black market in buying and selling of water has arisen in attempts to address Palestine's lack of control of essential resources such as water, alongside Israeli obstruction of flows of goods that has slowed the development process in the OPT (Global Water Partnership Mediterranean 2015). Long before the most recent military assault, more water supply was needed to overcome infrastructural deficiencies, yet there are "significant economic, institutional, and political impediments" that made the maintenance and operation of existing

infrastructure and further expansion exceedingly difficult (Brouma & Ezel 2011, 1005).

The Palestinian Water Authority (PWA)

The Palestinian Water Authority (PWA) was established in 1995 by the PA to regulate the water sector (Global Water Partnership Mediterranean 2015, 16). The PWA aims for development in addition to meeting basic needs (State of Palestine 2017), with a new Water Law introduced in 2014 to further:

> develop and manage the Water Resources in Palestine, to increase their capacity, to improve their quality, to preserve and protect them from pollution and depletion, and to improve the level of water services through the implementation of integrated and sustainable water resources management principles. (Global Water Partnership Mediterranean 2015, 18)

In 2006, external sources provided 40 per cent of the PA's revenues, but clearance revenues and external aid (the two largest sources of funding for PA operations) are subject to political disruptions (Overseas Development Institute 2012, v). In a context where constraints can make "the movement of even one pipe a logistical and administrative challenge," development partnerships have been "stuck in emergency rather than strategic mode" (World Bank 2009, 67). With current conditions making integrated resource management "impossible" and development efforts dwindling "to a series of stop-gap coping strategies," reformulation of investment programmes is a priority action item (World Bank 2009, 67). Prior to the current assault on Gaza, approximately US$74 million was needed to "enhance the capacity of the wastewater treatment infrastructure in Gaza and to bridge the funding gap for operation and maintenance costs for water and wastewater facilities" (Middle East Quartet 2022, 5). This points to the need for greater support for WSS, of which PDBs appear to have a potentially vital role in supporting public water and sanitation infrastructure in development contexts (McDonald et al. 2021; Güngen 2022; Reis 2022; Marois & McDonald 2022).

The PWA faces barriers in building and maintaining sustainable WSS based on the facts of being an occupied territory and being poor. There are few viable options open to the PWA for securing market-based WSS funding at the pace, scale and on the terms appropriate for building and delivery sustainable WSS in Palestine. In private investors' logic, WSS in Palestine is not "bankable." According to a 2015 Global Water Partnership Mediterranean Report (see pages 16, 27, 33), the private sector and PPPs are largely unable to provide the rapid improvement of WSS in the region. In a settler–colonial conflict context like Palestine, private finance is entirely uninterested in and incapable of funding public WSS. The only option is public funding, and foreign concessional and aid-based funding at that.

The KfW in the OPTs' water and sanitation services

Since 2013, the KfW has provided EUR 6.3 billion to over 200 water sector projects globally, 21 per cent of which has gone to the Middle East (Reis 2022), and it has been active in Palestine since 1995 (KfW 2024b). As of May 2024, the KfW had 72 active projects in Palestine and a total portfolio of EUR 765 million. Following a review in late 2023, Germany's Federal Ministry for Economic Cooperation and Development (BMZ, *Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung*) decided to maintain aid and development cooperation in Palestine.

German aid, directed by the BMZ, has supported a number of WSS projects in the OPT. The KfW has been charged with delivering it. Alongside supporting implementation and expansion of central water supply networks and sewage management in urban areas, the BMZ's activities are guided by three principles that are relevant to the KfW in Palestine: 1) water's capacity to reduce conflicts; 2) an Integrated Water Resources Management approach; and 3) investment sustainability, or the ability for infrastructure to continue to operate beyond a project's scope (BMZ 2017). For its part, the PWA is broadly aligned with the BMZ and the KfW in its long-term goals of constructing sustainable desalination and wastewater treatment plants, improving network efficiency, increasing coverage, reusing treated wastewater for agriculture, and governance (Palestinian Water Authority 2014, 12). The German Society for International Cooperation (GIZ), an umbrella organization that encompasses GTZ (*Deutsche Gesellschaft für Technische Zusammenarbeit*), is a German aid agency that carries out the technical aspects of the BMZ.

In our interview with a Palestinian UNCTAD officer, the person suggested that the KfW is active in OPT WSS because "public banks are willing to take the risk" (interview 2). When asked why public banks take those risks, the official responded that this is because returns on investments are not prioritized; rather, public banks have mandates for public results and have access to better interest rates from international markets. In this personal view, public banks "have no political agenda" (a view that differs from ours). In the case of the KfW, however, it can take therefore a longer-term view of engagement in development projects than might not be possible from within the confines of shorter-term electoral cycles. Still, as Zeitoun et al. point out specifically in the context of transboundary water arrangements, "'transformative analysis' must critically evaluate the processes that establish and maintain the arrangements" (Zeitoun et al. 2020, 365), especially in inequitable arrangements where the less powerful actor is never favoured (Ibid. 371), such as the OPT where Western imperial (and thus also local) powers can stand to gain from involvement and influence. This applies to the contested functions of public banks like the KfW, which are always embedded within and subject to wider power relations, including within the OPT and throughout its continued occupation.

In another interview with a high-level KfW director engaged in the region, it was noted that funding the water sector in the OPT makes sense because it resonates on a global level, and because creating the conditions for reliable WSS can help to stabilize the political situation by creating respect for the PA. This stability is only possible due to the "PA's fully subordinated position," where state bureaucracy and "the ability to accumulate was always tied to Israeli consent and thus came with a political price—one designed to buy compliance with ongoing colonization and enforced surrender" (Hanieh 2013). With few functioning regional water utilities, local municipal administrations must oversee projects, and there can be a "fear of public backlash to raise further [funds]" due to poor maintenance necessitating quick rebuilds (interview 1). With financial commitments for maintenance and operating costs being hard to subsidize, the KfW director does not see WSS in the OPT becoming as regionally integrated and managed as the KfW would wish. On the debate of private bank financing in WSS, the KfW director stated that "the perception in Palestine is that private (international) funding would be more technically expert than local operators but much more expensive." However, with projects taking on average ten years to complete, WSS in the OPT "is not bankable."

KfW project report case studies from the OPTs

The following sections review four KfW WSS project reports in the OPT communities of Tulkarem, Jenin and Tulkarem, Al-Bireh and Hebron. The KfW reports are from 2008 to 2017, but the contents reflect a longer timeframe and illustrate how the KfW engages with Palestinian municipalities and WSS infrastructure. The engagements are imperfect, but they demonstrate the significance of policy-based financial support from PDBs for public water and sanitation in conflict situations.

Tulkarem

Tulkarem is a city in the West Bank, and this summary is based on a 2017 KfW post-evaluation report on funding for water and sanitation systems in this municipality over 129 months in the context of data collected from 1995 onwards (KfW 2017). The report states that investment costs of EUR 10.96 million were spent on construction; rehabilitation of the existing distribution network, wells and reservoirs; installing new pipelines and pumping stations; and training commercial and technical staff of the Tulkarem Municipality Water and Sewage Department, which was EUR 3.8 million more than planned. The BMZ, the German government aid programme, supported the KfW programme by providing EUR 10.16 million in non-repayable grant aid, of which EUR 9.85 million was funding and EUR 300,000 covered training components, with local counterparts contributing EUR 1.10 million. The project aimed to improve the living conditions

of approximately 100,000 people, including two refugee camps, by reducing unaccounted-for water (UfW), that is, water that is lost before reaching customers. The project was designed to prevent future health hazards by achieving an "economically efficient supply" of safe drinking water and was "sensitive to the possibility of conflict in that it focused on rehabilitating existing well components" rather than increasing yields (KfW 2017, 1). The KfW framed its water funding intervention in this way because Israeli authorities had already approved the existing wells' use, and gaining new authorizations for WSS projects in Palestine is an unpredictable and lengthy process (KfW 2017, 1). The World Bank confirms that WSS authorizations by the Israeli Civil Administration or Joint Water Committee in Palestine consistently come with "arbitrary" restrictions (World Bank 2009, 54). With the potential for conflict in mind, the KfW recommends future rehabilitations of existing well installations to increase yield as well as pump efficiency (KfW 2017, 1). This will likely be an enormous task given current conflict-related destruction of water infrastructure (see below).

The KfW uses five criteria to evaluate development interventions: relevance, effectiveness, efficiency, impact and sustainability. The Tulkarem water supply project received an overall "3" out of 6 in 2017, with "1" being the highest possible rating. The satisfactory rating of "3"—meaning that "the project fell short of expectations but that positive results dominated"—was assigned to each category of criteria aside from "relevance," which received the "good" rating of "2." Sustainability was rated on a 4-point scale, with "3" indicating a satisfactory rating overall despite the developmental efficacy being "very likely to decline significantly" (KfW 2017, 6). Criteria for sustainable operations includes a project being able to function independently for three years (interview 1).

From employing 39 people in 1998 to 122 people in 2017, Tulkarem delivers water to 15,000 households, nearly double the number from 1998 (KfW 2017, 4). In terms of financial sustainability, operating expenses have grown to US$2.4 million a year, whereas revenues only amount to NIS 7 million (KfW 2017, 5). The municipality is expected to make up the balance. A consumption survey on higher tariffs found that the financial burden of monthly water for an eight-person household was roughly 4 per cent of the average income per household, which is theoretically enough to cover the costs of maintenance and operations (KfW 2017, 3). However, only 65 per cent of water produced is actually billed for and collected (KfW 2017, 3). To motivate customers to pay their monthly bills, Tulkarem links the payment of water to power supplies (KfW 2017, 5) (which is perhaps a reflection of problematic cost-recovery pressures applied by KfW in water services). Low water tariffs make financial sustainability in WSS difficult, and water tariff revenues are "often used for other relevant municipal needs" (interview 1). The KfW director we interviewed confirmed that municipalities often prioritize other constituent issues if shortages are not too severe (interview 2). Even though funds are meant to be for new investments rather than

existing maintenance and operational expenses, "without donor financing, many municipalities wouldn't be viable" at all (interview 1). Cost recovery in water in Palestine, like in most places, is a distant reality.

The KfW report identifies positive trends in effectiveness, even if UfW levels did not meet objectives. From 1995 to 1997, UfW levels in Tulkarem measured between 47 and 54 per cent (KfW 2017, 4). UfW was intended to be reduced to 30 per cent, but levels stood on average between 35 and 38 per cent at the time of the report (KfW 2017, 1). This is a significant improvement. At the same time, the network doubled its length and number of customers. There are also no data on how much water is delivered to Tulkarem's two unmetered refugee camps, which account for roughly 25 per cent of the population (KfW 2017, 1). The report affirms a significant, consistent supply that is reliable (24 h, 1 bar of pressure), which is "remarkable in the context of the Palestinian territories" (KfW 2017, 2). The KfW report recognizes that "a further reduction in technical UfW would not have been achievable without substantial additional investments" (KfW 2017, 3).

The policy-based KfW financial supports enabled these improvements. The difficult working conditions of the Second Intifada (2000–05) increased required funds and prolonged the project term from 39 to 129 months (KfW 2017, 3). However, the KfW "always works with public partners," meaning large projects can be accomplished as long as there is patience (interview 1). This more consistent supply of water is reported to have reduced the explosiveness of the Israeli–Palestinian conflict from a Palestinian perspective, especially given that inhabitants of the refugee camps do not pay for water (KfW 2017, 4).

Jenin and Tulkarem

A 2011 KfW report examines the water supply and sewage treatment projects for the municipal administrations of Jenin and Tulkarem, located in the West Bank. Derived from the 1995 Oslo II Interim Agreement resolutions, the projects expanded the water supply network of Jenin and rehabilitated a pond sewage treatment plant in Tulkarem (KfW 2011, 1). The projects, planned in 1998, took 54 months to be completed in Jenin and 78 months in Tulkarem. Total investment costs equalled EUR 6.24 million, with all but EUR 0.64 million being financed through KfW financial cooperation grants and aid (KfW 2011, 1). For Jenin, the objectives were improved quality of water and a reduction in system water losses—technical and administrative—from 45 per cent of supply to 30 per cent (KfW 2011, 2). This involved implementing a water loss reduction programme, refurbishing an outdated plant, restructuring the distribution system and providing consultancy services. Tulkarem's programme aimed to reduce dissolved oxygen levels to 75 per cent of initial values and to "avoid the discharge of untreated water into local watercourses during the dry season" (KfW 2011, 2). Measures enacted in Tulkarem were clearing, renovating and expanding sewage ponds,

and providing suitable network connections, infrastructure and consultancy services.

The overall performance rating for Jenin and Tulkarem was "3" (satisfactory), with relevance receiving a "2" (good), efficiency a "4" (unsatisfactory) and effectiveness, impact and sustainability all receiving ratings of "3" in the 2011 report. Relevance was rated higher because addressing the efficiency of water resources, effective sewage treatments to protect soil and groundwater and reuse of treated sewage for agriculture all contributed to greater awareness of environmental protection (KfW 2011, 2). However, the human resources side is worth noting. In a 2009 World Bank report, the director of the Jenin water utility said he believed most staff would leave if they could find another job; they had not been paid for three months (World Bank 2009, 43). The director continues, "Why spend my life here for nothing? There is nothing on the ground that makes you hope" (World Bank 2009, 43), capturing the difficulty of being a public servant in a conflict situation.

Regarding effectiveness in Tulkarem, there had been no documented uncontrolled discharges of untreated sewage during the dry season since 2006 (KfW 2011, 2). The project has had an overall developmental impact on the region's capability to reuse treated sewage in agriculture that could "counteract overuse of renewable reserves of drinking water" and contribute greatly to integrated water management and political outcomes that would reduce the potential for conflict in Tulkarem (KfW 2011, 3). In Jenin, water losses were reduced for the three years after project completion, and residual chlorine levels lowered to safe drinking levels (and have remained so). However, administrative issues have reintroduced water loss levels of over 40 per cent (KfW 2011, 2). According to interviewees, less formality in Palestine allows for quick, flexible arrangements, but this brings a risk of corruption (interview 1). The Palestinian central government is seen as dysfunctional; "they need constant technical assistance and have a high turnover of staff due to all the NGOs that come, train staff, then steal them… me included" (interview 2). Local government, however, is "much more effective" than the unstable central government because of "immediate" accountability for elected officials and funding that is more plentiful (interview 2).

However, in both municipalities, efficiency was rated unsatisfactory, or "significantly below expectations, with negative results dominating despite discernible positive results" (KfW 2011, 5). This was because neither municipal body commands "adequate financial and administrative autonomy" to guarantee operations (Ibid. 3). The KfW aims not to completely take over utility management in such cases of municipal ineffectiveness; to do so would cause conflict (interview 1). "Foreigners are easy scapegoats" (Ibid.). Taking over services from municipalities would mean that the local governments would no longer collect relied-upon water debt paid by the central government (interview 2). The Jenin and Tulkarem projects represented "the most cost-effective option[s] for rapid emergency aid," but, according to the KfW report, due to "the Israeli army's periodic invasion and occupation of the

Palestinian territories, it was not possible to carry out construction work in a timely and proper manner" (KfW 2011, 3). It is near impossible to estimate a budget that will accurately predict effects of conflict. It is rather more important that conflict projects are able to cope financially with likely delays.

Still, the KfW tends to assert a cost-recovery message that likely has little applicability in Palestine. The KfW suggests that financial sustainability could be achieved, given political support, "by gradually adjusting tariffs in line with the market and by significantly improving allocative efficiency" (KfW 2011, 3). And, while the KfW report calls for further financial support for investment projects, training and the establishment of regional sanitation associations, it also suggests outsourcing WSS to "independent service operations" (KfW 2011, 3). Cost recovery is difficult enough, and outsourcing undesirable, even in the advanced economies of Europe (Marois & McDonald 2022), let alone in a settler–colonial conflict situation like Palestine.

Al-Bireh

A 2008 KfW report outlines the sewage disposal project in Al-Bireh, again with the municipality as the local executing agency. Al-Bireh functions under the jurisdiction of the Jerusalem Water Undertaking, a regional water utility with low UfW but high tariffs, as well as being "the largest and oldest service provider" in the OPT (Global Water Partnership Mediterranean 2015, 24). Of the EUR 14.6 million spent reducing health hazards for Al-Bireh's 50,000 inhabitants and conserving regional water resources by constructing a central sewage plan, the KfW provided all but EUR 1.3 million through KfW financial cooperation grants, aid funds and the GTZ (KfW 2008, 1). The GIZ "supported the municipal authority in setting up a separate department for sewage disposal, trained the personnel and procured and financed vehicles and equipment" (KfW 2008, 2). The project not only stabilized pipelines of the rapidly expanding city of Al-Bireh but also targeted the population of the neighbouring Jericho region, which depends on connected groundwater from endangered wells and water reserves. The project design originally provided for a pipeline to a more ecologically hardy neighbouring valley for an agricultural irrigation storage basin, but "the expansion of Israeli settlements and the heavy restrictions on access roads" obstructed implementation (KfW 2008, 3).

The Al-Bireh project received an overall performance rating of "3" (satisfactory), as did every other category of criteria aside from "relevance," which received a "2" (good). Despite municipal fiscal deficits, the KfW expects the city of Al-Bireh to maintain the sewage disposal project (KfW 2008, 5). Despite the unlikelihood of such a recommendation coming to bear, the report recommends that during the planning of high-priority projects like this one, that the German federal government and partner governments make a joint decision on cost recovery and decide on the "percentages of

running costs to be financed by each side and for how long" (KfW 2008, 5). To review their development projects, Germany and Palestine meet twice a year to discuss priorities. At the same time, the KfW's development mandate ensures that the bank follows through on continuing to provide financing (interview 1).

In terms of effectiveness, the treatment plant has been in continuous operation since 2000, and other than a single 15-month period, biological purity thresholds were met (KfW 2008, 3). One target for extending the sewage system was connecting 85 per cent of the population by 2005 and then 90 per cent by 2010; the 2008 connections level reached 79 per cent (KfW 2008, 3). Because automatic control of a sludge press has been inoperable since January 2005, only 33 per cent of sludge is dehydrated before being deposited at the disposal site, resulting in pathogens re-entering purified water (KfW 2008, 3). As a short-term solution, the Al-Bireh mayor provided written confirmation that two additional technicians would be employed to operate the machinery by hand, and available KfW funds would go towards sludge drying beds as a longer-term solution (KfW 2008, 4). For this reason, the report recommends that mechanical plants be designed with an option for easy manual operation in future projects (KfW 2008, 5). In a conflict zone with unreliable access to mechanical replacement parts, manual operation alternatives are required.

In terms of efficiency, delays and higher costs were incurred due "to the invasion of Israeli armed forces, protracted curfews, coordination problems and capacity bottlenecks with local building contractors" (KfW 2008, 2). The connection costs for the Upper North District of the city were considerable, but "considering the topographical situation of Al-Bireh and the wages and incomes of the population… reasonable" (KfW 2008, 4). And, in terms of overarching developmental impacts, the report deems that considering the initial operating levels and pledged commitments by the municipality and the KfW, the objective of treated water being used as a drinking water resource further down the valley is still attainable (KfW 2008, 4). Although only 50 per cent of operating and maintenance costs were met at the time of the report, the KfW expected a 2008 increase in sewage charges and planned joint billing with water to remedy deficits (KfW 2008, 5). At the time of writing, the KfW had not confirmed if its push for cost recovery of operation and maintenance costs in Al-Bireh had been met.

Hebron

A 2006 KfW report looks at a drinking water supply project in Hebron that began in 1995. Other than EUR 25,000 contributed by the city for acquisition of a well site, the project costs of EUR 7.09 million were funded by KfW financial cooperation grants and aid (KfW 2006, 4). The construction of two deep wells and an accompanying water transport system aimed to ensure at least 16 h per day of safe drinking water for the roughly 200,000 Palestinian inhabitants of Hebron by the year 2000 (KfW 2006, 2). With entire districts

shut off for weeks at a time in the summer months, Palestinians were using only 40 L per person a day on average, in comparison to 250 L per Israeli settler per day (KfW 2006, 2). The situation posed risks. Palestinians attempt to store rainwater unhygienically on their roofs, and there are health risks posed by sewage seeping into empty water pipes. The project aimed to address both (KfW 2006, 2). The overall performance rating of the project was "5," or a "clearly insufficient degree of developmental effectiveness" (KfW 2006, 2). Significance/relevance received a "4" (slightly inefficient), effectiveness and efficiency both "5" (clearly inefficient), and there was no category for overall developmental impact or sustainability in this report.

In this case, the engineering firm for the project was the partially state-owned Israeli consulting company TAHAL based in Tel Aviv. This was an anomaly raised in the interviews. It is also worrying. Interviewee 1 claimed that typically all projects have international competitive bidding. Project appraisal had classified the situation in Hebron as emergency relief, so TAHAL had urgently "been contracted directly by the project executing agency with the consent of the German Ministry for Economic Cooperation and Development (BMZ)" (KfW 2006, 3). Interviewee 2 noted that "direct procurement is fishy," and the fact that the project executing agency was the Palestinian City of Hebron does not contradict this view. Even the KfW report states that "the data on the hydro-geological situation in the conflict region published by the public authorities has to be interpreted with particular caution" (KfW 2006, 7). Indeed, test borings determined that existing water volumes were not as high as expected, so projected volumes were reduced, but water production of the wells was even lower in operation than anticipated (KfW 2006, 3). No further rise in water levels could be expected due to heavy overuse of the upper groundwater aquifer. Given such disparities in the expected and actual production of the wells and the fact that TAHAL had "comprehensive knowledge about the hydro-geological situation in the project region and had already prepared different studies and master plans on the drinking water supply in Hebron," the report casts doubt as to whether TAHAL ensured that tests were conducted properly (KfW 2006, 3). At the same time, political controversies obstructed the electricity supply system from being connected to the existing power supply line of the Israel Electric Co. (KfW 2006, 4).

The emergency construction, scheduled for completion mid-1997, only began operation in 2001 and was fully completed in 2003 (KfW 2006, 4). Israeli authorities delaying approvals and the city of Sa'ir's year-long refusal "to have the transport pipeline be constructed along their main road" already caused delays before the second Intifada began in 2000 (which closed the city centre to free movement) (KfW 2006, 4). At the time of the project appraisal, Palestinians consumed 17 per cent (around 115 million m^3/year) of the renewable water resources of the West Bank (679 million m^3/year), and the Oslo II Agreement was supposed to grant them an additional 70–80 million m^3/year of drinking water (KfW 2006, 2). However, because hydro-geographical

data were not made available for verification to the project executing agency or the KfW, the project caused inefficiencies and cost increases of approximately 31 per cent, and "contributed only slightly to an alleviation of the initial problem" (KfW 2006, 4). Total costs increased by EUR 1.38 million, in part due to road asphalting requested by the city of Sa'ir (KfW 2006, 4). The report suggests cancelling the remaining funds of EUR 86,000 as the executing agency has not yet used them to eliminate water hammer problems as was intended (KfW 2006, 4). Collection efficiency of 60 per cent had grown to 95 per cent in 1997, but it then dropped to 50 per cent in 2004 and then to a mere 25 per cent in 2006 (KfW 2006, 6). With multiple contributions from the World Bank, UNDP and the French government towards rehabilitating the Hebron distribution network, the report attributes the unacceptably high water losses to "administrative problems" such as illegal water withdrawals, manipulated water meters and incorrect meter reading (KfW 2006, 5).

This report does not treat sustainability as a separate evaluation category, but "rather as an element common to all four fundamental questions on project success" (KfW 2006, 7). Sustainability is determined by the project's facilities being able to carry on "independently and generate positive results after the financial, organisational and/or technical support has come to an end" (KfW 2006, 7). The report goes on to recommend that, in the future, a socio-economic preliminary study be prepared before intervening in a conflict area's water sector, even if the study "can only be prepared under a short-term expert assignment" (KfW 2006, 7). The KfW report indicates that the KfW encountered both financial and political obstacles surrounding the project, and that they would learn to walk the narrow path of providing their own expert technical advice while respecting local autonomy.

Intensification of water weaponization since October 7, 2023

Since the October 7, 2023, attack on Israel by Hamas, Israeli authorities have escalated their prevention and restriction of the entry of water, food, fuel and electricity into the OPT of Gaza, which had already been blockaded and periodically bombed since 2007 (that is, infrastructure destruction has been a long-standing objective of Israeli authorities). Insufficient fuel supplies have resulted in the collapse of WSS infrastructure in Northern Gaza not destroyed by Israeli bombing, resulting in tens of millions of gallons of raw sewage discharged daily into the Mediterranean Sea (Hall et al. 2024). UNICEF calculates an immediate cost of US$53.4 million to meet urgent water and sanitation needs (Hall et al. 2024). Inadequate clean water supplies exacerbate ongoing health issues of disease and infection that could spread throughout the geographic region (State of Palestine WASH Cluster 2023; Devlin et al. 2024). As of January 2024, at least 93 per cent of Gaza's population (1.9 million people) have been displaced, with the average Gazan living on no more than one third of daily emergency water standards, according to the UN (Hall et al. 2024). In December 2023, the World Health Organization

reported that there was but one toilet for every 486 people in Rafah and but one shower for 4500 people on average across Gaza (as cited in Murray & Bishara 2024). Regardless, "the pumps for sewage are not operating and the streets are flooded [with it]" (Muhammad Atallah, who works for the Palestinian Centre for Human Rights, in Devlin et al. 2024).

The escalation of violence by Israel in response to October 7 "translates into [even greater] restrictions of movements, forced evictions and displacement, house demolitions, search-and-arrest operations, disruption of schooling, and the continuous presence of the Israeli military and settlers" (Médecins Sans Frontières 2024) throughout the OPT. Up north in Tulkarem's refugee camp in January 2024, Israeli Defense Forces (IDF) damaged nearly 1000 homes and "destroyed most of the camp's roads, the water, electricity and sewage networks, as well as the telecommunications networks" (Asmar 2024). On January 25, 2024, IDF "broke into the city of Jenin and the outskirts of its camp and launched an arrest campaign amid widespread destruction of infrastructure." And although the city of Al-Bireh had been raided by the IDF in early 2024 [R. 2024 (truncated citation due to anonymity)], there were as of then no reports of damage to infrastructure.

The destruction of WSS by Israel is no accident. A 2009 UN fact-finding mission specified that the deprivation of water and the destruction of WSS infrastructure have long been Israeli strategies in Gaza and the West Bank (as cited in Murray & Bishara 2024). At the start of Israel's retaliation, it began shutting off the pipes supplying Gaza. At that time, Israeli Defence Minister Yoav Gallant stated that they were "imposing a complete siege on Gaza. No electricity, no food, no water, no fuel. Everything is closed. We are fighting human animals, and we a[re] reacting accordingly" (as cited in Murray & Bishara 2024). South Africa has since cited the weaponization of water in its ICJ case against Israel and its attempted genocide. Pedro Arrojo-Agudo, a UN Special Rapporteur on the right to safe drinking water and sanitation, stated that Israel "must stop using water as a weapon of war" (as cited in Murray & Bishara 2024).

Conclusion: an unknown future

In 2022, interviewee 1, a KfW director, reflected that in the OPT the KfW must remain politically neutral between the PA, Hamas, Fateh and Israeli authorities: "A project becomes as shaky as the central government," with Palestinians being directly affected by triggers in the Israeli–Palestinian conflict and used for leverage in lead-ups to elections. According to interviewee 2, a Palestinian United Nations officer with experience working in the OPT, politics and development are interwoven such that "there can be no development in Palestine while under occupation." The systematic devastation of Gaza following the October 7, 2023, Hamas attack into Israel demonstrates these points with terrible forcefulness. At the time of writing, the devastation

continues despite the ICJ's order for Israel to stop and to prevent likely genocide in the OPT. Continued cooperation between the KfW and Palestine's public WSS faces a wholly uncertain future.

What can be said is that the KfW's past WSS projects in the OPT reflect its unique capacity as a PDB to finance public infrastructure in the OPT specifically and in conflict situations as a matter of policy, not profit—even if never independent of wider power relations. The KfW in the OPT is reflective of wider public bank/public water experiences. Reis (2022, 819) writes that water operators in Latin America continue to approach the KfW because of "prior positive experiences…in particular regarding the technical advice that the bank provides on top of the funding." The KfW self-assessment reports suggest a willingness to provide developmental supports over the long term and as a reflection of need, even in uncertain conflict contexts. This is an important lesson, if one that must be tempered by the continued occupation of Palestine.

The capacity of the KfW, and of other PDBs, to provide policy-based infrastructure financing and aid funding to the OPT will be of paramount importance as the future need for reconstruction is certain. There will be no private sector alternatives, and even if there were, these for-profit sources are neither desirable nor viable for public infrastructure financing in conflict contexts like Palestine. Moreover, KfW will need to make use of its technical capacity and expertise to help channel development grants and aid into the OPT. In this role, there is scope for the KfW to lead on fostering public–public collaborations—that is, to work collaboratively with other PDBs and aid organizations to support the delivery of reconstruction finance. Indeed, the KfW was founded to support post-World War II reconstruction in Germany. The KfW could help do so in the OPT and play an essential role in public infrastructure rebuilding. But in whose interests and benefit? How can PDB funding support Palestinian independence and developmental aspirations? Further research into PDB financing of reconstruction would support not only Palestinian reconstruction but also reconstruction in other conflict contexts, from Ukraine to Sudan to eastern Turkey.

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