



Environmental Injustice in the West Bank

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List of Abbreviations

ARIJ	Applied Research Institute of Jerusalem
ATG	Alternative Tourism Group of Palestine
CBD	Convention on Biological Diversity
CEPF	Critical Ecosystem Partnership Fund
CESCR	Covenant On Economic, Social, And Cultural Rights
COP	Conference of the Parties
CSO	Civil Society Organization
EIA	Environmental Impact Assessment
EQA	Environment Quality Authority
EU	European Union
FMEP	Foundation for Middle East Peace
IAS	Invasive Alien Species
ICJ	International Court of Justice
INPA	Israel Nature and Parks Authority
IUCN	International Union for Conservation of Nature
IWMI	International Water Management Institution
JSCs	Joint Service Councils (deal with waste)
LRC	Land Research Center
MDC	MAAN Development Center
MOA	Ministry of Agriculture
MOE	Ministry of Education
MOEA	Ministry of Environment Affairs
MOH	Ministry of Health
MOLG	Ministry of Local Government
MOPAD	Ministry of Planning and Administrative Development (newer name)
MOTA	Ministry of Tourism and Antiquities
NAP	National Adaptation Plan to Climate Change
NBSAP	National Biodiversity Strategy and Action Plan
NCCCA	National Committee for Climate Change Adaptation
NDCs	Nationally Determined Contributions
NGOs	Non-Governmental Organizations
NRs	Nature Reserves
NSSWM	National Strategy for Solid Waste Management
OPT	Occupied Palestinian Territories
PCBS	Palestinian Central Bureau of Statistics
PEN	Public Electricity Network
PIBS	Palestine Institute for Biodiversity and Sustainability
PNA	Palestinian National Authority (now the State of Palestine)
PWA	Palestinian Water Authority
RE	Renewable Energy
SDGs	Sustainable Development Goals
SP	The State of Palestine
UAWC	Union of Agricultural Work Committees
UNDP	United Nations Development Programme

UNEP	United Nations Environment Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNGA	UN General Assembly
UNRWA	The United Nations Relief and Works Agency
USEPA	US Environment Protection Agency
WB	West Bank
WHO	World Health Organization

Executive summary

Palestine has rich cultural and natural heritage stemming from its geography (crossing road of continents) and geology (lowest point on earth elevated mountains). Our Canaanitic ancestors domesticated animals and plants and thus became part of the cradle of civilizations (the Fertile Crescent). For thousands of years people lived mostly in rural agricultural communities in relative harmony with nature. Things began to change in the 19th century with advent of industrialization and of the Zionist project and accelerated as the environment was subjected to human induced climate change, habitat destruction, overexploitation, pollution and invasive species. Furthermore, these threats to the environment are interconnected. This project focused on cataloging the impacts on the environment of Israeli activities (settlers, military, industrial, agricultural) on the Palestinian environment for the purpose of producing advocacy and legal material useful in acquiring environmental justice. For this purpose, the text is organized in sections. Section 1 gives a background on Israeli activities in the West Bank, the logic of planning settlements and military presence, and why environmental issues are important. It is clear that planning is done for exclusion and destruction of Palestinian lives even if the environment is a collateral damage. This started over 100 years ago and continues unabated in the Negev and Galilee as well as areas occupied in 1967.

Section 2 reviews in detail impact of specific activities on our environment. This includes issues of water and water associated resources, the segregation wall, pollution/waste, energy, protected and forested areas, invasive species, quarries and industrial zones, and other military and settlement activities. In water issues for example, Israel is noted to take the water of the West Bank, exploits resources like the Dead Sea, dried up the Jordan river water, and many other activities that are both illegal by international law and also make life very difficult for the local people. The segregation wall affects lives and livelihoods of both local people and wildlife (affecting biodiversity on both sides of the wall).

Section 3 covers issues specific to each of the 11 governorates. In these 11 chapters we expanded more on the Hebron and Bethlehem governorates as important areas to select from them case studies (from the work done in sections 3.10 and 3.11).

Section 4 analyzes and summarizes the dangers (past and impending) related to Israeli activities showing that they have been devastating to the environment (with a focus on the West Bank).

Section 5 on legal issues and power dynamics is composed of three subsections. Section 5.1 shows that Israeli actions are indeed violations of global conventions and customary international human rights and environmental laws. Section 5.2 Discusses issues of local jurisdictions and cases that came before Israeli courts and shows the possibilities and limitations of using colonizer's judicial system. Section 5.3 discusses regional, transboundary, and other issues of relevance arguing that the continuation of the Zionist project also impacts regional stability and sustainability. While Israel unilaterally takes tax money belonging to Palestinians as supposed compensation for waste water going across the green line, Israeli settlement (both residential and industrial) dump solid and

liquid waste that impacts human health on WB Palestinians with impunity. Israel also controls and manages national parks (stolen heritage sites that belong to the local Palestinians) and so called “nature reserves” (many are used as military training grounds and for settlement expansion. All of this is contrary to international law.

In section 6, we cover how local people have resisted and continue to resist environmental injustice but this is also covered briefly under each of the governorates (Section 3) and in the cases selected (Section 7). Section 7 goes in detail about case studies selected for follow-up because of compelling data on violations buttressed by good potential for legal and advocacy aspects

The data collected here is highly significant and diverse material for challenging the destructive behavior of the belligerent occupying state in the West Bank. Basically, there is significant theft of natural resources from the occupied Palestinian territories (land, water, stone, oil, gas, etc.) and significant damage to the environment, affecting lives and livelihoods of local people and local fauna and flora. We focused on the West Bank with limited discussion of Gaza or areas inside the Green Line. But all areas suffer from damage that is similar despite some peculiarities because they were driven by the same colonial mentality. However, even though these 300+ pages and 620+ references suggest there is a lot of information, we must emphasise that there is so much more research to be done in these areas of threats and challenges to the Palestinian environment.

المخلص التنفيذي

تمتلك فلسطين تراثاً ثقافياً وطبيعياً غنياً نابغاً من جغرافيتها (عرق الزجاجاة لقارات) وجيولوجيتها (أدنى نقطة على الأرض و جبال مرتفعة وسواحل ألخ). قام أسلافنا الكنعانيون بتدجين الحيوانات والنباتات ، وبالتالي أصبحوا جزءاً من مهد الحضارات (الهلال الخصيب). لآلاف السنين عاش الناس في المجتمعات الزراعية الريفية في ونام نسبي مع الطبيعة. بدأت الأمور تتغير في القرن التاسع عشر مع ظهور التصنيع والمشروع الصهيوني وتسارعت مع تعرض البيئة لتغير المناخ بفعل الإنسان ، وتدمير الموائل ، والاستغلال المفرط ، والتلوث ، والأنواع الغازية. علاوة على ذلك ، فإن هذه التهديدات على البيئة مترابطة. ركز هذا المشروع على فهرسة التأثيرات البيئية للأنشطة الإسرائيلية (المستوطنين ، والعسكريين ، والصناعيين ، والزراعيين) على البيئة الفلسطينية بهدف إنتاج مواد دعوية وقانونية مفيدة في تحقيق العدالة البيئية. لهذا الغرض قام البروفسور مازن قمصية وطاقم معهد فلسطين للتنوع الحيوي بدراس معمقه لتأثير الأنشطة الإستعمارية على طبيعة فلسطين

وتم كتابة نص من 300 صفحو و540 مرجع موثق لهذا الموضوع. تنظيم النص في أقسام. يقدم القسم الأول خلفية عن الأنشطة الإسرائيلية في الضفة الغربية ، ومنطق التخطيط للمستوطنات والوجود العسكري ، ولماذا تعتبر القضايا البيئية مهمة و. يستعرض القسم الثاني بالتفصيل تأثير أنشطة معينة على بيئتنا. وهذا يشمل قضايا المياه والموارد المرتبطة بها ، وجدار الفصل ، والتلوث / النفايات ، والطاقة ، والمناطق المحمية والغابات ، والأنواع الغازية ، والمحاجر والمناطق الصناعية ، والأنشطة العسكرية والاستيطانية الأخرى. في قضايا المياه على سبيل المثال ، يُلاحظ أن إسرائيل تستولي على مياه الضفة الغربية ، وتستغل موارد مثل البحر الميت ، وتجفف مياه نهر الأردن ، والعديد من الأنشطة الأخرى التي تعتبر غير قانونية بموجب القانون الدولي وتجعل الحياة صعبة للغاية بالنسبة لهم. السكان المحليين. يؤثر جدار الفصل على حياة ومعيشة السكان المحليين والحياة البرية (يؤثر على التنوع البيولوجي على جانبي الجدار).

يغطي القسم الثالث قضايا خاصة بكل محافظة من المحافظات الإحدى عشرة مثلا التدمير للقدس ومناطق جنوب الخليل. يحلل القسم الرابع ويلخص المخاطر (الماضية والوشيقة) المتعلقة بالمستوطنات ويضع المرحلة للأقسام الثلاثة التالية. يتألف القسم الخامس الخاص بالمسائل القانونية وديناميكيات السلطة من ثلاثة أقسام فرعية. يوضح القسم 5،1 أن الإجراءات الإسرائيلية هي في الواقع انتهاكات للاتفاقيات العالمية وحقوق الإنسان الدولية العرفية

والقوانين البيئية. القسم 5.2 يناقش قضايا الاختصاصات القضائية المحلية والقضايا التي عرضت على المحاكم الإسرائيلية ويوضح إمكانيات وقيود مثل هذا النظام. يناقش القسم 5.3 القضايا الإقليمية والعبارة للحدود وغيرها من القضايا ذات الصلة. بينما تأخذ إسرائيل من جانب واحد أموال الضرائب المملوكة للفلسطينيين كتعويض مفترض عن مياه الصرف التي تمر عبر الخط الأخضر ، فإن المستوطنات الإسرائيلية (السكنية والصناعية) تتخلص من النفايات الصلبة والسائلة تؤثر على صحة الإنسان على فلسطيني الضفة الغربية مع الإفلات من العقاب. تسيطر إسرائيل أيضاً على الحدائق الوطنية وتديرها (مواقع التراث المسروقة التي تخص الفلسطينيين المحليين) وما يسمى بـ "المحميات الطبيعية" (يستخدم الكثير منها كمناطق تدريب عسكرية ولتوسيع المستوطنات ، كل هذا مخالف للقانون الدولي.

في القسم السادس نغطي كيف قام السكان المحليون وما زالوا يقاومون الظلم البيئي ولكن هذا أيضاً تمت تغطيته بإيجاز تحت كل محافظة (القسم 3) وفي الحالات المختارة (القسم 7). يقدم القسم السابع بالتفصيل دراسات الحالات المختارة للمتابعة بسبب البيانات المقنعة عن الانتهاكات التي تدعمها الإمكانات الجيدة للجوانب القانونية والدعوية

البيانات التي تم جمعها هنا هي مواد شديدة الأهمية ومتنوعة لتحدي السلوك المدمر لدولة الاحتلال المحاربة في الضفة الغربية. بشكل أساسي هناك سرقة كبيرة للموارد الطبيعية من الأراضي الفلسطينية المحتلة (الأرض ، والمياه ، والحجر ، والنفط ، والغاز ، وما إلى ذلك) وأضرار جسيمة بالبيئة ، مما يؤثر على حياة وسبل عيش السكان المحليين والحيوانات والنباتات المحلية. لم نناقش غزة أو مناطق داخل الخط الأخضر التي تعاني من أضرار تشبه في بعض الحالات ما حدث في الضفة الغربية (ولا تزال تحدث) ولكن لها خصائصها وتحدياتها الخاصة.

1. Background

Palestine is located between Europe, Asia and Africa with an area of 27,000 km² (West Bank: 5,879 km², Gaza: 378 km²) (UNEP 2003) and belongs to the African Tectonic plate which as a result of the plate collision resulted in having the northern part of the great Rift Valley located here (including the lowest point on earth at the Dead Sea). Palestine is also the western part of the Fertile Crescent, where humans first developed agriculture (Qumsiyeh, 1996). Its unique geography and geology have given Palestine more biological diversity than some countries ten times its size. The diverse habitats cover five ecozones: the central highlands, the semi-coastal region, the eastern slope, the Jordan valley, and the coastal region. Palestine also spans five phyto/bio- geographical regions (Mediterranean, Irano-Turanian, Saharo-Arabia, Coastal, and Sudanese). The total wooded areas in the OPT in 1974 were 314,713 dunums (5.2% of the land mass), of which 209,510 dunums are naturally wooded (Abu Ayyash et al. 2007). This decreased by 29% from 1974 to 2007. Data is limited on further decline (see below).

As in other countries, **environmental decline** stems from climate change, habitat destruction, overexploitation, pollution and invasive species. Yet in our case there is added pressure, such as from political instability and Zionist colonialism. Furthermore, these threats to the environment are interconnected (see EQA 2022, 2023; Nofal and Barakat 2001). The first to warn of the trend of colonisation and attempts to change demographics on the Palestinians environment was Ives (1950). Before the Zionist project in the late 19th century, Palestine had some 1300 villages and towns each with small and manageable population. The total population then was 850,000 with various

religious persuasions (3% Jewish, 13% Christian, 80% Muslim, 4% other). The land was owned or operated by those local people. Since the first Zionist congress in 1897, this structure was radically shifted with mostly European Jews migrating and taking over the land. Initially there were very small land purchases and removal of local peasants who farmed the land for centuries but who were forced out because of Ottoman collusion with Zionists and very wealthy elite Arabs who illegally sold the land. This was a small percentage of no more than 7% of supposed privately owned land. It was only in 1948-1950 when Israel was founded by military rule that a large wave of ethnic cleansing happened and Zionists took control of the much of the land of the local Palestinians (Pappe, 2006). Nearly 500 villages and towns were destroyed and their land re-cultivated mostly with European pine trees which damaged the local environment. In 1967 Israel occupied the remaining 22% of historic Palestine (plus the Sinai and the Golan) and built settlements throughout the occupied territories in contravention to International law (4th Geneva Convention) (Masalha, 1992; Qumsiyeh, 2004). When the West Bank and Gaza came under Israeli rule in 1967, only the area of Imwas was forested and became Canada Park after destroying the three Palestinian villages in the area. In all other areas of the occupied territories, forests and vegetation cover was removed to build the Israeli settlements which now house 750,000 Israelis (ARIJ, 2015). Simultaneously, rules were introduced that prevented Palestinians not only from doing much of their usual agriculture but also from managing forested lands or building in open spaces. Alon Tal, Founder of the Israel Union for Environmental Defense, acknowledged that: "...it's a Zionist paradox. We came here to redeem a land and we end up contaminating it" (Beyer, 1998; Tal 2002).

Estimated Population in Palestine by Governorate, (Mid-Year 2021)

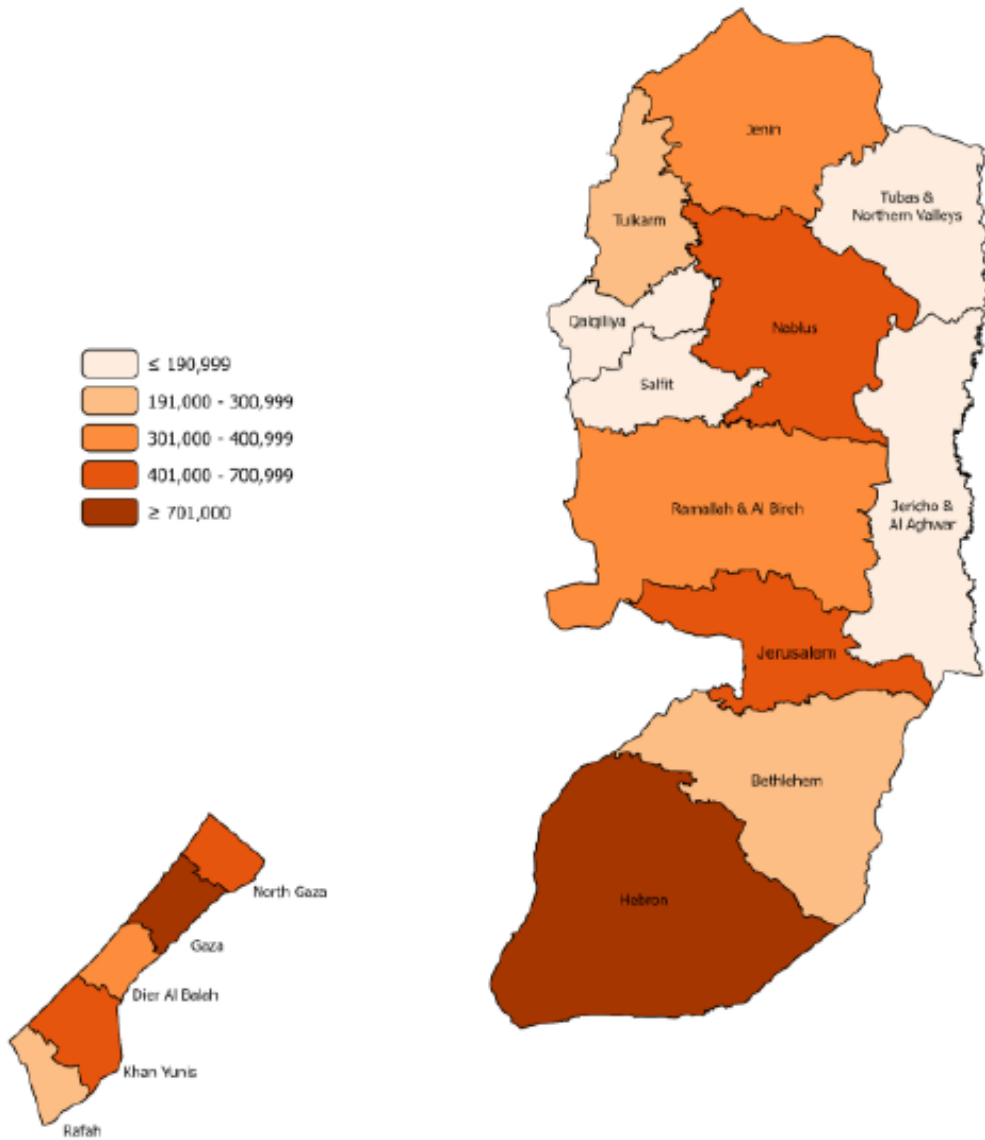


Figure 1 Density of population by governorate (PCBS 2022)

The State of Israel was established to serve the Zionist goal of a Jewish state in a country that was, before 1948, a multiethnic, multicultural, multilingual, and multi-religious state. It is thus not surprising that, both within the green line and outside the green line, there are laws and regulations that privilege Jewish settlers at the expense of the local and Indigenous people. Israel’s discriminatory laws and structures clearly reflect the Zionist agenda throughout historic Palestine, where over 65 laws discriminate against non-Jewish populations within the Green Line (Adalah, 2012; Al-Haq, 2012). In the areas occupied in 1967 outside the green line, nearly 900,000 settlers and the Israeli military effectively control and develop 60% of the landmass of the WB. Furthermore, hundreds of oppressive laws and regulations exist at the discretion and application of

Israeli authorities and military forces. The situation in the West Bank is worse, complicated by the duality of Israeli laws in the occupied areas, with the military government enacting restrictions on movement, access, and rights to Palestinians while prescribing Israeli law to Jewish settlements (Benvenisti, 1989).

There are currently 14.5 million **Palestinians** worldwide of whom 8 million are refugees or displaced persons, 1.7 million are Palestinian citizens of Israel, 4.5 million are Palestinian citizens of the Palestinian Authority and the rest live mostly in nearby Arab countries

(https://www.pcbs.gov.ps/portals/_pcbs/PressRelease/Press_En_InterPopDay2022E.pdf).

Israel occupied the West Bank (plus Gaza, Sinai and the Golan Heights) in June 1967 as a result of what its government said was a “preemptive war.” Immediately after, Yigal Allon was tasked with a committee to propose a plan for what to do with the territories acquired. His plan was presented to the government 27 July 1967 (Cohen 1972; Fig. 2) and proposed two Palestinian blocks with autonomy for the Palestinians. The plan was rejected by the government, but in 1968, most of the government accepted it with the idea that it would involve Jordan running the Palestinian enclaves. That plan launched the first Israeli colonial settlements in the West Bank and shaped the Israeli negotiating position since (e.g. retention of the Jordan valley, greater Jerusalem as an eternal part of Israel, autonomy or subservience to Jordan but no sovereign Palestinian state, and no right of refugees).

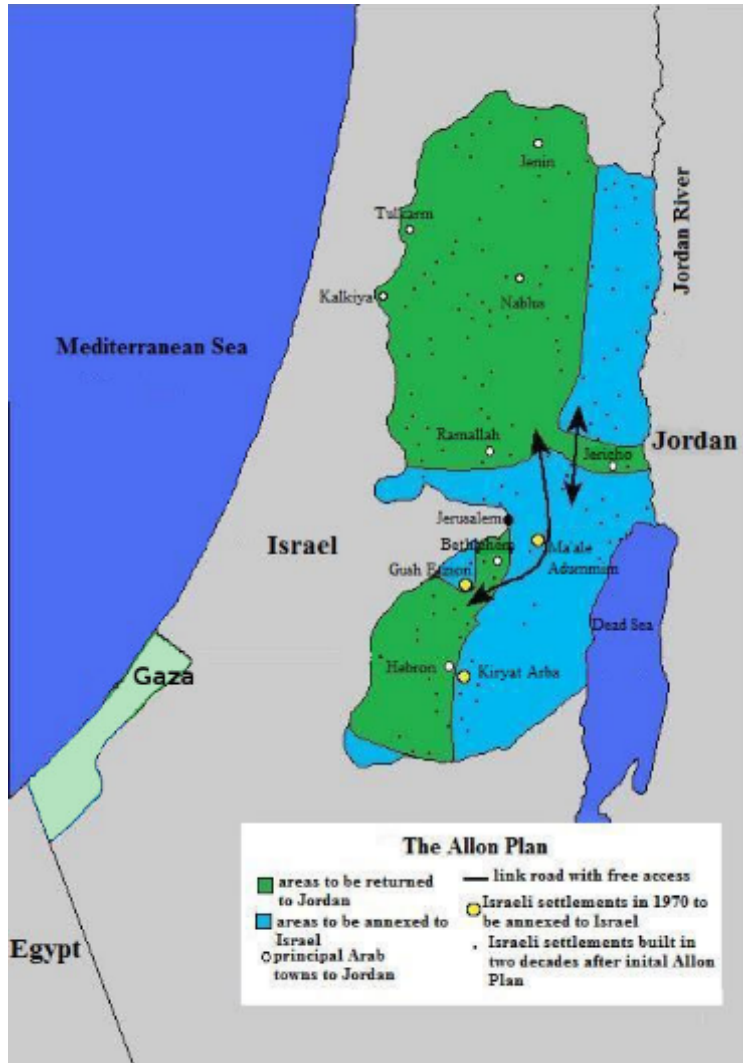


Figure 2 Allon committee 1968 approved plan for control of WB.

In the first ten years of the occupation, the Israeli government established 19 settlements in the Jordan valley and near the Dead Sea (frontiers in colonial philosophy) (see B'Tselem 2011). This was followed by 11 more between 1978 and 1992. After the Oslo accords were signed, the government of Rabin restrained settlements except in the areas noted in the Allon plan (B'Tselem 2011). The process of transfiguration of the WB to create a new hegemonic **colonial settlement structure** was methodical and extensive (see Allegra and Maggor 2022; Allegra et al. 2017). The development of the State of Israel and its occupation of the 1967 areas emphasised settlement building, military security, territorial security and demographic security, but has not mentioned environmental security (Tal, 2002; Newman, 2009).

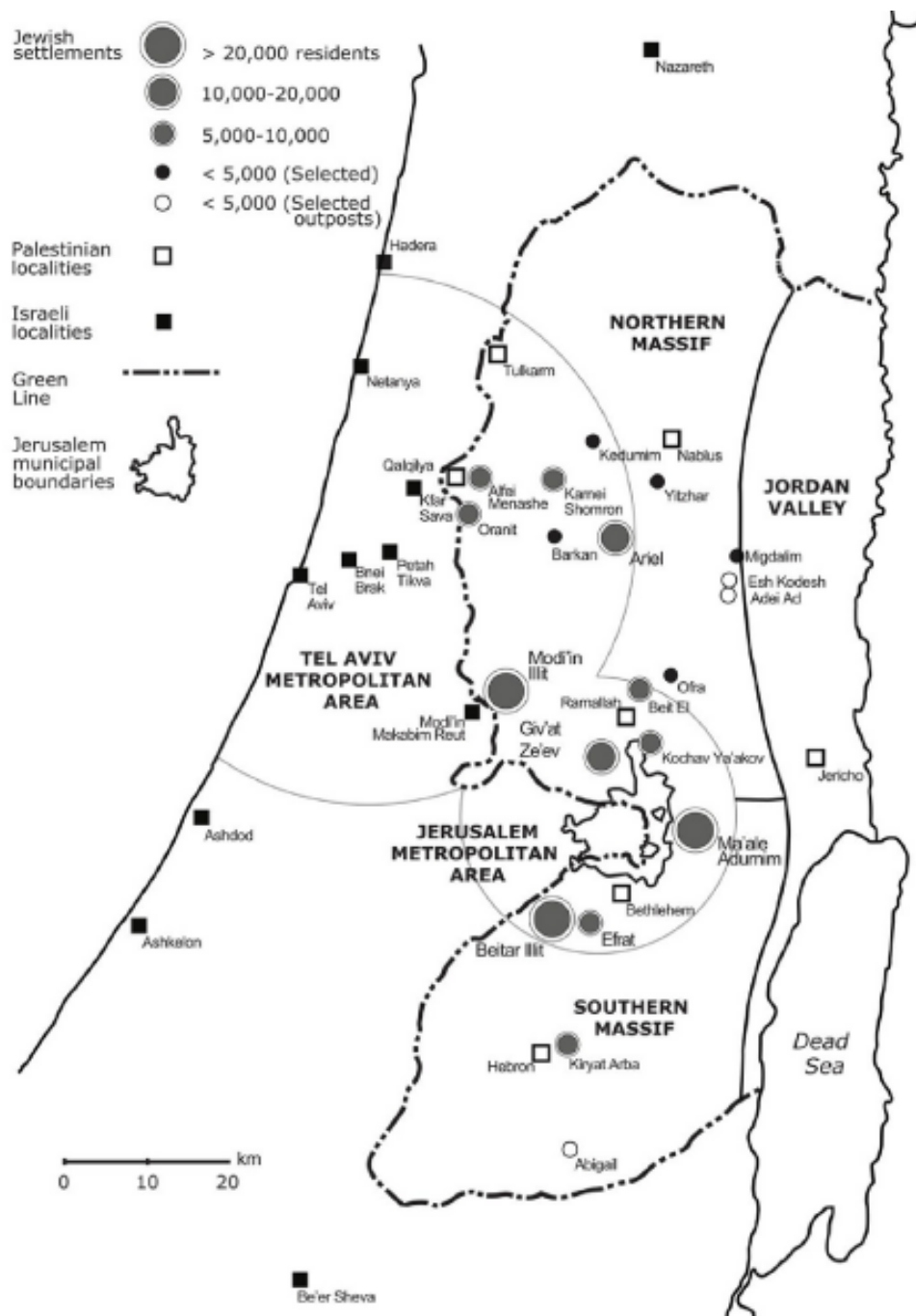


Figure 3 This figure from Allegra and Maggor (2022) shows that the only adjustment to Allon Plan is expanding the sphere of settlements in the north to create a Tel Aviv envelope.

The Master Plan for the Development of Settlement in “Judea and Samaria” (WB), 1979-1983 states “Settlement throughout the entire Land of Israel is for security and by right [...] implemented according to a settlement policy of blocs of settlements in homogenous settlement areas. [...] Over the course of time, with or without peace, we will have to learn to live with the minorities and among them, [...] therefore the proposed settlement blocs are situated as a strip surrounding the Judea & Samaria ridge – starting from its western slopes from north to south, and along its eastern slopes from south to

north: both between the minorities population and around it” This is indeed what was planned and executed (see Fig. 4).

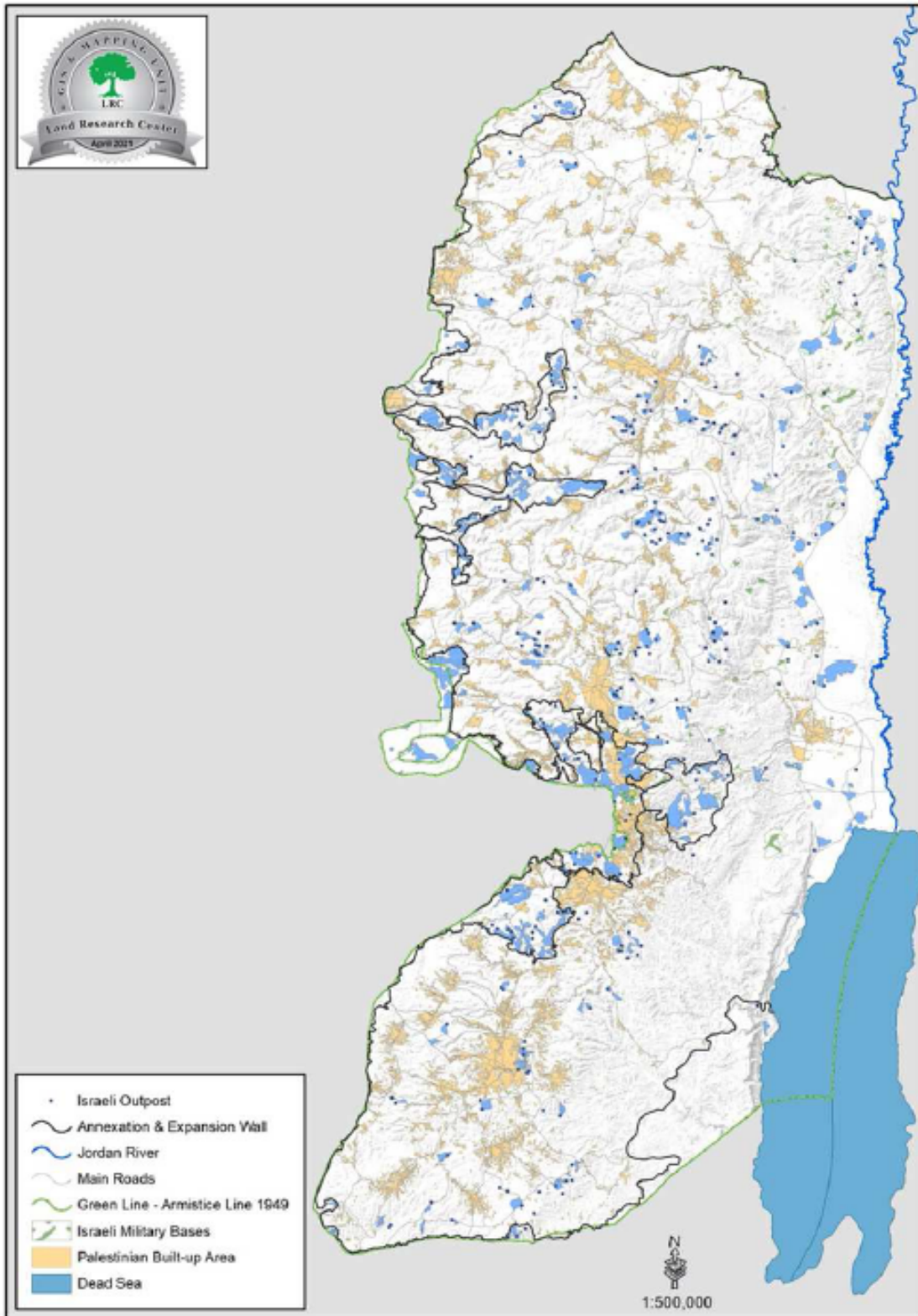


Figure 4 Israeli colonies in the West Bank incl. East Jerusalem shown in blue (LRC 2021).

Table 1 Jewish colonial settlements and settlers in the WB (LRC 2021).

Governorate	Number of Israeli Colonies	Number of Outposts	Total area confiscated in dunums *	number of colonists**
Jerusalem	35	30	38,419	303577
Hebron	37	37	14,991	109595
Bethlehem	22	29	18,314	124273
Ramallah	33	63	32,445	116034
Jericho	21	20	22,242	6792
Nablis	20	57	17,881	19486
Salfit	20	20	18,118	54152
Qalqilya	14	16	12,103	89373
Tubas	8	16	7,714	2437
Tulkarm	5	7	3,959	3760
Jenin	8	9	3,833	3916
Total	223	304	190,019	833395
	527			

Palestine suffered from a number of **challenges related to colonialism**, before and after 1948 Nakba and 1967 Naksa (Toynbee and Abu-Lughod 1987; Tal 2002; Boast 2012). Refugees and displaced Palestinians in the West Bank and Gaza create significant environmental and economic pressures (more studies are needed here). But no peace or security or stability or environmental conservation can be achieved while keeping millions of people in limbo because of the desire for a “Jewish state” (Masalha 1992, 2012; Qumsiyeh 2004; Pappé 2006; Feldman 2018). The Israeli actions toward controlling water sources started immediately in 7 June 1967 (addressed in section 2.1) and have been catastrophic for the environment in the WB, but attempts to use water as a weapon against the natives started long before 1967, such as the destruction of Hula lake and wetlands, and the diversion of water from Lake Tiberias.

For the West Bank and Gaza (the hoped for Palestinian state on 22% of historic Palestine), the situation is dire. The economic situation is bad (Table 2; Fig. 5) and settlement building increases every year, making the prospect of a Palestinian state dim.

Table 2 Selected indicators and statistics for 2019 (PCBS 2020).

Indicator	Palestine	West Bank	Gaza Strip
Number of Population, End Year 2019	5,038,918	3,019,948	2,018,970
Males	2,562,304	1,539,038	1,023,266
Females	2,476,614	1,480,910	995,704
Total Area (km ²)	6,024.82	5,659.91	364.91
Population Density (Capita/km ²), End Year 2019	836	534	5,533
Percentage of Population Below 15 Years, End Year 2019	38.3	36.3	41.4
Average Household Size, 2019	5.0	4.6	5.7
Unemployment Rate for Population Participated in the labour force Aged 15 Years and Over, 2019	25.3	14.6	45.1
Students per Class at Basic Stage, 2019/2020*	31.6	27.3	39.5
Students per Class at Secondary Stage, 2019/2020*	28.4	23.3	39.7
Percentage of Households Who have Computer Desktop, 2019	33.2	35.7	28.7
Hospital Beds per 1000 of Population, 2018	1.3	1.3	1.3
Gross Domestic Product (Million USD), 2018 (Constant Prices)	15,616.2	12,797.3	2,818.9
Gross Domestic Product Per Capita (USD), 2018 (Constant Prices)	3,417.7	4,854.4	1,458.3
Total Registered Value of Exports (Million USD), 2018****	1,155.6	1,141.5	14.1
Total Registered Value of Imports (Million USD), 2018****	6,539.6	5,899.6	640
Number of Fixed Telephone Lines, 2018**	469,741	343,777	125,964
Average Housing Density (Person per Room), 2017	1.4	1.3	1.6

*: Primary data.

** :Data excluded those parts of Jerusalem which were annexed by Israeli Occupation in 1967.

***: Differences in the results of certain indicators are due to approximation

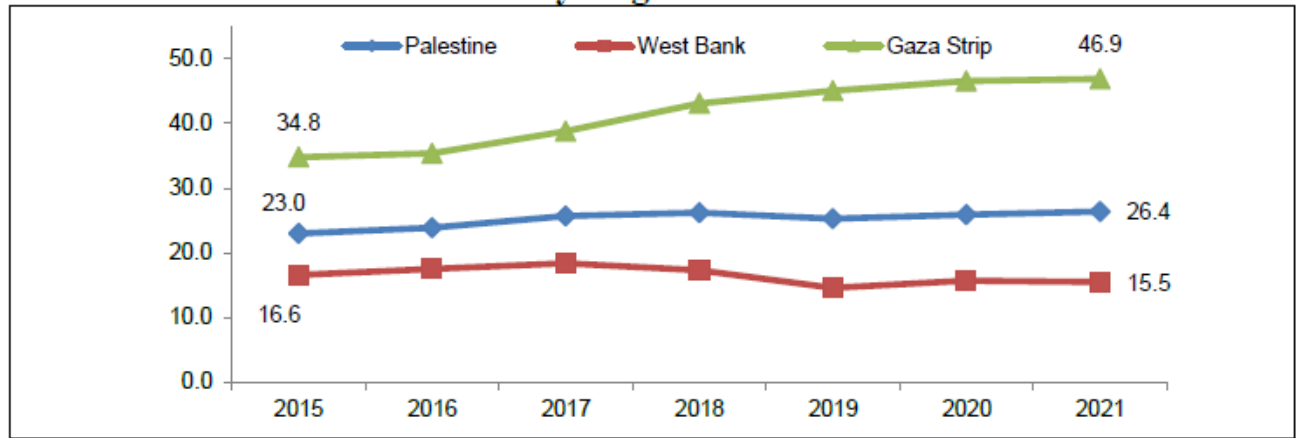


Figure 5 Unemployment percentage (PCBS 2022; https://www.pcbs.gov.ps/portals/_pcbs/PressRelease/Press_En_InterPopDay2022E.pdf)

The UNEP report (2003) identified the following as key **effects of the occupation**:

1. Direct degradation arising from military operations;
2. Increasing of human population pressure on natural systems from high population growth and the long-lasting refugee crisis;
3. Rapid growth of Israeli settlements and supporting roads in areas where land is already scarce;
4. Restrictions on communications, movement and access, limiting implementation of environmental management measures;
5. Construction of separation fence and wall that effectively block movement of terrestrial fauna, and cut the natural ecological corridors;
6. Threats from solid waste and wastewater pollution;
7. Clearing the land of vegetation, both by Israel for security purposes and as a result of other causes.

Article 49 of the Fourth Geneva Convention (to which Israel is a signatory) clearly states that, "The Occupying Power shall not deport or transfer parts of its own civilian population into the territory it occupies." Yet, between 1993 and 2000, the population of settlers in the occupied areas doubled to over 450,000 and today stands at nearly 900,000. Israeli colonies in the occupied areas were intended for security and control. Thus, most land confiscation and colonial settlement activity was intentionally concentrated on tops of hills and mountains (Benvenisti, 2002).

Israeli colonies were planned for security and ideological reasons and thus built on hilltops dotting the Palestinian landscape, in a pattern designed to control both the natural resources and the native Palestinian population (Benvenisti, 2002; Weizman, 2012). Thus, there was no forethought regarding environmental sustainability or clear plans to ensure population harmony with natural resources and the environment (ARIJ, 2015). For example, there are settlements in every Palestinian district, and facilities such as sewage treatment plants are not made available to the local Palestinian population. Untreated sewage water is discharged, and in most cases this discharge directly goes to the areas inhabited or farmed by Palestinians (Newman, 2009).

“By the end of 2020, there were 471 Israeli occupation sites and military bases in the West Bank, including 151 settlements and 26 inhabited outposts that considered as neighbourhoods following established settlements, in addition to 150 settlement outposts, and 144 classified as other sites (industrial, tourists, service areas and Israeli army bases).”

PCBS

<https://pcbs.gov.ps/site/512/default.aspx?lang=en&ItemID=4208#:~:text=By%20the%20end%20of%202020,other%20sites%20>

Table 3 From PCBS 2022.

Number of Settlements and Settlers in the West Bank by Governorate, 2020

Governorate	Number of Settlements	Number of Settlers
West Bank	151	712,815
Jenin	5	3,553
Tubas & Northern Valleys	7	2,541
Tulkarm	3	4,414
Nabhus	13	21,176
Qalqiliya	8	40,391
Salfit	13	47,905
Ramallah & Al-Bireh	26	139,386
Jericho & Al-Aghwar	17	7,508
Jerusalem	26	332,294
Area J1	16	246,909
Area J2	10	85,385
Bethlehem	13	92,183
Hebron	20	21,464

Palestine had an indigenous Canaanitic population going back thousands of years and living in small village communities with few urbanized areas (like Jerusalem, Hebron, and Nablus). At the dawn of the industrial revolution, the population was a few hundred thousand (3% Jewish, 13% Christian, 80% Muslim, 4% other). The industrial age and improvement in health resulted in population expansion, but the Zionist project resulted in ethnic cleansing of most of the natives, to be replaced by an immigrant (mostly European) Jewish population (Pappe 2006). Over 500 villages and towns were destroyed (most in 1948-1950, some in 1967). While Israel was created on 78% of Palestine, the remaining 22% was occupied in 1967. Some villages were destroyed, others depopulated. In 1967, Imwas village was depopulated and in its place Canada Park was built. In all other areas of the occupied territories, forests and vegetation cover was removed to build the Israeli settlements which now house hundreds of thousands of Israelis. Simultaneously, rules were introduced that prevented Palestinians not only from doing much of their usual agriculture—a sector on the edge of collapse now (Kittaneh 2020)—but also from managing forested lands or building in open spaces. Currently nearly one

million Israelis live in the occupied West Bank. The WB is also divided into several categories: Jerusalem annexed to Israel, area C under Israeli civil and military control, area B under Israeli military control only (18.3%) and Area A under Palestinian civil and partial security control (17.7%) (Isaac and Hilal, 2011; ARIJ, 2015). Thirty percent of the territory is designated as closed military zones and “nature reserves,” though nature reserves are occasionally reclassified to allow colonization).

This study focuses on the environmental challenges in the WB only. It attempts to review the massive literature regarding environmental injustice associated with Israeli occupation and colonization activities in the West Bank, while recognizing that that literature is inadequate relative to the massive challenges. Works along those lines are fragmented, and there is a need for bringing data together in one place (see EQA 2022, 2023; ARIJ 2016; UNEP, 2003; Elmusa, 1998). The **effect and illegality of Israeli activities** is described in this document (section 2, 3, and 5).

2. Israeli Effects on the Palestinian Environment

2.1 Water, Water Bodies, and water associated resources

Access to a clean, safe and adequate supply of water is a basic human right and forms a core element of the International Covenant on Economic, Social and Cultural Rights (ICESCR); While it is clear how it impacts human health and wellbeing, water is also critical for the ecosystem. The government of the state of Israel, which controls Palestinian (native) water, claims there is a water shortage; but the reality is that there is simply unequal distribution (Stauffer 1996) with the intention of control and displacement of people (Messershmied and Shelby 2015; Elmusa 1998). The first military order given by the state of Israel at the conclusion of the so called Six-Day War was military order number 92 on 7 June 1967 regarding the issue of water in the occupied territories, giving exclusive authority over all water sources, and even controlling rainwater harvesting (Israeli Military 1967). This was followed by order 158 on 19 November 1967 ensuring control of “installations of water infrastructure without prior approval by the Israeli authorities at risk of demolition, while prohibiting the construction or ownership or management of a water installation without the renewal of an official permit, including those of humanitarian organisations. The order concerned both, the construction of new water facilities and the reparation of pre-1967 ones. Without providing any justification the military commander could deny, alter and cancel permits” (Al-Haq 2022). In 19 December 1968, Israeli authorities declared all previous water dispute settlements invalid and all water resources in WB to be state owned (military order 291). On 23 March 1971, military order 418 centralised decision-making under a High Planning Council and the 1980s, that council declared the upper limit of Palestinian consumption of West Bank water resources shall be limited to 125 mcm of the Mountain Aquifer (DIHLC 2013). Water was stolen and Palestinians were made to buy more than 50% their own water from Israel (Rouyer 2000).

Control of water goes hand in hand with control of land. While Palestinian land was being confiscated and their water allocation slowly diminished, the area of Israeli

controlled irrigated land grew by 340,000 dunums between 1970 and 1990 (Elmusa, 1998). In addition to this large scale diversion of water resources, Israel declared most of the Jordan valley and large tracts of the best agricultural lands in the West Bank as closed military zones for a period of time resulting in the shutdown of Palestinian agriculture in the area. These vast tracks of Palestinian agricultural lands that were confiscated were then turned over to Jewish settlements which were given access to significant water resources (Daibes & Daibes-Murad, 2003).

Israeli authorities and settlers devastated the system of springs that existed before 1967 in the WB (Braverman 2019). Israel destroyed all the pumping stations on the Jordan River. It prevented the Palestinians in the West Bank from using the Jordan River while simultaneously drawing from Lake Tiberias at the head of the Jordan River at an amount of 600 million cubic metres annually. The Mekorot Water Company Ltd (Mekorot) was founded in 1937 as a joint Zionist venture by the Jewish Agency for Israel, the Jewish National Fund, and others. In 1949, Mekorot became a government company (Paz-Fuchs et al. 2018). Then according to Al-Haq (2022) “in 1982 the West Bank water infrastructure controlled by the Israeli Occupying Forces (IOF) was sold to Mekorot for the symbolic amount of 1 NIS. Since then, Mekorot has been the largest single water supplier for Palestinians and has taken over the entire water supply in the West Bank, in violation of the Palestinian inalienable rights of self-determination and permanent sovereignty over their natural resources.”

As Israel drilled 300 wells on the borders of the western basin along the Green Line, and thus the Palestinians could only pump about 15% of the mountain aquifer. That is, about 108.8 million cubic metres annually, which constitutes 79% of water consumed annually, which is not sufficient for the growing population and agricultural development. The Palestinians purchase 90.3 million cubic metres annually from the Israeli company Mekorot, which constitutes 20% of the annual consumption, while the Palestinians desalinate 5.7 million cubic metres, which constitutes 1% of the annual consumption. The Israelis pump 85% of the mountain aquifer in the West Bank for the uses of the settlers in the West Bank and the uses of the Israelis inside the Green Line.

Before 1967, Israel diverted and used most of the water resources of the Jordan River basin for irrigation farming through the so-called “Israel national water carrier/canal” (Elmusa 1998). From 1250 million cubic metres (mcm) per year in the 1940s the river’s flow declined to 20 mcm (Soffer 1994; Gafny et al., 2010). The usage of the Jordan river basin water is 68.5% by Israel and the rest split among Jordan, Syria, and Lebanon and none is being used by Palestinians in the West Bank (Isaac and Hilal 2011). Palestinians used 140 pumping units along the Jordan River before 1967 and all were destroyed or confiscated by the occupation authorities.

The US sponsored Johnston plan 1950s was adopted to address shared water resources but Israel refused to accept this arrangement (see Al-Atatout 2006; <https://history.state.gov/historicaldocuments/frus1961-63v17/d8>). According to the plan, Palestinians were to share 250 million cubic meters annually, according to Johnson's plan, the mountain aquifer in the West Bank is approximately 850 million cubic meters

annually, and the coastal reservoir in the Gaza Strip is 150 million cubic meters, which indicates that there was an abundance of water that was more than the population’s need. But since then more resources also became available. If given all their water resources and rights, Palestinians would have more than 3 times their needs so could even export water. Yet, after a thorough review of the hydrological data, Elmusa (1998) concluded that: “Israel takes 80-90% of the freshwater resources of geographic Palestine. The disparity in extraction between the two sides has translated into a conspicuous water gap in all sectors. The gap is even more conspicuous between the Palestinians and the Israeli settlers who consume five to six times as much per capita as do the Palestinians and are profligate irrigation water users”. The UN Commission on Human Rights reported in 2000 that “Israel extracts 85 per cent of the Palestinian water from the West Bank aquifers”. But the data is still outdated and more data needs to be collected since the numbers change regularly in negative ways. For example, Palestinian West Bank access to water from the aquifer declined rapidly between 1999 and 2007 (see Fig. 6)

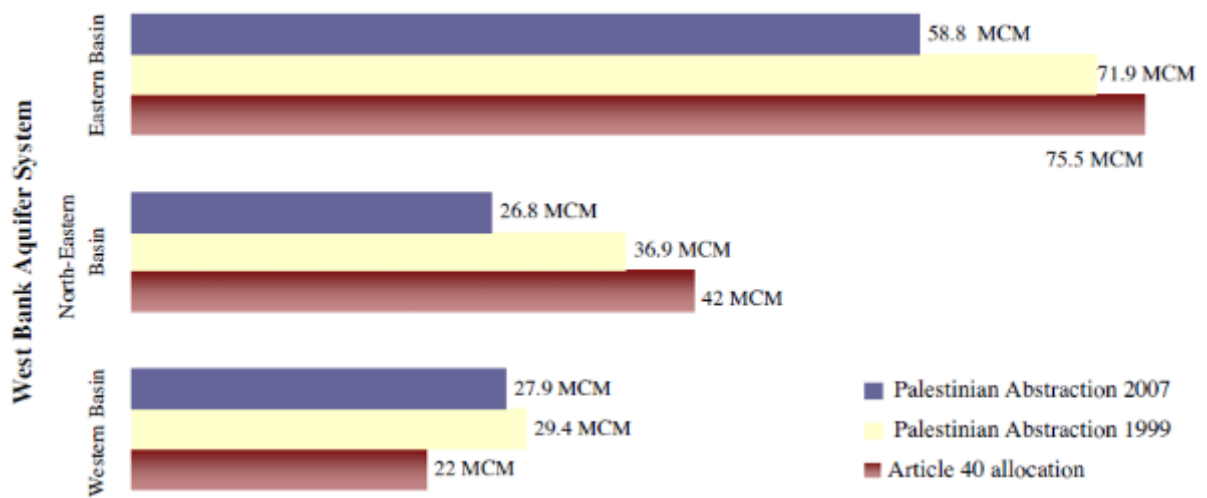


Figure 6 Palestinian abstraction between 1999 to 2007 (Isaac and Hilal 2011).

This is not an issue of water shortage but of unequal distribution and theft of water by the occupying authority (Fig. 7)

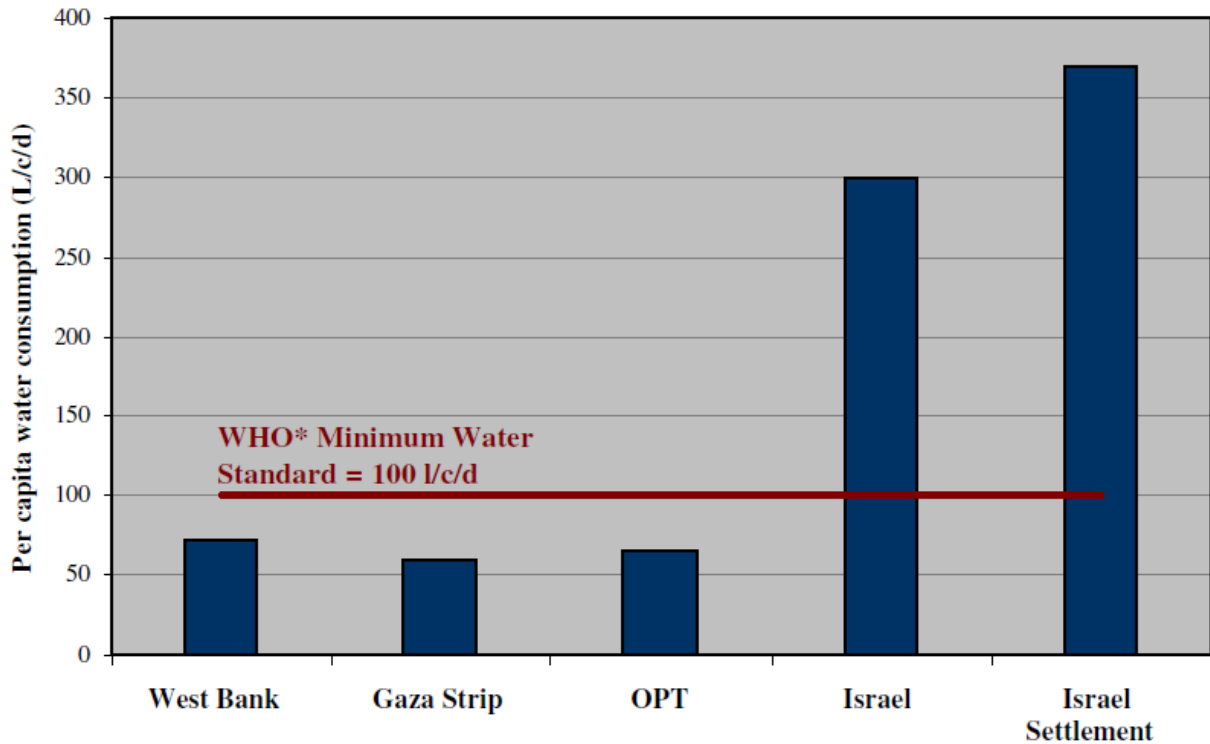


Figure 7 Use of water per capita (Isaac and Hilal 2011)

A detailed report on the human rights aspects of the water injustice is available (Amnesty International 2009).

The UN Social and Economic Commission for West Asia (ESCWA) with the German Federal Institute for Geosciences and Natural Resources (Bundesanstalt für Geowissenschaften und Rohstoffe, or BGR), published an “Inventory of Shared Water Resources in Western Asia (ESCWA-BGR, 2013). However, this report is flawed and misrepresents the depth of water pillage in the Jordan river basin (Messershmid and Selby 2015).



Figure 8 Jordan valley irrigated areas according to ESCWA (left) and areas irrigated by Israeli settlements (right) (Messershmid and Selby 2015).

Through military orders, all water in the occupied territories is designated “state owned by Israel” even though this violates the 4th Geneva Convention (UNEP 2003). Palestine (a state not recognized by Israel as the occupying authority) did attempt to draft water and other natural resources’ laws. The Palestinian authority even failed to get Israel to agree to many waste water and solid waste projects. As Israel takes 91% of the West Bank Water resources, it provides much of it to illegal settlers (UN Commission of Human Rights 2000). It is obvious that all these measures contravene International law and conventions such as the 4th Geneva Convention and the International Covenant on Economic, Social and Cultural Rights (Elmusa 1998).

The Oslo agreement was supposed to lead to ending the occupation but simply entrenched it with all attendant strengthening of Israeli control over the Natural resources including water. International treaties and laws pertaining to water were ignored in deference to “might makes right” (Tamimi 1996). Regardless of political outcomes, there is simply a very small geographic territory (historic Palestine) with one hydrological system (Elmusa 1998; Daibes and Daibes-Murad 2003). One democratic state ensuring distribution of water to its citizens based on international guidelines is actually most logical. The situation in Gaza is now catastrophic and cannot continue (Baalousha 2006; UN 2012). Water desalination projects as a solution in Gaza have their own environmental issues, see (Assaf 2001).

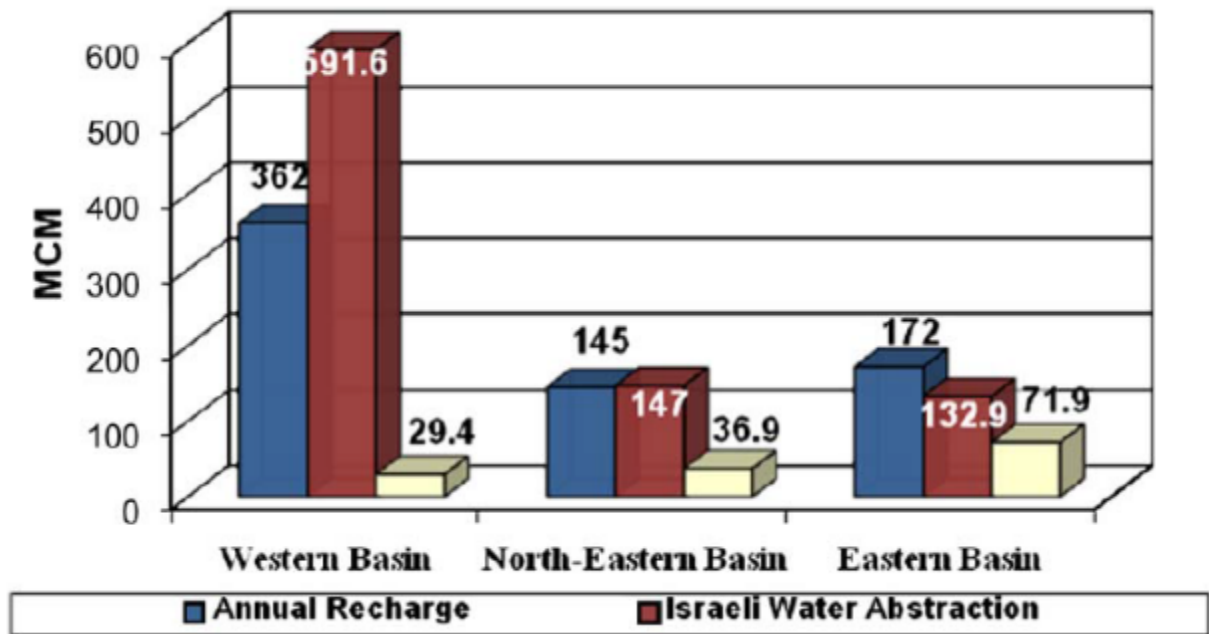


Figure 9 Estimated Recharge of West Bank Basins and Israeli water abstraction (Isaac and Hilal 2011).

The Jordan River basin needs special attention. Significant depletion of its water was done because of mega-projects like the draining of the Hula Wetlands and the diversion of significant amounts of water from upstream (Lake Tiberias) (Messerschmidt and Shelby 2015; Phillips et al. 2005; Figure 10).

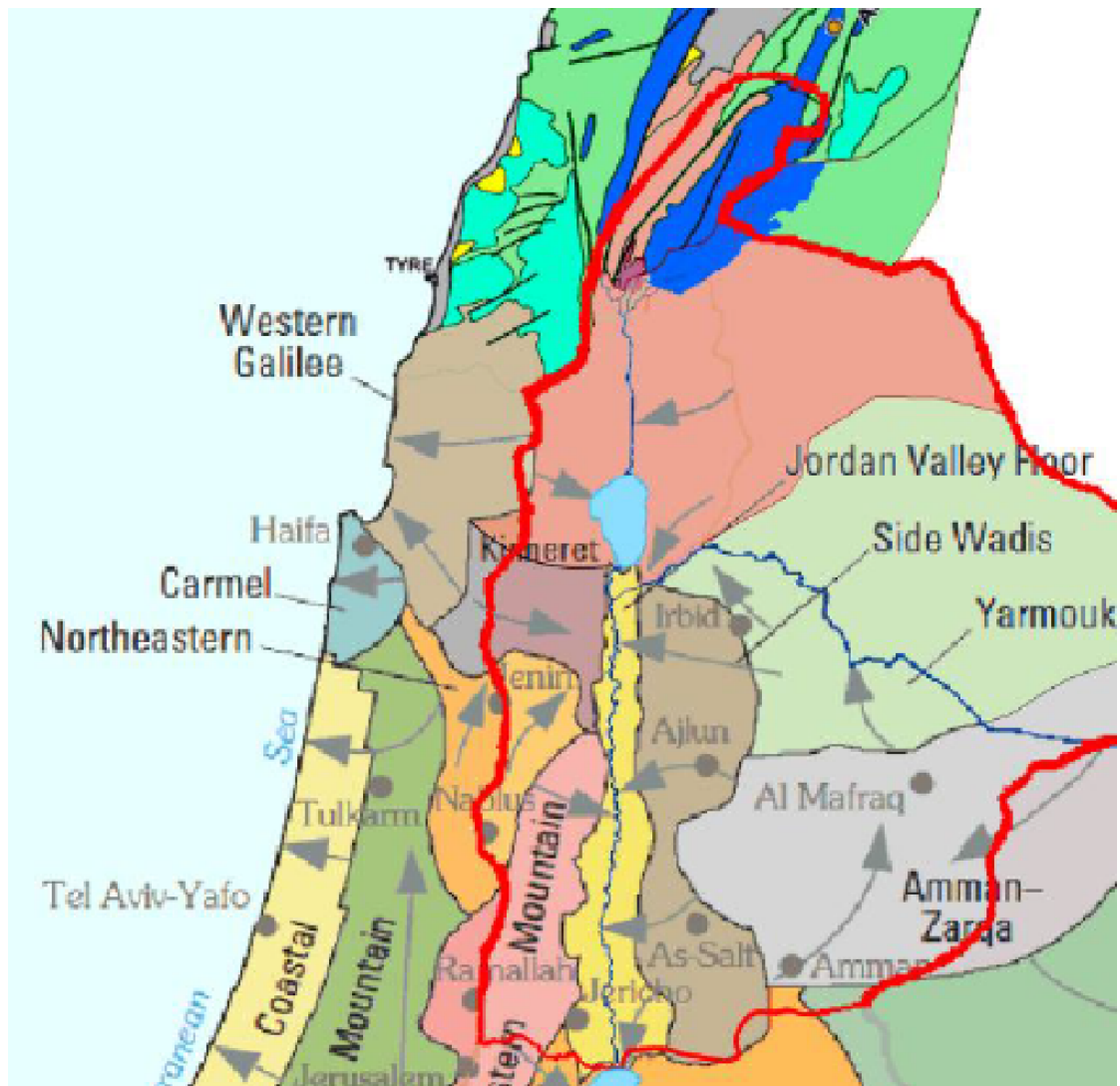


Figure 10 Aquifers in our area and their drainage – most of the water is taken by Israel from Palestine, Jordan, Lebanon and Syria (Messerschmidt and Shelby 2015).



Figure 11 Water aquifers and water diversion (Trottier 2019 from PASSIA).

Palestine is rich in water resources. The rainfall feeds into four major aquifers and there are dozens of springs in the West Bank. There is a National Water Sector Strategic Plan and Action Plan (2017-2022) which identifies issues, and sets objectives to improve the sector. Some strategic Goals and Objectives to be reached: first, the integrated management and sustainable development of the water resources (quantitatively and qualitatively). Secondly, improving the quality and reliability of water supply services by ensuring fair water distribution. Thirdly, by improving wastewater services and structure. Fourthly by the development of Water Sector institutions to reinforce Good Governance bases. And last but not least, by ensuring the financial sustainability of water utilities and water service providers. Below are two tables with the issues and objectives reached.

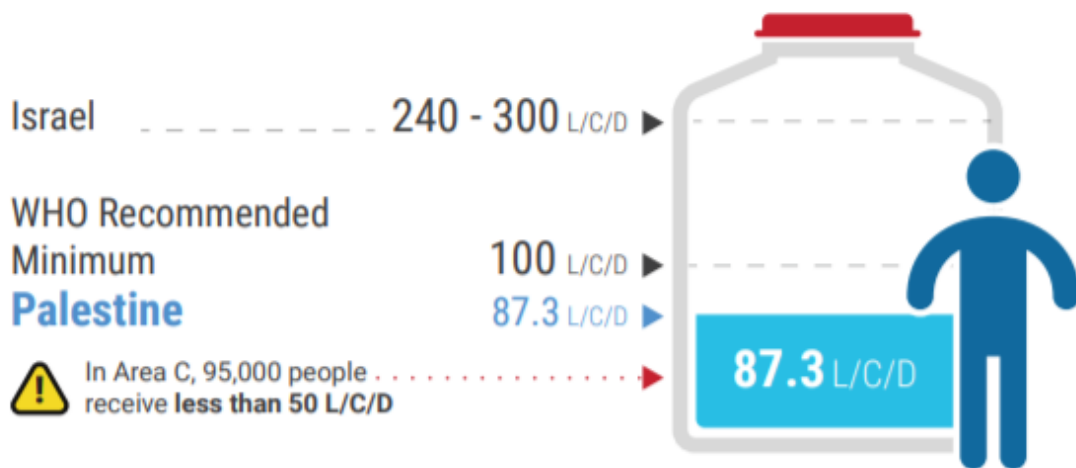


Figure 12 Daily consumption rate of water is low and highly affected by Israeli theft of Palestinian water (Unequal distribution) (SP 2020).

The asymmetric allocation distribution of water between the natives and the Israeli occupiers including across the borders is based on systems of state organized discrimination (Zeitoun et al. 2009; Zeitoun 2013; Al-Haq 2013). The UN Commission on Human Rights reported in 2000 that:

- *Palestinian entitlements for water include the underground water of the West Bank and Gaza aquifers, in addition to their rightful shares in the waters of the Jordan River as riparian. The annual renewable freshwater yield in the occupied territories ranges from 600 million cubic meters to 650 million cubic meters*
- *The Palestinian use of the Jordan River before 1967 was through 140 pumping units. Israel either confiscated or destroyed all of those pumping units. In addition, Israel closed the large, irrigated areas of the Jordan Valley used by Palestinians, calling them military zones that later were transferred to Israeli settlers.*
- *At present Israel extracts more than 85 per cent of the Palestinian water from the West Bank aquifers, which accounts for about 25 per cent of Israel's water use.*
- *Israel provides settlers with a continuous and plentiful water supply, largely from Palestinian water resources. The supply to Palestinians is intermittent, especially during summer months...*

Political interests in the Jordan River basin (Messerschmid and Selby, 2015). Confiscation of land for settlements is also one of the major threats to the Palestinian nature reserves (Etkes and Ofran, 2007). The confiscation of Ras Imweis and six adjacent areas, now known as Nahal Shilo, northwest of Ramallah are examples of taking in the name of nature and then destroying nature to build colonies (POICA, 2013).

Table 4 Water Sector SDP (2017-2022) Objectives (PWA 2016).

Item	Water Resources	Water Supply	Wastewater	Institutional Arrangements	Financial Arrangements
Strategic Objectives	<ul style="list-style-type: none"> Integrated management and sustainable development of the water resources (quantitatively and qualitatively) 	<ul style="list-style-type: none"> Improving the quality and reliability of water supply services as well as ensuring fair water distribution 	<ul style="list-style-type: none"> Improving wastewater services and structure (collection, treatment, and reuse) 	<ul style="list-style-type: none"> Development of Water Sector institutions to reinforce good governance bases within an integrated legal and institutional framework 	<ul style="list-style-type: none"> Ensuring the financial sustainability of water utilities and water service providers

However, all these great plans are contingent on being allowed to be implemented by the occupying power (the State of Israel). For example, the second Israeli Military Order issued immediately after the occupation (issued 7 June 1967) designated all water resources in the newly occupied Palestinian Territories as “state owned by Israel” (UNEP, 2003).

The Dead Sea is a unique natural phenomenon as the lowest point on earth. The economic, historical, socio-cultural, and touristic importance of the basin region of this inland salt lake cannot be overstated. The area has essentially a tropical climate (but with little rain) making it a winter destination for the people of our region going back thousands of years (e.g. the Roman Edomite vassal King Herod had a winter place in Jericho area near the basin and a summer place in Tequa area - Herodion). The muddy shores with high concentration of salts and rare elements make it of therapeutic use by both local and internationals. It is also fed by the Jordan River and springs like Ain Al-Fashkha (a protected area). The Part of the Dead Sea that is supposed to be part of the State of Palestine is under Israeli occupation (the whole state is under occupation). Contrary to the 4th Geneva Convention, its resources are being utilized by the State of Israel (Al-Haq 2012).

This diversion of the water via the Israeli National Water carrier from Lake Tiberias and the draw Israel makes further downstream has resulted in significant decline in the level of water in the Dead Sea (Salameh and El-Naser 2008; Fig. 13). The current rate of decline in the level of the Dead Sea is estimated at about 80-100 cm annually. As a result of this decline, the water level has declined over the past fifty years from -397 (in 1968) to about -434 in 2018. This was accompanied by a decline in the area from 950 km² to 637 km². And in the event that the situation continues as it is, the level of the Dead Sea surface is expected to drop by about 46 m by the year 2070, and this is accompanied by a decline in the surface area of the Dead

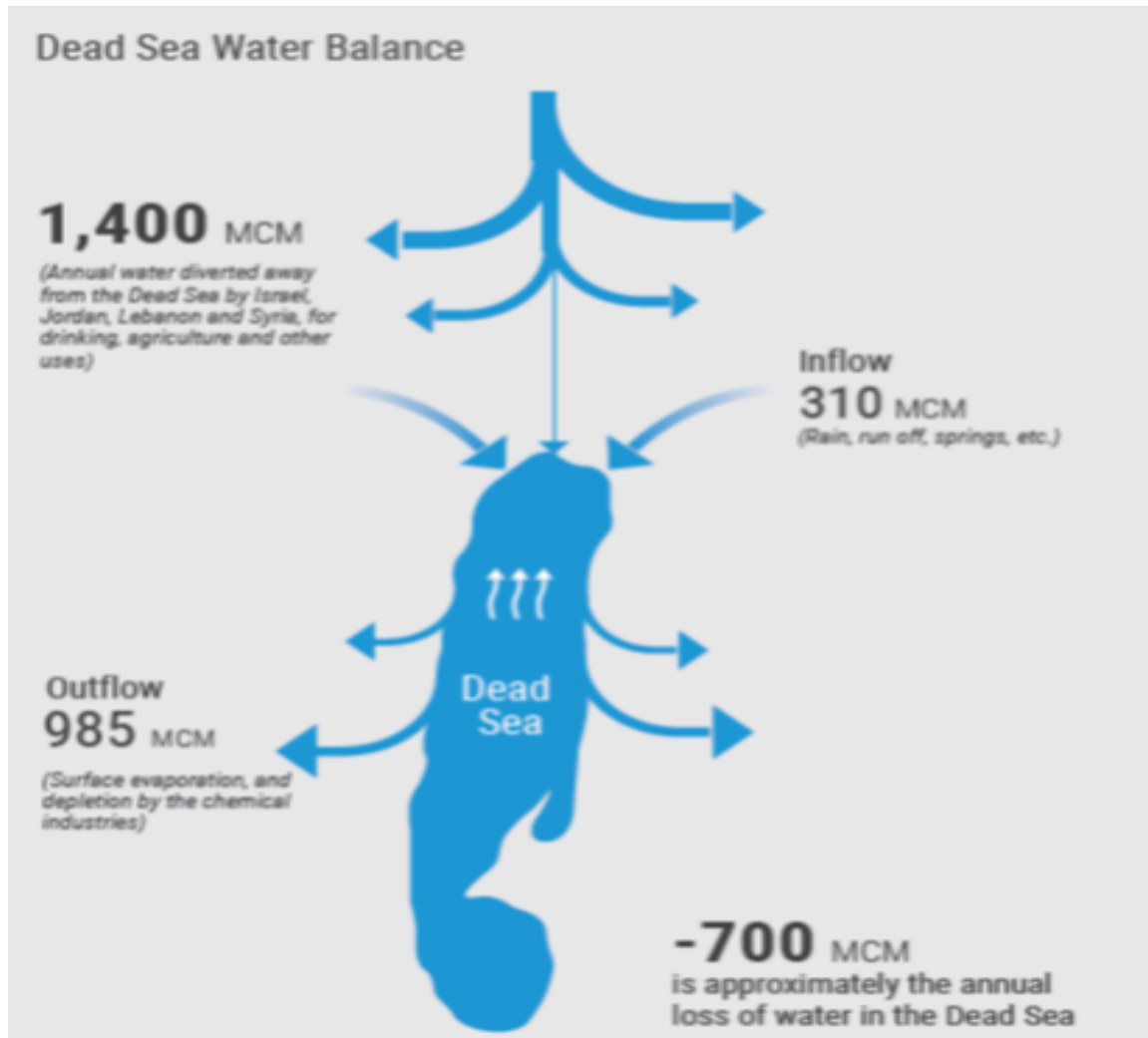


Figure 13 Palestinian natural resources like dead sea minerals are exploited for the benefit of illegal settlers contrary to international law (Al Haq 2012).



Figure 14 The current “shrunken” dead sea (Google Earth).

There is pillage of resources of the Dead Sea. The Israeli settlements to the northern part of the Dead Sea explicitly and actively utilize the natural resources of the area (Fig. 15) (Al-Haq 2012). For example, within two decades of its launch in 1988, the annual global sales of Ahava, an Israeli cosmetics company which uses minerals from the Dead Sea, had reached almost \$150m (£95m). The company has been the target of boycott campaigns. Meanwhile, Palestinians are prevented from using the Dead Sea area for tourism (Abu-Baker and Farah, 2020; Al-Haq, 2012; Popperl, 2018).

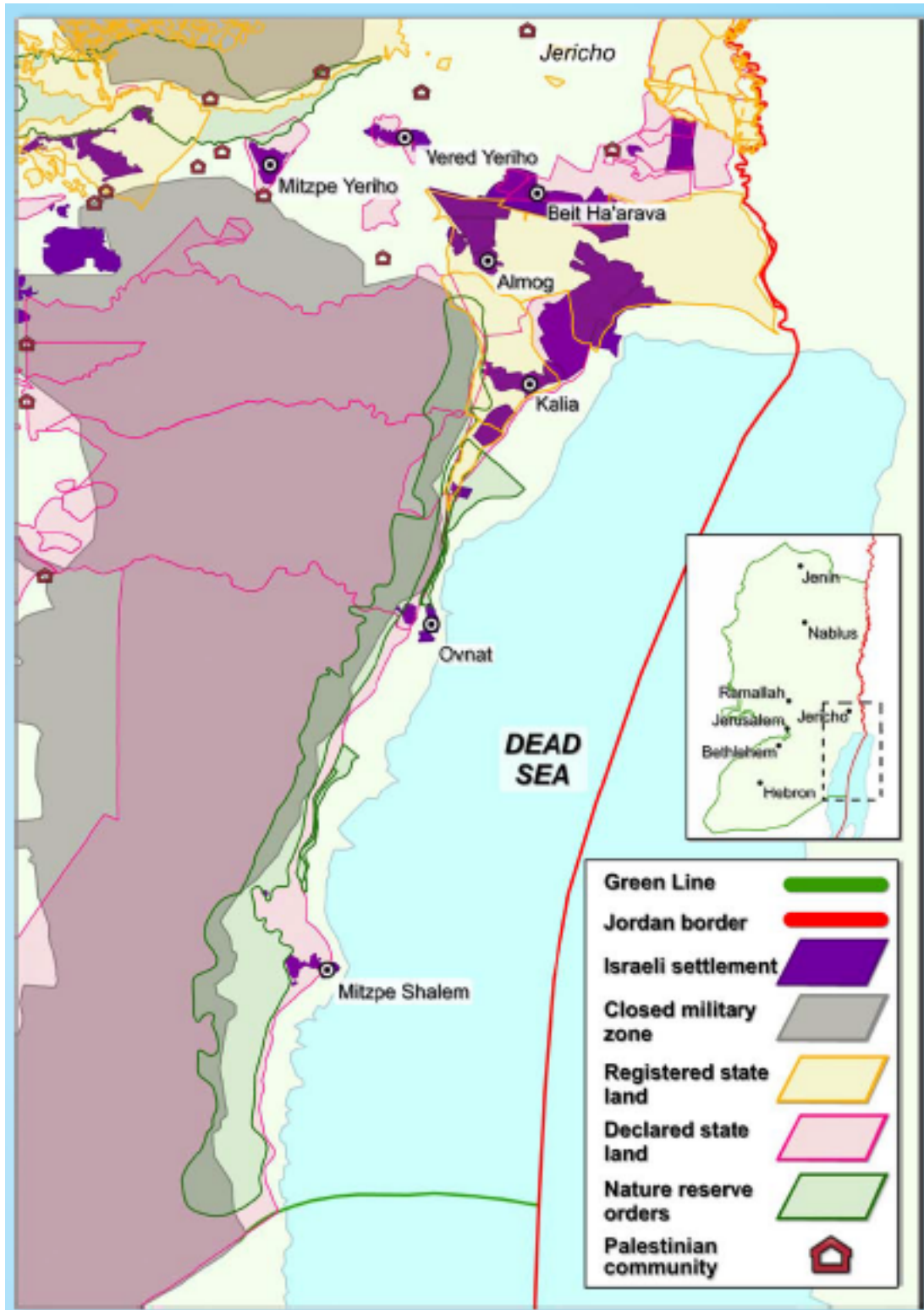


Figure 15 Colonial structures around the Dead Sea (AlHaq 2012).

According to ARIJ (2016a) “Access to the Dead Sea is completely sealed off for Palestinians as far as economic activities are concerned. For the Palestinian economy, this represents a loss proportional to the potential economic value from the exploitation of these resources. Accordingly, if Palestinians had free access to their share of the Dead Sea and were allowed to invest in and develop their mining industries, their production value could range between \$917.70 million and \$2,366.40 million, or the equivalent of 7.2% - 18.6% of 2014 Palestinian GDP. Hence, the average potential production would equal \$1,642.05 million, or 12.9% of GDP. Access to Dead Sea salts and minerals will also allow Palestinians to invest in the cosmetic industry with the potential to generate even more revenue.”

From the Knesset Dead Sea Concession law 1962 “[the Israeli government gave to Dead Sea Works Company] the exclusive right to extract by way of evaporation (solar or artificial), cooling, mining, quarrying, or in any other way, mineral salts and minerals and chemicals, whether in solution or in solid form, which are in and beneath the Dead Sea... the exclusive right to make, expand, modify, maintain and demolish, in and beneath the Dead Sea...including – but without derogating from the generality of the aforesaid –embankments, evaporation ponds, culverts, water barriers, pumping stations, canals, pipes, electricity lines and electricity cables, roads, anti-flood installations, wells and bores and other installations.”(Hasson 2022)

The Dead Sea works basically transformed the southern half of the original salt lake into an evaporation pond. But since it is now completely dry, to extract the minerals water is pumped from the Northern Half (which is legally Jordanian and Palestinian) to the southern half by the Dead Sea Works (the Israeli company). As a result the northern half is shrinking very fast (due to Jordan river diversion and to pumping both by Israel). A huge new pumping station called P-9 started operating in 2021 with pumping 450 mcm/year from north to south (Hasson 2022)

Ahava Dead Sea Laboratories is an Israeli company that utilized resources from the Dead Sea for cosmetics and other products while Israel prevents Palestinians use of these same Palestinian Dead Sea resources (<https://www.whoprofits.org/company/ahava-dead-sea-laboratories/>). WhoProfits.org notes that “to relocate its factory from the settlement of Mitzpe Shalem to the town of Ein Gedi within the Green Line. The company itself stated that the factory in Ein Gedi would be additional to its existing factory in Mitzpe Shalem. Recent photos taken at the Ahava plant in Mitzpe Shalem indicate that Ahava’s factory and visitor center in Mitzpe Shalem are still operational. The company’s products are sold in Europe under a misleading label, which doesn’t indicate the name of the settlement the factory is located in. Ahava extracted mud from occupied territory on the shores of the Dead Sea. In May 2011, the Israeli civil administration confirmed that Ahava holds a license to operate a mud excavation site from the occupied area of the Dead Sea since 2004 and it is the only company licensed to do so. The Civil Administration also confirmed that it was an active excavation site.” The Dead Sea is intentionally being destroyed by the state of Israel for the sake of political calculations (Hasson 2022)

Red Sea - Dead Sea Canal project is a prime environmental problem and should not still be implemented damaging the environment in the whole region (see Rosenberg 2011; Georges et al 2021; Salem 2009; Qumsiyeh and Amr, data available/unpublished). Its impact in SP will be most acutely felt in the unnatural “replenishment” of the Dead Sea while leaving the Jordan Valley essentially dry and with continued environmental deterioration. Some work was done on this, but much more research needs to be done and the summary of these are beyond the scope of this report.

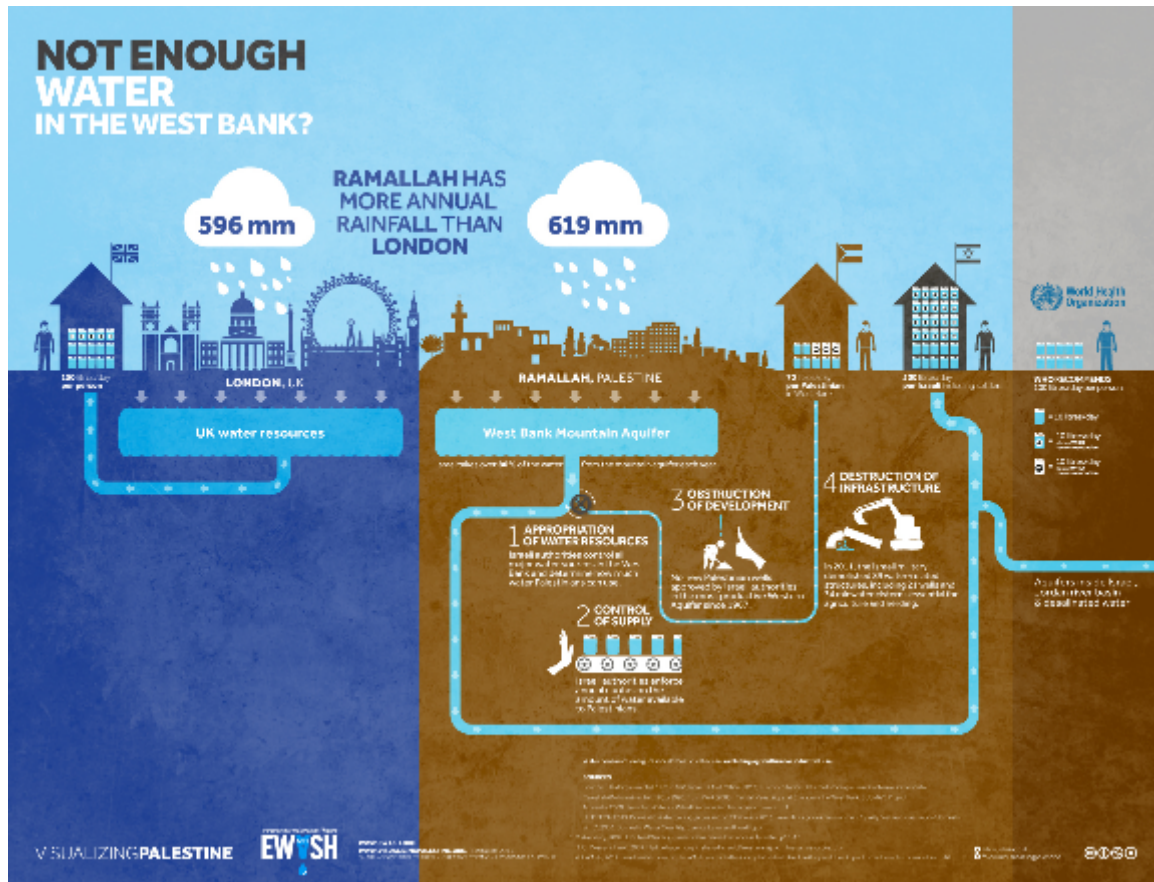


Figure 16 Is there not enough water in the WB or is it theft of water? From Visualizing Palestine (<https://www.visualizingpalestine.org/visuals/west-bank-water>).

Conclusion: Zionism from its beginnings was a hydraulic mission (Feitelson and Rosenthal 2012) and the colonialist of modern water still dominates the discourse (Underhill et al. 2023). A study done by Judeh et al. (2017) assessed the water governance in the West Bank, through 30 individual interviews and a focus group meeting that were conducted with the participation of representatives from the major stakeholders of the water sector in Palestine. The overall assessment of the governance system shows that political status and social status constitute the two most restrictive dimensions (the most in need of improvement), whereas water quality and responsibilities and resources are the two most supportive dimensions (the least in need of improvement) (Judeh et al., 2017). While Israel uses significantly more water than it is reasonably or

legally should be able to use from neighbouring areas including the WB, Israel is also engaged in building desalination plants which give it more hegemonic power and advances neoliberal agendas within the country (Feitelson & Rosenthal 2012).

In the West Bank, the Israeli army deliberately destroys even small scale water collection mechanism put into place to address the gap between water availability and need, in violation of both international law (the Fourth Geneva Convention) and the Joint Water Committee's 2001 "Joint Declaration for Keeping the Water Infrastructure out of the Cycle of Violence." (ARIJ, 2015) From 2010 to 2015, the Israeli military destroyed 335 water and sanitation related structures in the West Bank (ARIJ, 2015, 75-76). Some of this destruction has accompanied military incursions, such as the 2002 Israeli Operation "Defensive Shield" when water lines, sewage systems, and other key pieces of infrastructure were destroyed across the West Bank "without justification" according to an Amnesty International report (Amnesty, 2009, p.66). Other cases of destruction have come when people, desperate for water and waiting for years for the necessary permits for building even a small cistern or irrigation system, go ahead and build what they need anyway. They are then met with demolition orders from the military. In Tuwani, a small village, the Israeli army has regularly issued orders to stop building local water cisterns, and then demolished the structures (Amnesty, 2009, 43-44). In 2008, the army destroyed nine rainwater cisterns in a small village near Hebron, Beit Ula, that were part of an EU funded project to increase food sovereignty by providing sustainable water resources for many fruit and olive trees (Amnesty, 2009, p.48). In the Jordan Valley, the military confiscates water tanks and destroys houses to force people to leave their homes, such as in Ras Al-Ahmar, Hadidiya, and Humsa (Amnesty, 2009, 45-46).

In four villages that have been cut off from their cisterns and lands, Ras Al-Tira, Dab'a, Wadi Al-Rasha, and Ramadin, Palestinians have no water resources available because the Israeli Apartheid Wall was built to enclose their villages in order to accommodate an illegal Israel settlement nearby; moreover, non-resident Palestinians aren't allowed to enter the enclosure, so water tankers can't even deliver water in most cases (Amnesty, 2009, p.57). In July 2019, Israeli soldiers destroyed irrigation systems that a farmer had installed to water his fields near Hebron (ISM, 2019). In fact, a 2019 report from the United Nations' Office for the Coordination of Humanitarian Affairs (OCHA) documented an alarming increase in the number of demolitions that are happening, stating that in addition to the 218 people displaced by demolitions in the first three months of 2019, "the demolitions have affected over 25,000 people this year, most of whom were impacted by the destruction of water connections and wells in five separate incidents in February." (OSCHA, 2019) One of those instances was the destruction of a pipeline between two villages in Area B that are isolated on all sides by settlements and military zones; another was the destruction of a water network in the South Hebron Hills funded by international donors that had only been operating for 3 months before it was destroyed (OSCHA, 2019). This disturbing series of actions serve to keep Palestinians from using even the very limited water resources they have under occupation. It amounts, as some scholars and activists have put it, to a "water apartheid" and should be met with international sanction as such.

Celik et al (2017) warn that rainwater harvesting, which is a way many people in Palestine cope with the water shortage, can lead to the spread of water-borne diseases. An ARIJ report (2015) found that 50.9% of Palestinian households receive water intermittently. The practice of providing water to households intermittently (which at the municipal level is done due to water shortages) can increase the presence of microbes in the water and lead to illnesses as well (Kumpel and Nelson 2016). Overall, the oPt has higher rates of enteric diseases than India or Iraq, among other countries (ARIJ, 2015, 84).

Water is the essence of life and local control of water is critical also for the nexus to energy, food, and climate change and thus for SDGs (see IUCN 2016). The World Bank (2009) also noted that water issues remain problematic because of “the nature of governance” as they put it in the WB. That is putting it mildly. Israel actually practises hydro-hegemony (Messerschmidt 2008; Rudolph and Kurian 2022; Hayat et al. 2022), transnational eco-violence (Stoett and Omrow 2021; Stoett, et al. 2021) and water apartheid (Al-Haq 2013) regionally including on Palestinians. It is also changing water from a basic human right to a commodity to use as leverage in its attempt to assert political hegemony (Davidson-Harden et al. 2007; Abu-Eid 2007; Sultana & Loftus 2013; Brunner et al. 2015). In the WB by demarcating populations of settlers vs Palestinians and giving the latter the lion’s share of the water, by restriction of population access and the use of ‘security’ to justify a system of discrimination and oppression. Challenging this system is a big undertaking (McKee 2021) and we discuss some options in section 6.

2.2 The Segregation Wall

From its foundation as a Jewish state in a land that was multiethnic, multicultural and multireligious, Israeli policy makers believed in segregation and removal of natives and enclosing themselves behind borders and walls. But walls were also used as a system of pressure to force the natives to leave. For example after the ethnic cleansing of 1948-1949, the nascent state of Israel wanted to remove the last remaining Palestinians in some areas. The villages of Faluja and Iraq Al-Manshiya were actually populated after the war and the withdrawal of Israeli army was predicated on allowing the natives to continue living there. But Israeli planners wanted them out so setting the villagers in bordered villages (large prisons), they pressured them economically to finally “volunteer to leave”. Martial law was declared to other villages in the Galilee and the Negev (Qumsiyeh, 2004:41).

Walls were set up around inhabitants of Gaza started in 1967 and accelerated as colonies were established in the Gaza strip. The Israeli partial withdrawal from the strip in 2005 eliminated some walls and added others. The Israeli planners hoped to get rid of the burden of internal policing of Gaza’s population towards external policing. At the same time, the plan was to intensify colonization in the West Bank. The plans for walls and fences in the West Bank started in 1993-1994 with the Oslo accords where Israel was hoping to give limited autonomy to Palestinians in urban areas (designated area A in the parlance of Oslo) while increasing colonization throughout the West Bank. Settler

population mushroomed from in 1993 to over 600,000 by the year 2000 when all the delusions of Oslo “peace” accords evaporated (Qumsiyeh, 2004:133).

The Outbreak of another uprising in 2000 gave the Israeli state the excuse to make more collective punishment and restrictions in both the West Bank and Gaza. The Isolation of Jerusalem from its Palestinian suburbs intensified and the siege and blockade on Gaza became a hermetic seal that ensured impoverishment of nearly 2 million Palestinians. Having completed the wall around Gaza (with the aid of Egypt’s dictatorships), in 2002, the Israeli government formalized its policy of segregation in the West Bank by starting massive building projects of segregation walls and barriers starting in the northern parts of the West Bank. The walls were billed “security barriers” in projections to Western Media but were not related to security. Evidence for this is very clear: a) there were Palestinians on both sides of the wall (e.g. 250,000 Palestinians in Jerusalem on the “Israeli” side of the wall), b) there are Israelis on both sides of the wall with dozens of colonial Jewish settlements on the so called “Palestinian” side of the wall, c) Suicide bombings that started in 1994 after the attack by a Jewish settler in the Ibrahimi mosque were ended not by the wall but by Hamas taking a political decision to enter the 2006 election (the wall was less than 30% complete by then) (Qumsiyeh 2012: 107; Husein and Qumsiyeh 2022). In fact the wall is about annexation of settlements (Bimkom and B’tselem. 2005).

The Segregation Wall as of 2020 included 781 km of fortified barriers to movement (LRC 2021). It cuts through the western part of the West Bank with a 721 km length, and Height of 8-12 meters - twice the height of the Berlin Wall. The Wall is composed of vehicle-barrier trenches, exclusion zones, electric fences and thick concrete slabs (ARIJ, 2015:1). Most of the wall build is inside the West Bank well away from the green line and it is cutting more than 150 Palestinian communities from their lands and taking about 1/10th of the landmass of the West Bank to potentially annex to Israel (part of it in Jerusalem was already annexed, EQA 2010; B’Tselem, 2017).

The wall had a devastating impact on the Palestinian Environment (EQA 2010; ARIJ 2015a; Husein and Qumsiyeh 2022). Farmers with the land on the other side of the wall were told they could get permits but the rejection rate was high, the restrictions severe (no relatives to help harvest, no machinery), and thus many have given up on trying to apply and as a result there was 60% reduction in agricultural output on the so called “Israeli side of the wall” (OCHA 2022). But the effect of the wall on livelihoods and food sovereignty goes much deeper than that to cover areas like access to water and agriculture (Trottier 2007; Reynolds 2015)

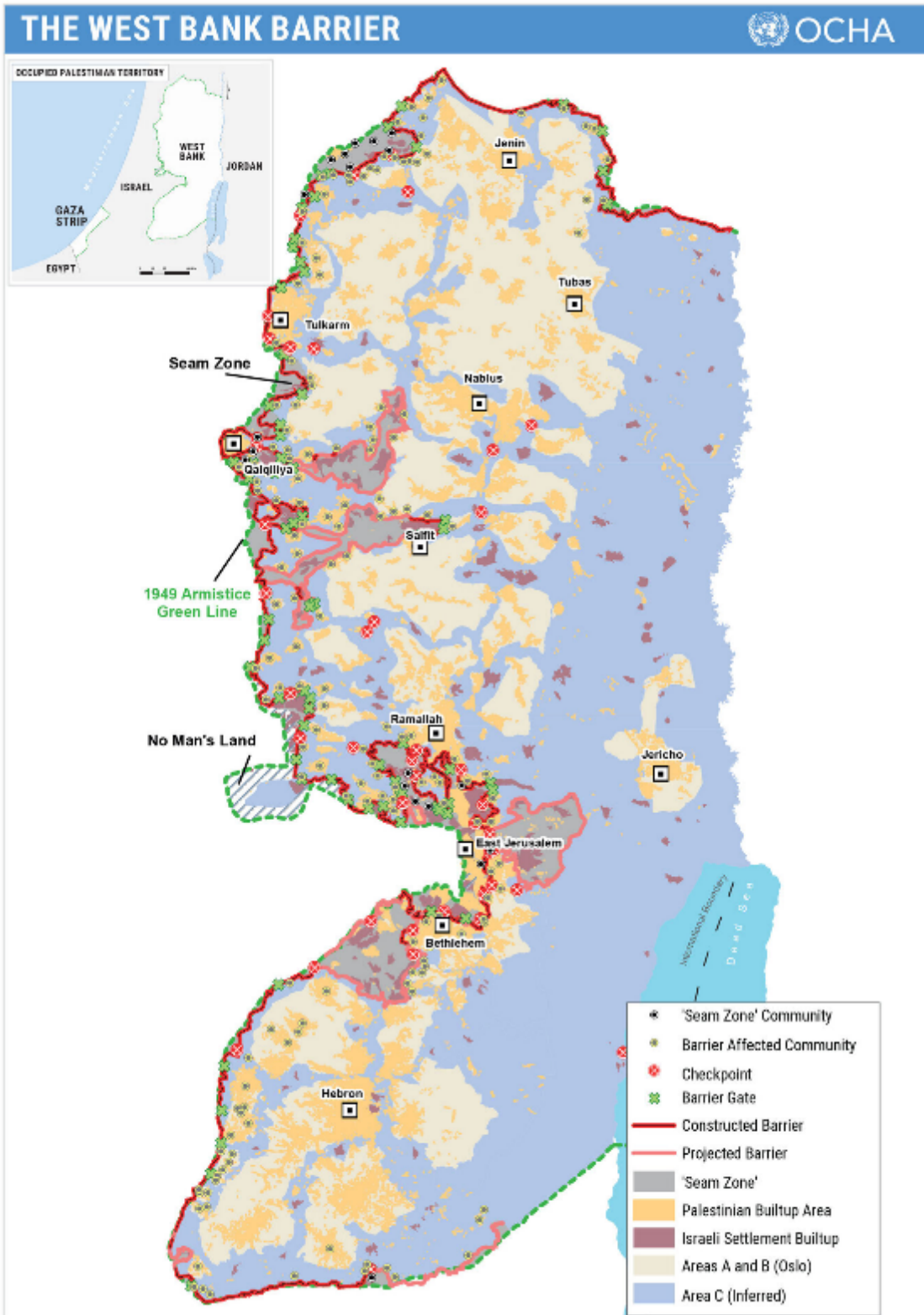


Figure 17 Segregation wall as of December 2022 (OCHA 2022).

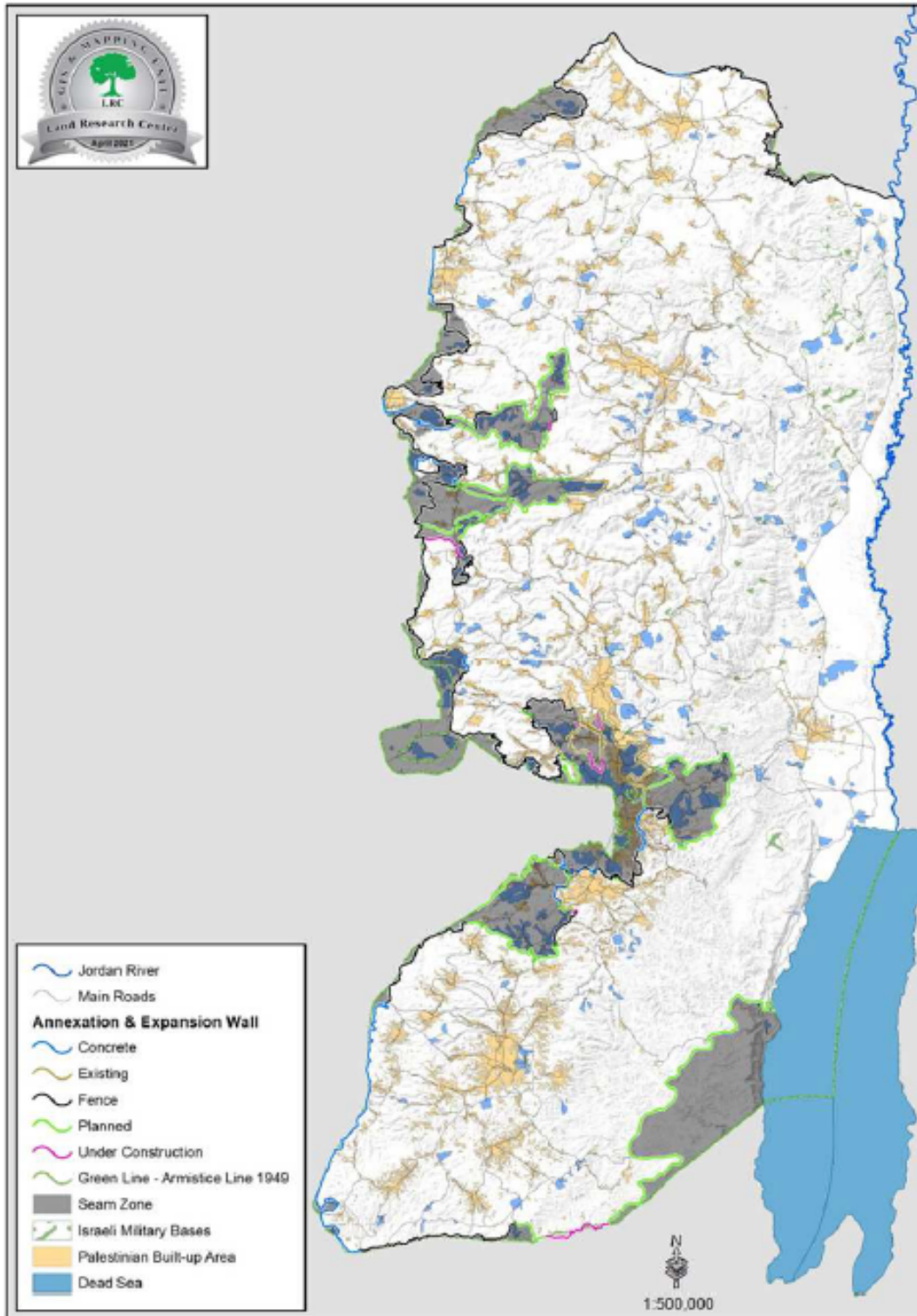


Figure 18 The segregation and annexation wall in the WB projection of land loss (LRC 2021).

The vast majority of the Wall route is planned to be located deep inside the West Bank (Fig. 18), causing confiscation of approximately 630,090 acres. Excluding East Jerusalem, this area - representing 10.9% of the total West Bank (EQA, 2010) - includes

land used for building the Wall or creating buffer zones, and land lost because the line of construction put some land on the Israeli side leaving Palestinians with fewer resources in highly populated areas. Dense population caused land and soil degradation due to urban building (EQA, 2010). The Wall caused fragmentation of farms, forests, grasslands and water resources and prevented access to land and other natural resources (ARIJ, 2015). Additionally, Construction of the Wall has created Seam Zones that lie between the segregation Wall and east of the Green Line (ARIJ, 2015). Cultivated land left behind the Wall are subjected to desertification because Palestinian farmers are banned from reaching or cultivating their land (Abdallah & Swaileh, 2011). >83% of respondents in a recent survey done by PIBS & EQA indicated that the wall has impact on both wild plants and animals of the area.

The wall is supplemented by many other barriers even deeper in teh West Bank that include cement blocks closing roads or mounds of earth or other barriers (see LRC 2021 for data).



Figure 19 Examples of closures within the west bank via earth mounds or cement blocks (LRC 2021)

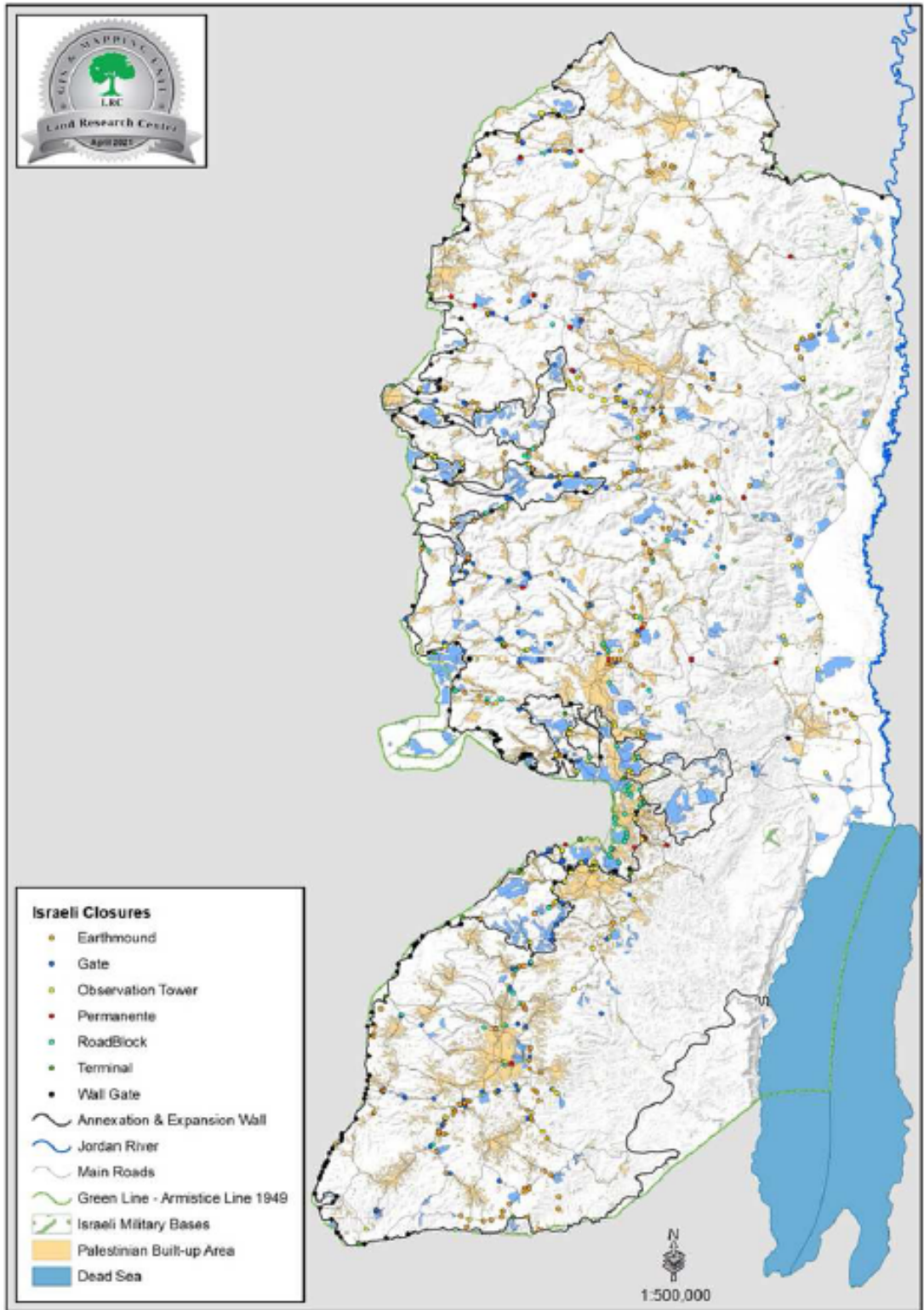


Figure 20 2020 map of terminals, checkpoints, gates etc restricting freedom of movement (LRC 2021).

The loss of land and the uprooting of many plants is damaging and endangering agro-biodiversity with high ecological and socio-economical impact. Many

vegetables and crops in these areas are threatened to disappear from the West Bank, especially those cultivated on plains and lower rainfall areas (EQA 2010). Overgrazing is another issue - a consequence of smaller areas permitted for access - causing depletion of plants (Abdallah & Swaileh, 2011). There are also indirect negative effects on plant species whose pollinators or seed dispersers do not cross the barriers (Abdallah & Swaileh, 2011). In addition to removing wide areas of green vegetation cover around the Wall - including endangered plant species (EQA, 2019) - construction led to the uprooting of many crop trees, especially olive trees used by many families as a source of income (EQA,2010; ARIJ, 2015). Forests and Protected Areas and nature reserves were also disrupted by the Wall construction. Almost 42,000 dunums of forest were included in the Wall area. Additional annexation took place of forests and protected areas west of the wall with high ecological value, such as Umm Al Rayhan forest (EQA, 2010).



Figure 21 A section of the wall (Creative Commons).

The impact on biodiversity and the environment include (modified after Husein and Qumsiyeh 2022):

- 1) Restriction on movement of land mammals. Our own studies on distribution of land mammals like the hyena (Handal et al. 2020:20) and Gazelles (PIBS unpublished data) show reduction in population of these species that have wide ranges (see also ecological data in Qumsiyeh 1996).

2) Land and soil degradation due to altered geophysical features (EQA 2010; UNRWA-BMU and ARIJ 2012b). Our own observations in areas like Wadi Zarqa (Qumsiyeh and Al-Sheikh 2023) and Wadi Al-Makhrour (Qumsiyeh et al. 2022) shows altered water courses and affect on natural habitats.

3) Habitat destruction and fragmentation. Already over 2 million trees were uprooted to build the wall, fences, and associated roads and buffer zones (see stopthewall.org). The wall caused fragmentation of the farms, forests, grasslands and water resources preventing access and use of lands and natural resources (ARIJ, 2015; EQA 2019). Forests and Protected Areas and nature reserves were also disrupted by the wall construction, almost 42,000 dunums forests area included in the wall area in addition to annexation of a total forests and protected areas with high ecological value in west of the wall such as Umm Al Rayhan forest (EQA, 2010).

4) Restructuring socioeconomics in environmentally damaging ways: Farms segregated from landowners damaged local food production and added to unsustainable practices of consumption. The loss of lands and uprooting of many plants is damaging and endangering agro-biodiversity with high ecological and socio-economical value (ARIJ, 2016). Many vegetables and crops are threatened to disappear especially the ones cultivated in plains and less rainfall areas (EQA,2010).

5) Overgrazing is a consequence of smaller areas allowed for people to access, which is causing depletion of plants and soil erosion (Abdallah & Swaileh, 2011; UNRWA-BMU and ARIJ, 2012) .

6) Affect on invasiveness and other species population changes: the wall likely explains local changes like increased invasiveness of certain species and expansion of populations of animals like wild boars and hyrax while decrease in others like Gazelles (due to habitat changes). For large mammals like Hyenas, the wall impedes their movements in ways that reduces availability of food because they have large foraging areas (Handal et al. 2021). Spread of some invasive species that are not restricted by walls is noticeable such as the Indian myna bird (Handal and Qumsiyeh 2021). A survey of areas around walls in Bethlehem Governorates showed many invasive species proliferating including *Ricinus communis*, *Ailanthus altissima*, *Nicotiana glauca*, and *Ambrosia confertiflora*.

7) The walls and the syphoning of spring water in many areas including those in this area has already produced a decline in Amphibian populations (Salman et al. 2014) and freshwater snails and plants (see also Al-Shaikh and Qumsiyeh, 2021).

8) The restrictions on movement imposed on the Palestinian population via the walls and plant checkpoints impedes access of conservation crews (Amr et al., 2016:75; Qumsiyeh et al., 2016:6) and the imbalance of power endangers conservation efforts (Qumsiyeh and Albardeiya, 2022).

The Wall disrupted the contiguity of natural water flow of streams and springs and this affects local flora and fauna (Qumsiyeh, 2014). The Wall caused changes and damage to

the local environment endangering many local animal species. According to the EQA, 16 wild animals are endangered as a result of the construction of the segregation Wall (EQA, 2010). Disruption of the natural habitat for many wild species has affected population size and prevented normal movement of wildlife (Abdallah & Swaileh, 2011). Wild animals are frequently trapped by the electric fences as they try to cross (Abdallah & Swaileh, 2011). The wall also damages agrobiodiversity (Isaac & Hrimat 2005 And for large mammals, such as Hyenas with large foraging areas, the wall has restricted movement in ways that has reduced the availability of food (Handal et al. 2020). Furthermore, the walls and the siphoning of spring water in many areas has produced a decline in Amphibian populations (Salman et al. 2014).

Importantly, the restrictions on movement imposed on the Palestinian people by the wall and checkpoints, severely limit their ability to protect rich biodiversity areas (Qumsiyeh and Amr. 2016; Qumsiyeh et al. 2016). Aside from the detrimental ecological footprint of the wall, fertile Palestinian lands behind the wall are now no longer accessible to Palestinians. The uprooting of trees to construct the wall led to negative impacts on the hydrology of watersheds and shifted the morphology of the water flow, leading to further erosion of land (Salem, 2011).

The segregation wall not only denies people access to their farms and lands but also in many cases to water and makes a Palestinian state untenable (Dolphin 2006; Arsenault & Green 2007; Ir Amin 2007; Al-Haq, 2011; B'Tselem 2012b; ARIJ 2016). The Western Aquifer, which lies primarily under the West Bank, is best accessed for extraction purposes from Israel and near the Green Line on the Palestinian side, but because of the Apartheid Wall and illegal settlements, it is impossible for Palestinians to access the West Bank areas with the best extraction potential (Amnesty 53). According to a 2015 ARIJ report, the Wall illegally isolates 28 groundwater wells which yield 4 MCM a year, or “more than 30 percent of Palestinians’ share in the Western Aquifer” according to the Oslo Accords (79). Just in the area between Tulkarem and Qalqilyah, the wall cut off Palestinian access to 47 small wells (Messerschmid, 2007). In Jayyus, a village by the Apartheid Wall, the residents have been cut off from much of their land, as well as all of the wells that they had been relying upon, with water consumption at 23 L/day, one fifth of the WHO minimum recommendation (Amnesty International, 2009, p. 54). As Amnesty International (2009) notes, “Israel does not need this land in order to extract water from the Western Aquifer, as it can and does so very successfully within Israel. By appropriating this land, however, Israel denies the Palestinians access to that part of the West Bank that has the best potential for drawing water from the Western Aquifer” (Amnesty, 2009, p. 53). Messerschmid names many reasons why Israel has very little need for the wells themselves in this area, since they could simply increase pumping rates at their own wells, and since the wells in this area are mostly disconnected from a water network and provide for very little water relative to Israeli use; thus the only factor at play is a geopolitical strategy to prevent Palestinian development of water infrastructure with regards to the Western Aquifer: “It seems likely, then, that Israeli planners were not so much concerned with annexing present resources when they designed the route of the wall, as they were with expropriating their neighbours’ future” (Messerschmid, 2007).

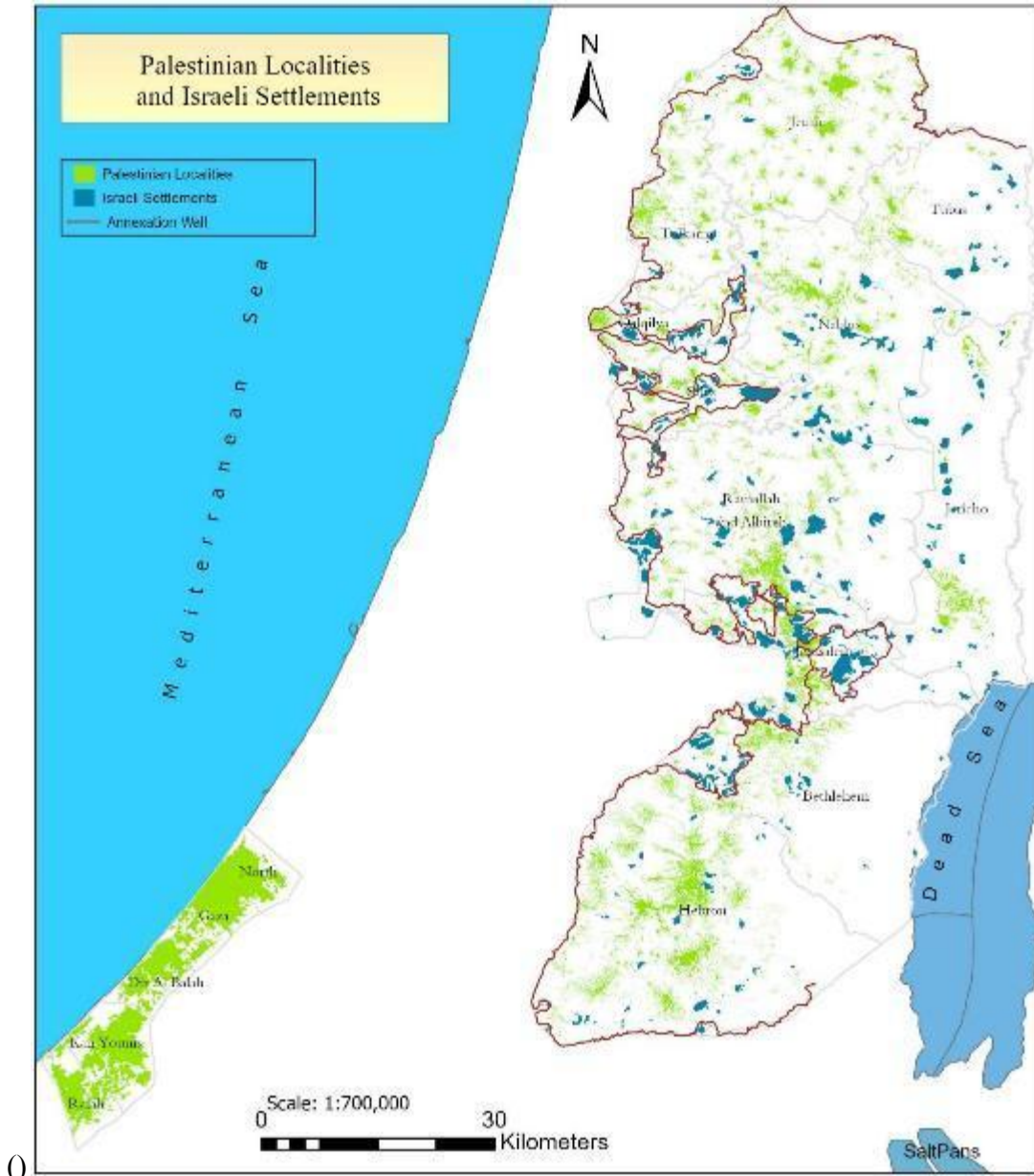


Figure 22 Palestinian Localities and Israeli Settlements.

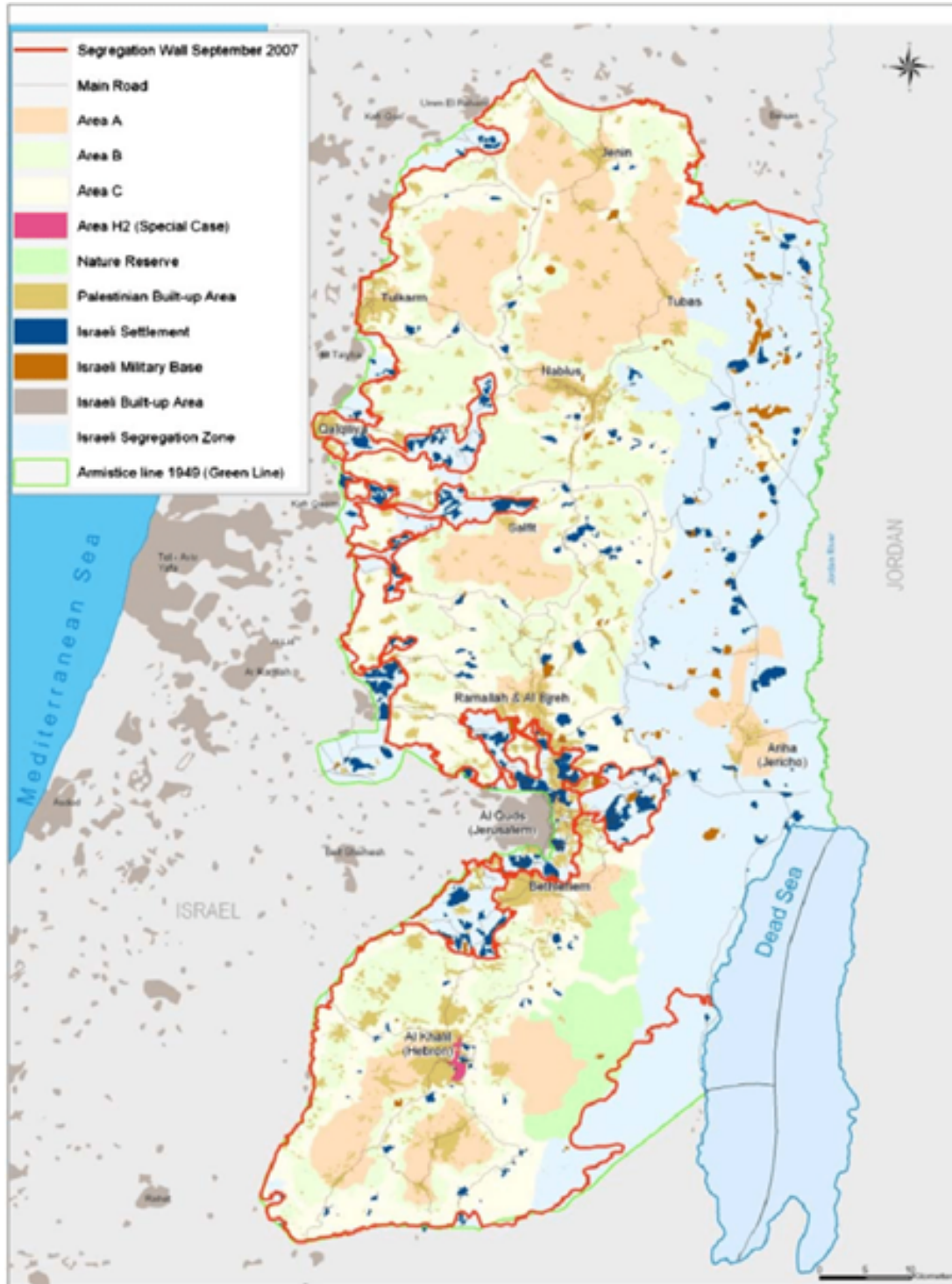


Figure 23 Map of the Israeli Segregation Wall in the West Bank (ARIJ, 2015).

The settlements themselves are an extremely clear illustration of environmental injustice in terms of access to water. A 2009 Amnesty International report found that 450,000 Israeli settlers illegally living in the West Bank use as much or more water in total than the 2.3 million Palestinians in the West Bank (Amnesty International, 2009). The report

noted that while Palestinians lack enough water to subsist upon (the average daily water consumption by Palestinians is 70 L/day, well below the World Health Organization's recommendation of 100 L/day at minimum), Israeli settlers irrigate their farms intensively, water their lawns, and relax in large swimming pools. In Om Alkheir in the South Hebron Hills, Israel prohibits the Palestinian Water Authority from connecting the village to the Palestinian water network and also prevents villagers from constructing cisterns; in contrast, the nearby illegal settlement of Karma'el is provided water through Mekorot supply lines that pass through Om Elkheir's land. Settlers "use 300 liters per person per day, compared to the Palestinians' 15 litres, which is transported by donkeys and carried on women's and children's heads from long distances." (Friends of the Earth International, 2013).

Moreover, Israeli settlers take over Palestinian springs which are a valuable source of water given the many other restrictions in place, particularly for Palestinians living in Area C. According to one report, settlers blocked Palestinian access to 56 springs as of 2015, most of which are on private Palestinian lands within Area C, through violence, intimidation, threats, and physical obstacles or de facto annexation (ARIJ 2015, p. 77/78). A 2012 report by the U.N.'s Office for Coordination of Humanitarian Affairs (OCHA) noted that these springs are a critical source for irrigation and watering livestock for Palestinians, and that Israeli settlers are turning the springs into tourist attractions, with pools, picnic areas, and Hebrew signage (Kelley, 2012).

Preserving the inherent right of the Palestinian people to water is one of the Israeli state's obligations under, among others, the International Covenant on Economic, Social and Cultural Rights, which it ratified in 1991. Jordanian laws on the environment were applied in the West Bank while the Egyptian laws applied in Gaza after the 1949 truce and until 1967. The Second Israeli Military Order designated immediately after the occupation in 1967 that all water resources in the newly occupied Palestinian Territories were to be "state owned by Israel" (UNEP, 2003), and also took over the "West Bank Water Department," a Jordanian operator of wells in the West Bank, and now sells back the water from these wells to Palestinians and Israeli settlers (Amnesty International, 2009, p.15). Since 1982, all of the water infrastructure in the West Bank was put under the control of the Israeli water company, Mekorot; the water Mekorot extracts from West Bank wells primarily supplies Israeli settlements and unauthorized "outposts," and sells some water to Palestinians under tight regulation by the Israeli government (Amnesty International, 2009, p.15). Currently, there are about 39 wells in the West Bank that are directly controlled by Mekorot (ARIJ report, 2015, p. 44).

In the 1993 negotiations of Oslo, final status negotiations bogged down not just on the refugees and Jerusalem, but also due to Israel's insistence on maintaining leverage and control over most of the water resources. Even the agreements signed in Oslo and the creation of the Palestine Water Authority were like other Oslo agreements – devoid of

any equality or even meaning in terms of enforcement and control over water resources. The basic elements of fair distribution of water based on per capita are provided by Tamimi based on International treaties, but Israel controlled water allocation and use in the Palestinian occupied areas in very unfair ways (Tamimi, 1996). After a thorough review of the hydrological data, Elmusa (1998) concluded that, “Since 1967, Israel has had a firm grip over virtually all the ground water resources of geographic Palestine and the Jordan River's headwaters [...]Israel takes 80-90% of the freshwater resources of geographic Palestine. Included in this figure are the shares of Israel and the West Bank under the Johnston Plan [a US plan for distribution of water based on population].” The PNA did attempt to legislate on issues of water and other natural resources via the water law signed by the late President Yasser Arafat on 17 July 2002. But these remain wishful thinking in context of continued occupation (UNEP, 2003).

The problem is exacerbated because "the West Bank, Gaza, and Israel have a high degree of hydrological interdependence in the sense that most of the fresh, renewable resources in geographic Palestine are common to both sides" and thus it is difficult to ensure separate and equal resources (Elmusa, 1998; Daibes & Daibes-Murad, 2003). Any cooperation between Israelis and Palestinians, however, comes up against the fundamental inequalities of occupation; one study on cooperation around water management showed that both Israelis and Palestinians condemned the Israeli government for their water policies towards Palestinians and named the government as the primary factor negatively impacting better water management for all (Ide and Frohlich 2015). In response, the geological reality of interdependence has led some scholars to argue for a matching political reality: a one-state solution, where all citizens could be provided with equitable access to clean water through the shared water resources of historic Palestine (Houry, 2012).

Israel has also controlled water infrastructure in the oPt since 1967, when a military order stated “ that Palestinians could not construct any new water installation without first obtaining a permit from the Israeli army and that any water installation or resource built without a permit would be confiscated” (Amnesty, 2009, p.15). While Israel claims to have transferred full control over to the Palestinian Authority, what has in fact happened is that the PA is responsible for administering the extremely limited water resources that Israel allows, while simultaneously being prevented from building any infrastructure in the majority of the West Bank and having to pay Israel for 50% of Palestinian’s drinking water, which Israel extracts from the shared Western aquifer and sells back (Amnesty, 2009, p.21). Moreover, the Oslo Accords established the Joint Water Committee with Israeli and Palestinian representatives, which must approve water related activities, but which, in practice, is just as defined by the power asymmetry between Israel and Palestine as any other “cooperative” endeavor (Amnesty, 2009, p.33). This is particularly apparent when it comes to getting the committee to approve even minor

repairs in Area C, which is under Israeli control Amnesty, 2009, p.34); even where the JWC grants approval, the PA then has to wait for military approval as well. A 2015 ARIJ report documents the outcome of an impossible situation: “Between 2011 – 2013 Israel rejected 97% of applications for building permits in Area C, including applications for developing related water and sanitation projects”. An Amnesty International report gives further detail: “Only 13 permits [for drilling or rehabilitating wells] were granted in the 29 years from 1967 to 1996 (when the PWA was established), but all of these were for projects for domestic use only” (Amnesty, 2009, p.15). In the village of Hizmah, for example, Palestinians depend on water from Mekorot, but not enough water is sold to meet the needs of the people there, so the Palestinian Water Authority requested to build two wells - the JWC approved, but the army hasn’t yet agreed to a location (Amnesty, 2009, p.37). In Rujib, near Nablus, the military has similarly been a major obstruction, repeatedly changing demands for where a prospective well can be built, which has led to international funders backing out due to the uncertainty (Amnesty, 2009, p.38). In contrast, the Palestinian authorities have no access to data on Israeli water usage of shared resources, or on illegal settlements drilling wells, or on connections to the water network from “unauthorized” illegal settlements (Amnesty, 2009).

2.3 Pollution and Waste

The situation for wastewater management in the occupied Palestinian areas is critical, and it is important to note that lack of wastewater treatment and management on the Palestinian side also contributes significantly to pollution of water resources. In Gaza, for example, a significant portion of the sewage flows untreated to the Mediterranean Sea (Ashour et al., 2009), about 70-80% (ARIJ, 2015, 160). In Gaza, moreover, the Israeli enforced blockade means that materials can’t get into Gaza to repair existing infrastructure or build anything new to deal with the wastewater issue (Visualizing Palestine, 2013). Some Israeli experts point to desalination as a possible solution to Gaza’s water crisis. There are small scale desalination projects by reverse osmosis in Gaza but these have their own environmental issues, see (Assaf, 2001). Moreover, the investment in desalination belies the reality that Gazans aren’t permitted equitable access to existing water resources, and that any investments in Palestinian desalination on a large scale would ultimately be extremely costly to Palestinians (Kessel and Klochender, 2009). Even Israeli water experts, like Avshalom Ferber, the CEO of a desalination company in Israel note that the situation isn’t fair, saying, “Current Israeli water planning simply does not make allowance for the needs of the Palestinian territories” (Kessel and Klochender, 2009).

When it comes to building infrastructure within the West Bank, the influence of the occupation can be felt keenly. As noted above, 60% of the West Bank is Area C territory that the Palestinian Water Authority cannot access, but an Amnesty International report

notes that Area C “is the most suitable area in which to locate the water supply and sanitation infrastructure [...] The 40 per cent of the West Bank that comprises Areas A and B and is under PA jurisdiction is already crowded and barely sufficient for the growing population” (Amnesty, 2009 p.80). Israel also sets unreasonable higher standards for sewage treatment in the West Bank than in Israel: in order to have a sewage treatment plant approved in the West Bank, the planners must meet 10/10 standards, while in Israel, this requirement is being phased in over the next 10 years and currently, is not being adhered to in most cases” (Amnesty, 2009 p.80). The report continues, saying that building plants that meet this requirement, which includes tertiary treatment of the waste, costs about 100% more than those that only provide secondary treatment of the waste (81). In Salfit, a proposed Palestinian water treatment plant provides a clear case study for how occupation prevents Palestinians from treating wastewater and thereby keeping the environment protected. While the JWC approved the plant in 1997, the army stopped construction in 1998 because the location of the plant would have impeded the expansion of an (illegal) settlement, Ariel; they also demanded that the plant process the waste from Ariel (“Troubled Waters,” 39). The project stalled, and nearly a decade later, the military proposed a pipeline to take waste from Ariel and other settlements to Israel for treatment, and to provide Salfit with wastewater treatment for a price; the PWA rejected this plan due to cost and legitimization of illegal settlements.

Pollution of groundwater and springs in the West Bank comes both from Palestinian sources and from illegal Israeli settlements, including industrial settlements which operate with impunity and no oversight. Settlements dump wastewater in some significant supposedly protected areas like Wadi Qana, Wadi Nar, Wadi Far’a (Bathan), and around Salfit (EQA 2015 Aliewi 2015) and into the Mediterranean Sea where it is highly damaging to the environment (Akram and Cheslow 2016). Since these settlements receive their water from the Israeli water company, the local water pollution doesn’t affect them (ARIJ, 2015, 78). In Salfit, specifically, the Barkan industrial zone has contaminated the local drinking water with discharges of industrial waste water and sewage that run through the villages of Bruqin and Haris, seep into the soil, and then into local aquifers. Another industrial settlement, built on confiscated Palestinian land near the village of Khirbet Zanuta, discharges its wastewater into the valley where farming and grazing used to happen (Aidy, Lee and Watts, 2017). A 2017 B’Tselem study on Israeli waste in the oPt outlines how Israeli law on corporate transparency on environmental issues does not extend to the West Bank, where “plants are exempt from recording or reporting their external impact [...] no information is collected at all regarding the type and quantity of pollutants, how they are treated, the destination of wastewater pumping, or the quantity and destination of hazardous by-products” (“Made in Israel”). Israel also imports pollutants into the West Bank. For example, pesticide use is also a major source of water pollution, but while the Palestinian Authority has banned some particularly dangerous pesticides (though only about 1/3 of the number of pesticides restricted under

Israeli law), transportation of illegal pesticides across the Green Line by Israelis for use in industrial farming settlements is disturbingly common (Aidy et al. 2017).

Disturbingly, there are many accounts of illegal settlements dumping sewage directly into Palestinian lands, untreated. In the village of Faisayel, the deaths of 25 cows in 2014 signalled high ammonium content in the water, as a result of sewage flowing from nearby settlements into the water supply (Aidy, Lee and Watts, 2017). In the village of Yatta, wastewater from settlements has contaminated the soil and killed olive trees, and has been flowing through the village since the early 1980s (Aidy, Lee and Watts, 2017). In 2005, Israeli settlers poisoned the water reservoir that supplied the villages of Tuwani, Mufaggara, and Khorouba, first with soiled diapers and dead chickens and later with toxic chemicals (Amnesty, 2009 p.71). A 2013 story about the city of Sabastiya found that the settlers were pumping raw untreated sewage into Palestinian agricultural lands, and villagers had started the process of bringing legal action (ISM, 2013). And in Qalqilya, a 2018 news story reported on how Israeli settlements “are the main cause of environmental pollution [...] from wastewater and sewage” (Yasin, 2018). While some of these settlements now have wastewater treatment plants, not all do, so this problem continues (Amnesty, 2009, 77-78). As of 2009, it was estimated that only two-thirds of illegal Israeli settlements in the West Bank sent their waste to a treatment facility, and some of those facilities did not even meet minimum Israeli standards for wastewater treatment (ARIJ 2015, 78). The case of East Jerusalem is an important one with regards to pollution and occupation. Since East Jerusalem has been annexed by Israel, the Palestinian Water Authority cannot provide services, and furthermore, the illegal Israeli settlements in East Jerusalem are not provided sewage treatment services by Israel (Amnesty, 2009, p. 79). As a result, raw sewage flows into the rest of the West Bank from East Jerusalem.

In Gaza, it is the blockade and military actions, in addition to overuse of resources by Israel, that have most significantly polluted the water. Baalousha (2006) used GIS and the DRASTIC measures of vulnerability to show that many areas in Gaza Strip are susceptible to significant water pollution damage. 8 years later, Abu Jabal (2014) found that groundwater in Gaza was undrinkable because of “brine upcoming from the deeper parts of the aquifer, brackish water flow from the adjacent Eocene eastern aquifer, aquifer overpumping, and wastewater infiltration into the aquifer.”(Jabal, 2015). Indeed, the United Nations found that the coastal aquifer “will be unusable by 2016” and another report found that “Gaza is only responsible for 26% of all withdrawal from the aquifer. Israel is the biggest user, accounting for about 66% of the water extracted” (Patterson 2014). Sea water intrusion, moreover, will only get worse in coming years, according to a 2013 study by Sarsak and Almasri (Sarsak & Almasri 2013). A 2018 study determined that 90.4% of the wells in Gaza are nitrate polluted, as a result of sewage inputs in the Gaza coastal aquifer (Abu-alnaeem, 2018). Another study that focused on water quality in the tanks located at kindergartens in the Gaza Strip found that the primary sources of contamination were biological, mostly from sewage (Zaqoot, 2016). This widespread

pollution is a result primarily of destroying wells, wastewater treatment plants, and other water infrastructure: “Israeli attacks during “Cast Lead” had disastrous consequences for the underlying Coastal Aquifer, already in a seriously deficient state” (“Troubled Waters,” Amnesty International, 66). Some of those consequences were “sewage overspill from the Gaza wastewater treatment plant in al-Zaytoun, a suburb of Gaza City, caused by an Israeli airstrike which damaged one of the sewage lagoons’ embankments,” “100,000 cubic meters of wastewater and sewage sludge flooded nearby agricultural fields, damaging 55,000 square meters,” the dispersal of hazardous waste because of building destruction, and the contamination of groundwater from animal remains after Israeli attacks destroyed a large poultry farm (Amnesty International, 2009, p.66).

But there are also some mismanagement of the shrinking and limited water resources on the Palestinian side. A decaying water infrastructure is not upgraded because state funding has other priorities (like security, education, and healthcare). So there is some loss of water through the existing pipeline structures. In some areas there is poor protection to freshwater supplies. For example in the biodiversity important area of Al-Bathan near Nablus, the sewage water course merges with the freshwater spring course just below the picnic and park areas (ARIJ 2015). There are also cases of Palestinians using water without authorization, but the PA and PWA are unwilling to enforce these cases, because they are not in a position to provide adequate water resources through the system legally to everyone, as an Amnesty International report notes: “As poverty has increased since 2001 due to harder economic conditions and the impact of Israeli-imposed restrictions, many Palestinians have been left with little option but to contravene the water law in order to cope with severe water shortages that the PWA has been powerless to prevent or overcome” (Amnesty, 2009, p.77). When it comes to water governance in Palestine, moreover, an important secondary issue of environmental injustice, beyond the broader impact of the occupation on all Palestinians, is the internal variations in water access, as Judeh and Haddad (2017) note: “[...] Palestinian communities suffer from the variation in the water availability and services. For example, Tulkarm and Qalqilia have an abundance of water through the water networks and also have good water services with a reasonable cost. In contrast, Hebron suffers from water scarcity and the water exists in the network a few hours during the day with a high cost”(Judeh and Haddad 2017). Finally, there is no organized program to alert tourists to conserve water even as the ministry of tourism pushes hard to increased number of pilgrims to the Holy Land. Clearly some things can and should be done regardless of what the status of the occupation.

Pollution and waste management is a huge problem in the West Bank (Al-Khatib et al. 2007). Palestine has made some advances towards ABT 8 by doing more research on pollution in recent years. This includes research on noise pollution (Hustim et al. 2018), groundwater pollution (Aliawi and Al-Khatib, 2015; Malassa et al. 2014), drinking water pollution (Daghara et al. 2019), air pollution (Jodeh et al. 2018), heavy metal pollution (Zaqoot et al. 2018), and landfill impacts (Salah et al. 2019) among other studies. Qureitem et al. (2020) have published an inventory of main greenhouse gas emissions in Palestine. There have also been other studies on the reduction/control possibilities of pollution in Palestine (El Baba et al. 2015; Khayat 2020).

There are relatively new wastewater treatment facility near Nablus (<http://wwtp.nablus.org/>). Another example is that ARIJ managed to do wastewater treatment like in Wadi Saeer the institute established wastewater treatment unit with a capacity of 1,200 CM per day and preserved an area of 500 dunums of land that used to be flooded by wastewater and the institute had innovative special units for treating the black water from houses to be used for irrigating trees in home gardens.

Not allowing Palestinians to develop wastewater treatment facilities and then allowing WB wastewater (of both settlers and Palestinians) to flow to the greenline and beyond to be treated at high expense deducted from Palestinian tax revenue (Trottier 2019; Trottier et al. 2019; Fig. 24)

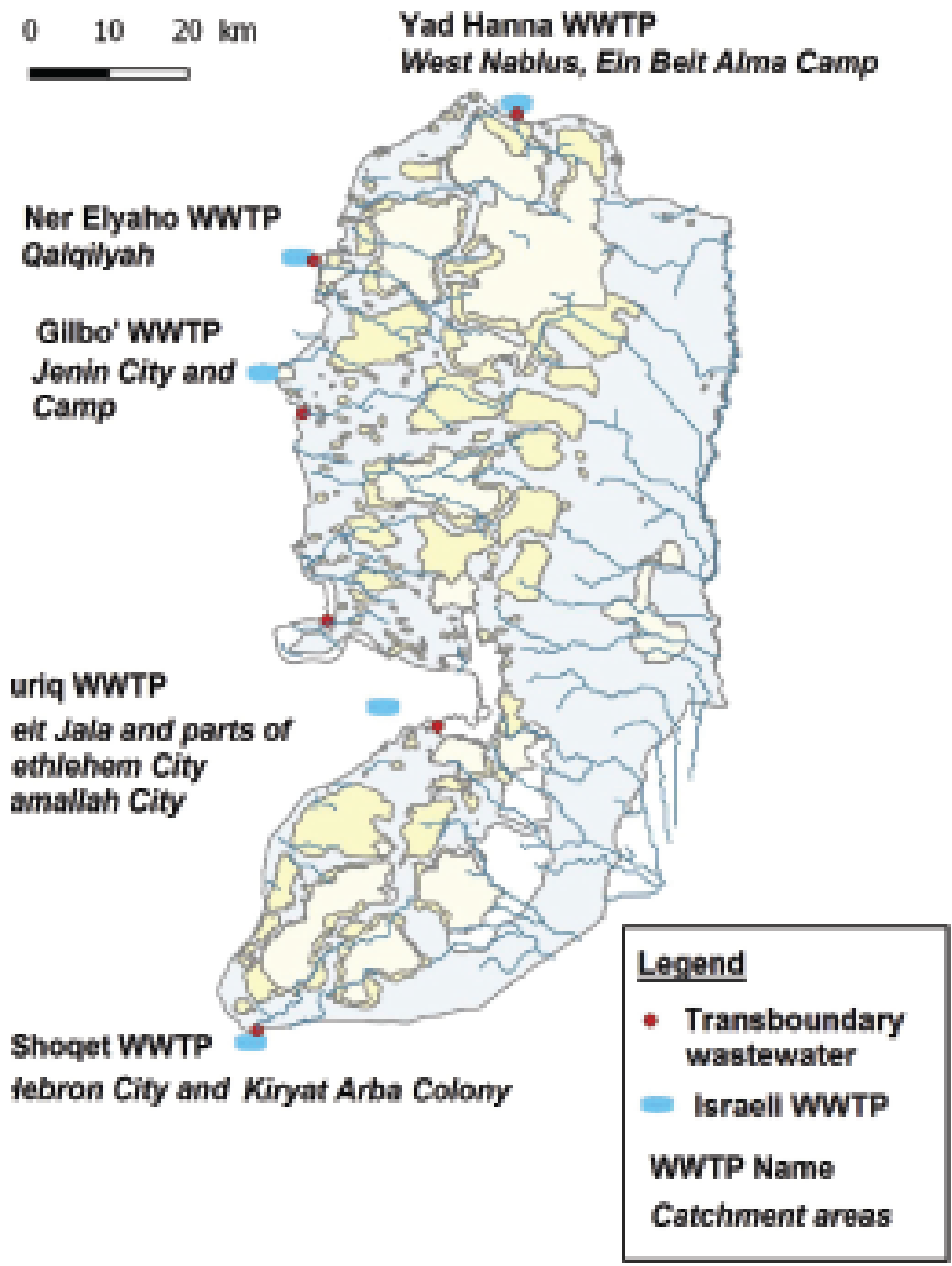


Figure 24 Transboundary wastewater and Israeli wastewater treatment plans (Trottier et al. 2019).

A study of water from 54 wells and 43 springs carried out in 2016 (http://www.pwa.ps/ar_page.aspx?id=J0h6J5a2717254815aJ0h6J5) showed that many have high nitrates (above maximum 50 mg/l) especially in the north of the West Bank where farmers in Jenin and Tubas use chemical fertilizer. Inorganic Nitrates are harmful to both environments and humans (Camagro et al 2006; Ward et al 2028). The same PWA

study showed increasing salinity especially in wells in the Jericho area (due to overuse) and some 19% have coliform bacteria. Similarly many springs in the central (Ghanem et al. 2021) and northern WB (Hejaz et al. 2020) are found to be contaminated with fecal material. The studies by PIBS on amphibians (Salman et al. 2014) and snails (Handal et al. 2015) also showed impact on biodiversity of the closure and contamination of many previously free flowing springs.

It was reported that Palestine annually produced 7,103 tonnes of hazardous waste (6.4% of total waste) of which 1,420 tonnes are of hazardous medical waste's origin in the last available estimate (SP 2020a). Per capita waste production was about 0.9 kg/day Israeli waste now dominates (ARIJ, 2005a; Newman 2009). The Ministry of Local Government (MoLG) has overall responsibilities for municipal SWM, and operations are covered by municipalities and Joint Services Councils for Solid Waste Management (JSCSWM). http://www.bjscswm.org/wpeng/?page_id=7. As part of the preparations for the National Strategy for Solid Waste Management (NSSWM), a team led by EQA prepared the Interim Action Plan for Hazardous Waste Management in the Palestinian Territory (EQA 2011) has identified the following challenges:

- Poor hazardous waste management due to insufficient regulations (no existing hazardous waste by law) and inability to enforce them.
- Weak enforcement of environmental law to discourage industries from reducing pollution streams that contain hazardous waste.
- A lack of awareness of hazardous waste issues across the PT industry, for priority waste streams in particular.
- Absence of hazardous waste treatment and disposal sites.
- There are no hazardous waste recycling facilities and waste exchange activities.
- Absence of hazardous waste transfer stations.
- The need to explore alternative delivery mechanisms for hazardous waste facilities such as public/private partnership

The NSSWM in Palestine (2017-2022) aligns Palestinian SW policy with Sustainable Development Goals of 2030, especially Goal 3 (Health and Well-being), as well as Goal 11 (Sustainable cities and human settlements) (CESVI, 2019). The strategic objectives of the current NSSWM are:

- A modern and effective legislative and organizational framework for SWM.
- Strong implementing institutions.
- Effective and environmentally safe management of SW services.
- Financial sustainability and efficient SWM services and activities.
- Appropriate treatment and inventory of medical, hazardous and special waste.
- A growing participation of the private sector in SWM.
- A more participating and aware public.

Efforts of the PNA to get Israel to agree to waste water and solid waste facilities' which Israel refuses to authorize, unless Palestinians agree to take in colonial settlement waste, from illegal settlements as per international law (Tal, 2002).

The Israeli occupation is a major source of pollution (water, solid, air) affecting the Palestinian environment (ARIJ, 2016). Solid and liquid waste management in the West Bank can generate significant environmental damage even when material is treated or recycled (ARIJ, 2016a; Abu Thaher 2005; GIZ, 2014). **Environmental impact assessment (EIA)** studies are required by Palestinian law for new construction projects. However, law enforcement is not well developed for EIAs (Bacenetti et al. 2016; Saleh 2016; Sayara 2016).

Cross border trafficking in **solid waste** is an environmental hazard. For example, 200-500 tons of electronic waste from Israel every day (TCCR, 2012). An Al Haq report on environmental injustice also finds that an active waste dump near Jerusalem releases toxic dust into the air (Al-Haq 2015b). Waste dumping, more broadly, can have a range of deadly effects, especially given what tends to be dumped and burned in open and unregulated sites in the West Bank: The waste often contains plastic, PVC, tires, electronic waste and other things that produce particularly dangerous air pollutants when burned and creates dangerous toxic smoke, which has many tiny particles which can get deep into lungs, potentially increasing the risk of asthma, lung and heart disease, cancer, and other cardiovascular problems (EPA, 2010). In addition the smoke typically contains “dioxins” which are highly toxic pollutants known to cause cancer, as well as hundreds of other contaminants which may cause or aggravate lung problems. This pollution can be blown by the wind for some distance. When the contaminants fall to the ground and settle on subsistence foods, there is another opportunity for people, animals and plants to come into contact with dangerous substances (EPA, 2010).

Random dumping sites of solid waste is still a big issue and enforcement is lax (ARIJ, 2016a). Joint services councils (JSCs) function under the MoLG (MoLG & JICA, 2015). The actions of JSCs is also described in detail in the Solid Waste Management Strategy (MoLG, 2016). Landfills like Al-Minya landfill to serve the south West Bank needs are inadequate for societal needs (compounded by Israeli settler solid waste) and leachate from solid waste dump sites is not adequately addressed (ARIJ, 2016; MoLG, 2016).

In recent years, Israel’s illegal waste dumping in the OPT has come under increased scrutiny. In 2016, for example, the Palestinian Environmental Quality Authority actually reported the illegal waste dumping to the United Nations, specifically “two truckloads of hazardous waste coming from Geshuri settlement and heading to a waste treatment facility in Jenin” (Anan, 2017) Even though Israel attempted to defend their actions by saying that the waste came from a settlement and not the Israeli state, the Basel council secretariat to which the actions were reported dismissed that defense, ruled that Israel was guilty of “illegal transboundary movement of waste” and ordered the waste to be transported across the Green Line for disposal (Anan, 2017, p. 23). This situation, however, is not an isolated case, and most of the time, there is no just resolution for Palestinians.

Solid waste from settlements, toxic waste from illegal industrial settlements and the transportation of waste across the Green Line and into the West Bank are all significant ways in which Israel actively dumps its waste in the OPT. In Qalqilyah, for example, huge amounts of waste generated from an illegal Israeli settlement, including both domestic waste and industrial waste, may even be linked to higher rates of cancer in the Palestinian population (Pontin, 2015). The “Jayyous landfill” where this waste was being dumped was usurped by Israel from a family who had been farming the land, without any prior consent or communication; it is located above a local aquifer, is uncapped, and is the likely cause of very high levels of lead and other contaminants in the water (Aidy, Lee and Watts, 2017). In 2001, local pressure forced Israel to close the landfill, but since then, no reparations or remediations have been offered by Israel, and the waste remains. In 2015, the estimated solid waste generation by Israeli settlers was about 446,000 tons per year (ARIJ 2015, 102), and about 80% of that waste is not properly disposed but “disposed of in random dumpsites in the West Bank” (Arij, 2015, p.88). Near Bethlehem and Hebron, two illegal settlements generate 1200 tons of waste a month that is directly disposed in the Palestinian operated Al Minya landfill (ARIJ, 2015, p.98). The Israeli military also directly pollutes the environment: “Israeli Occupation Forces (IOF) have used Palestinian lands for the burial of zinc, nickel, radioactive substances and industrial waste for many years. There are also fears that Israel buried nuclear materials to the east of Yatta village” (Isaac, 2007). Near Faisayel in the Jordan Valley, there are reports of solid waste with high lead content, transported across the Green Line (Aidy, Lee and Watts, 2017). In Idhna, as noted in the introduction, Khlaif and Qumsiyeh have studied how the dumping of electronic waste, which is then recycled by the people of Idhna as a meager source of income, has serious health implications (Khlaif and Qumsiyeh, 2017). A 2015 ARIJ report on Palestine’s environment referred to Idhna as an “electronic graveyard” due to the amount of waste received, and workers at various e-waste processing workshops in the area numbered in the thousands, with 1500 permanent workers and more than 5000 non-permanent ones, including children (Arij, 2015, p.103). The environmental cost of this waste dumping extends beyond the health effects of working with the scrap: “E-waste is burnt, minerals are extracted, and the remaining non-valuable waste is left to contaminate the landscape” (103). Such irresponsible waste disposal would be reprehensible anywhere, but in the OPT, under Israel’s belligerent occupation, such actions could be said to constitute a war crime.

This waste dumping is accompanied by limiting Palestinian access to information about hazardous waste dumping and inadequately managing landfills that Israel has built on confiscated Palestinian land in the West Bank. A report on toxic chemicals in the West Bank notes that “Palestinian officials face a critical lack of specific data about the different toxic chemicals that are continuously leaching into the local groundwater and soil” and that “Israeli army personnel surrounding the illegal settlement sites physically prevent Palestinians from collecting and analysing water and soil samples” (Aidy, Lee and

Watts, 2017). Near Jerusalem, an Israeli managed landfill in Area C, the El 'Eizariya Landfill, has been expanded with no preventative measures put in place to stop the leaching of pollutants into the West Bank aquifer, whose infiltration area lies below the landfill (ARIJ 2015, 98-99).

In terms of waste from Palestinian sources, according to UNEP (2003), 70% of solid waste in the occupied Palestinian territories is organic waste. This is a very high number and one that gives us an opportunity for significant reduction via composting to generate fertilizers. Sewage can also be treated and other solid waste like metals and plastics and glass can be recycled, but Israel significantly hampers the building of adequate solid waste treatment facilities or disposal sites. There is a critical shortage of solid waste disposal sites in the OPT, with much solid waste being disposed at random dump sites. An important factor in the lack of landfills is that the major population centers in Palestine are located in Area A, which is a very small fraction of the West Bank, and as a result viable sites for waste disposal facilities are largely located in Area C and as such require Israeli permission to be built (ARIJ, 2015, 88). For example, one planned landfill in the West Bank is the Ramoun landfill, which would go a long way towards providing Palestinians in Ramallah and surrounding areas with a sanitary waste disposal location; however, since the landfill is located in Area C, it hasn't been approved by Israel, with a pending application since 2003 (ARIJ, 2015, 98). There is a real crisis in logistics and financing for proper solid waste disposal in Palestine (Abu Thaher, 2005; Al-Khatib et al., 2007). The majority of solid waste disposed of in Palestinian areas like Nablus is organic which indicates a great potential for resource utilization such as for composting/fertilizer generation (Al-Khatib et al., 2010). But as in many developing countries, management of such solid waste lags behind significantly (Ahmeda and Adib, 2004), enhanced in the case of Palestine by the illegal occupation.

There is not only the effect of wastewater on human health and the environment that are well known and discussed above but there is even a sensory and psychological effect related to olfactory aspects (Stamatopoulou-Robbins 2022.) Furthermore, there have been evidence of **Israeli pesticides** found in villages that have been notably banned by the PA. Israel does not provide information to local people about pesticides used by settlements including agricultural settlements or of any harmful products dumped near those (Aidy et al. 2017). Pesticide regulations do exist that prohibits their use if they are a) banned in the WB, b) banned in their country of origin, c) classified by the WHO or the USEPA as causing cancers, and d) if they cause groundwater pollution(Watts et al. 2017). Between 1994 to 2015, five tonnes of pesticides from the settlements as well as inside the Green Line were discarded upon its transportation through Area A. A more recent study by the Arab Group for the Protection of Nature (APN) and Pesticide Action Network Asia Pacific (PANAP) helps better understand the human rights implications of the illegal production, trade, and dumping of pesticides, the dumping of industrial and domestic waste by Israeli settlers, and the culpability of state as well as corporate actors (APN 2022). The Ministry of Agriculture helps discard some chemicals safely because Israel

refuses to take them back (Aidy et al., 2017). This is contrary to Stockholm and Rotterdam Conventions (see section 5).

Industrial colonies are highly damaging to both the environment and the local population health. Many Israeli industries were intentionally placed in the West Bank to as Israeli residents complained about establishing ones in their neighbourhoods (Kurzum 2015). For example, after the Israeli residents of Nethania and Kfar Saba complained about chemical industries near them, those were moved in 1983 to create Nitsanai Shalom (also called Gesahuri after the famili that owns it) Industrial Zone in Tulkarem Governorate (PENGON 2018). ARIJ (2016) estimated more than 250 polluting industries in 19 industrial zones in the WB.

There is waste from **Barqan industrial settlement** that impacted the natural resources of the valley nearby as well as human health. Barqan Industrial which was build on the land of Brukeen village (similarity in name is not coincidental) and dumps toxic pollutants that was documented via double blind case-controlled studies to produce DNA damage and chromosome breaks (Hammad and Qumsiyeh 2013). These in turn lead to cancers, infertility, congenital birth defects, and skin and lung disorders.

There is illegal transport of solid waste across the Green line to be either burried near Palestinian communities or “recycled” (in environmentally unfriendly ways) by desperate local Palestinians. For example Israeli electronic waste trucked across the green line (in violation of International law) is burned to extract copper wires and other useful elements and this pollutes the air of a village called Idhna (Al-Sharabaty, 2021). B’Tselem (2017) documented the level of solid waste trucked across the green line including seage sludge, medical waste, solvent waste, oil waste, metals, electronics, batteries. Recycling **Israeli electronic waste** in Idhna has been shown to cause DNA damage and chromosome breaks (Khlaif and Qumsiyeh 2017) leading to significant health effects (Green Land Society 2016)



Figure 25 Israeli main industrial zones in the WB as of 2015 (ARIJ 2016).

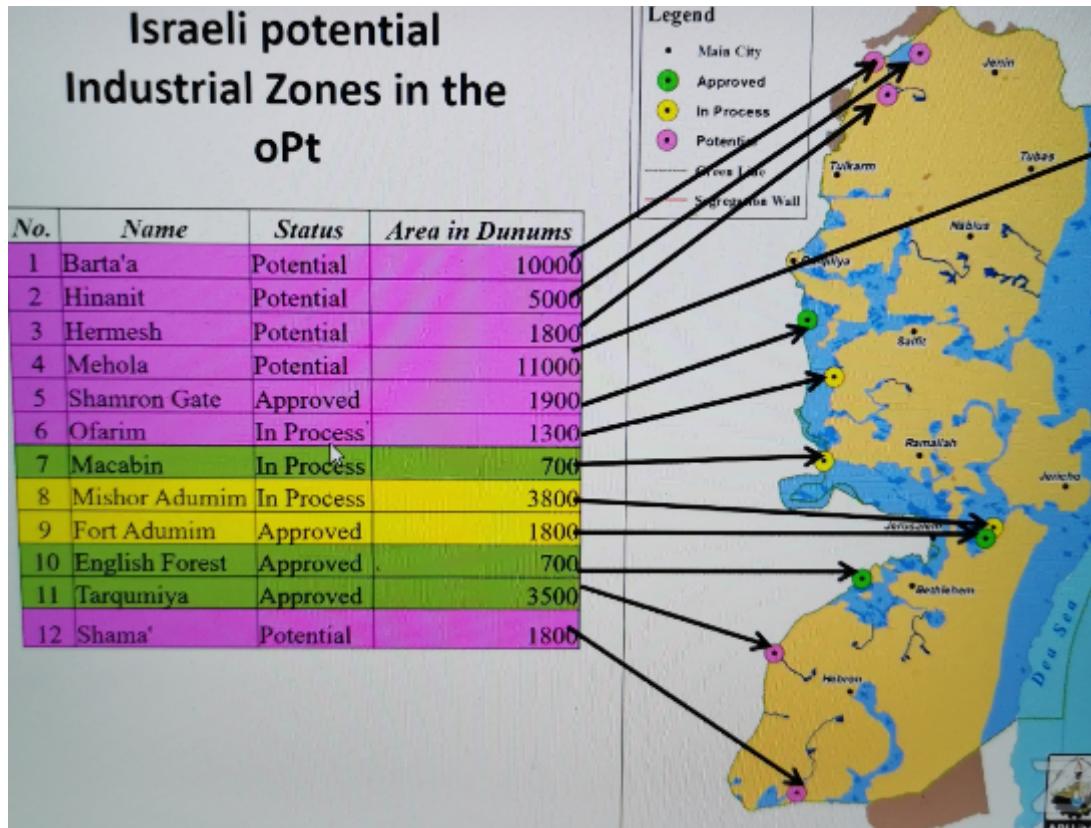


Figure 26 Israeli planned industrial zones in the WB (ARJ).

B'Tselem study (2009) is very revealing about the extent of **waste water** dumped into near by Palestinian areas from settlements. This includes:

- Ariel: following a decade of defective operation, the treatment plant in the settlement ceased functioning altogether in 2008. Since then, the settlement's wastewater has flowed into the Shilo stream, a major tributary of the Yarkon River. A plan to channel the wastewater to treatment inside Israel has not yet been approved.
- ElQana: the treatment plant in the settlement has stopped functioning and wastewater now flows into the Rava stream, another tributary of the Yarkon. The Ministry of National Infrastructure has allocated NIS 1.8 million to renovate the facility, which is scheduled to renew operations at the end of 2009.
- Qedumim: the settlement's two wastewater treatment plants stopped operating in 2007 and its wastewater began flowing into the Abu Jamus stream. In March 2008, one of the plants renewed operations.
- Beit Ariyeh: the settlement's recently-built treatment plant stopped operating in 2008 and its wastewater flowed into the Shilo stream.¹⁶ The plant was renovated at a cost of NIS 5.5 million, and recommenced operations in January 2009.



Figure 27 Main streams in the WB carrying sewage (ARIJ, 2016a).

The problems of Wadi Nar pollution is now well described (Almog 2007; Barak 2012). B'tselem (2009) pointed out that “Some 17.5 mcm of Jerusalem’s annual wastewater is channelled east, into the West Bank. Of this amount, 10.2 mcm are raw wastewater that flows into the Kidron Basin, in southeast Jerusalem, and 7.3 mcm flow into the Og Reservoir facility north of the Dead Sea, near Nabi Musa....A diversion facility in Horqaniya Valley, which operates without Ministry of Health approval, dams some of this

wastewater. After preliminary treatment in sedimentation pools at the facility, the treated water is used for irrigation of date trees in settlements in the Jordan Valley, while the raw wastewater continues to flow freely, seeping into the Mountain Aquifer in an area sensitive to pollution.” (see also Ram 2007). According to Cohen et al. (2010) and B’tselem (2011), treated wastewater (Horqaniya Valley facility) from the Kidron Valley-Wadi Nar is now authorized and used in Jordan valley agricultural.

B’tselem (2009) also notes that “the settlements Neve Ya’akov and Pisgat Ze’ev and the Palestinian neighbourhoods on the northeastern slope of Jerusalem have channelled their wastewater to an adjustment facility near Hizma, where it undergoes preliminary treatment and filtering. It is then piped to Og Reservoir, which also receives wastewater from the settlements of Ma’aleh Adumim, Adam, Anatot, and Mitzpe Yeriho and the Mishor Adumim industrial area.”

The Palestinian authority was interested in building wastewater facilities but the Israeli authorities neglected and gave few permissions after lengthy delays. According to B’tselem (2009), the Palestinian Authority raised fund to build 15 wastewater treatment plants but “since 1996...only one wastewater treatment plant has been built (in 1998)...its construction was possible because al-Birah, where it is located, is in Area B, which is under Palestinian civilian control. Israel was interested in having the facility built after it succeeded in forcing the al-Birah Municipality to connect the nearby Psagot settlement to the facility Although its wastewater is treated in the facility, the settlement refuses pay for the treatment.” This has been a consistent Israeli policy since 1996 which tries to force Palestinian to link settlements to any planned waste treatment facilities (Tagar et al. 2004; B’tselem 2009). The situation has little improved since then (Al-Sa’ed 2010; .Al-Sa’ed et al. 2012; Shreim 2012;.Stamatopoulou-Robbins 2021; Yaqob 2016)

“The sewage of over two million people flows untreated in the recharge area of the Mountain Aquifer, percolating into the largest and most significant groundwater reservoir in the region.” (Tagar et al. 2004)

“The area of the west bank has unique characteristics that affect the environmental situation: high hydrological sensitivity to groundwater pollution, the absence of clear borders, sharp segmentation of the area and the absence of political territorial continuity, high population density on the Palestinian side, and considerable differences in the standard of living and the ability to manage the environment between the Palestinians and the Israelis” (SI Comptroller report 2016)

“Current Israeli policy exploits the fact that Palestinian wastewater is not treated inside the West Bank and flows into Israel. Israel treats some of this wastewater in facilities inside its sovereign area and uses it for agricultural irrigation and to rehabilitate streams, yet deducts the cost of building these facilities and of the treatment from tax monies owing to the Palestinian Authority.” (B’tselem, 2009)

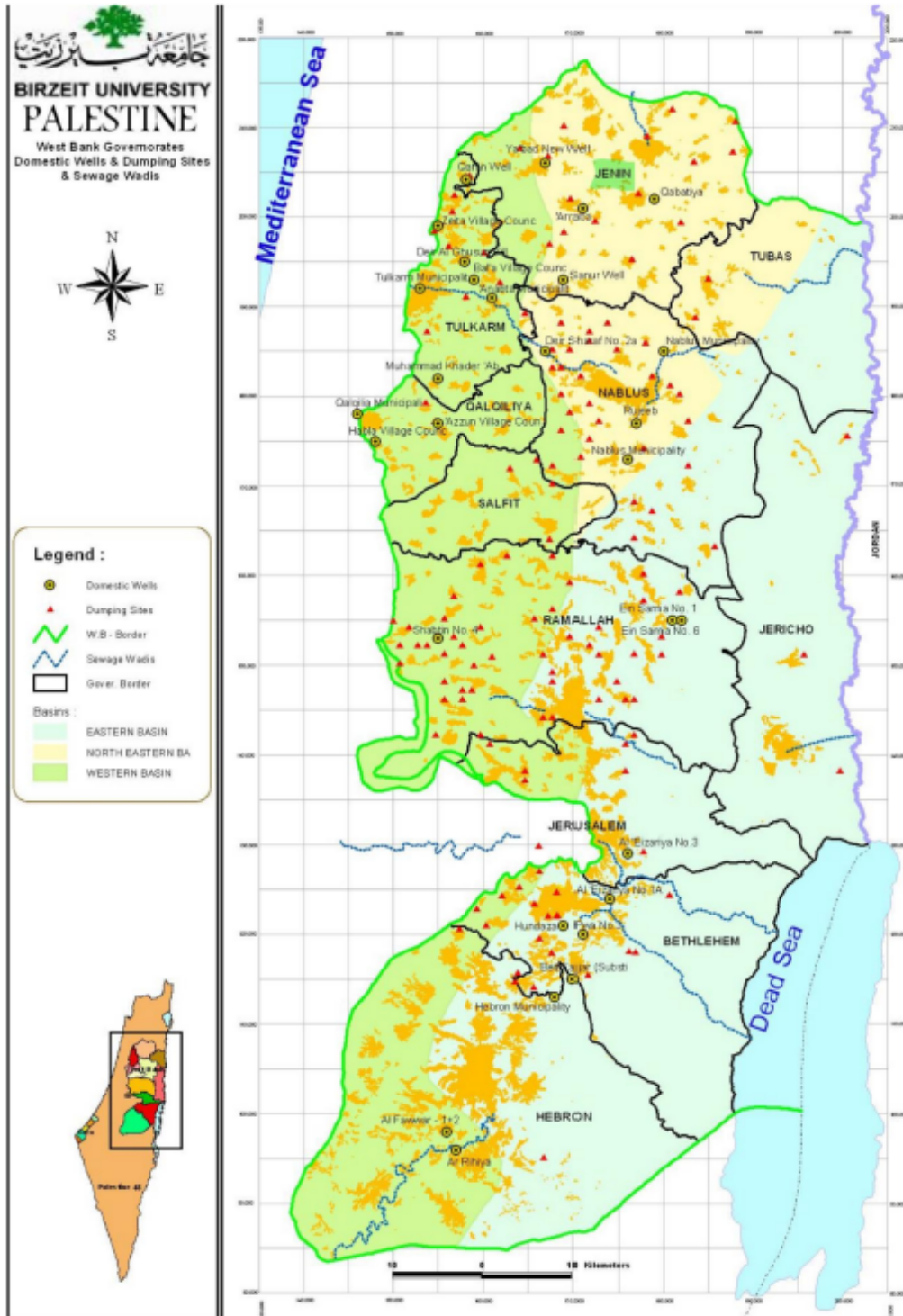


Figure 28 Non-engineered solid waste dumping sites in the West Bank (from Zohud and Alam 2022).

“Since the establishment of the Palestinian National Authority (PNA or PA) in 1994, Israel has used the newly established authority as a scapegoat to spare itself the burden of providing the essential services –its duty under international humanitarian law– like

collection and disposal of solid waste. At the same time, Israel maintained its absolute control over every aspect of Palestinians' lives. However, with a growing Palestinian population –now around five million in the West Bank and Gaza Strip–trash has been piling up. This has left the PA scrabbling to find solutions amidst a plethora of complications, restrictions and an overall messy geopolitical situation” (Atallah, 2020)

A good review of literature on wastewater and waste issues can be found in Salem et al. 202. Also Zohud and Alam recently (2022) review the extensive studies of groundwater contamination in West Bank. And while treating wastewater is possible, this is not without its issues (Abu Madi & Al-Sa'ed 2009) the 830,000 illegal settlers do generate even more waste per capita. Managing waste water is virtually impossible in context of colonization (Samhan et al. 2020).

“The vast majority of Israeli Army camps in the West Bank have not yet been connected to a sewage and wastewater treatment system normality, and they continue to pour waste water into the environment for years, thus creating a hazard serious environmental pollution of groundwater and streams; The operation of the security system The handling of the issue does not rely on an orderly multi-year implementation plan that includes schedules Times for its implementation.” SI 2017

SI (2017) report adds that: *Termination of approval of projects in the Joint Water Committee Deficiencies in the approval, coordination and initiation of projects financed by international parties Because of this, there are plans for Palestinian units in the field who have been waiting for the approvals of the Israeli civil administration for years, and thus the contamination of the groundwater and the environment continues in these places. This situation is caused by both bureaucratic barriers and lack of care In the relevant bodies - the Ministry of Foreign Affairs, the Ministry of Defense, the Water Authority, the Ministry of Foreign Affairs, the Ministry to the High Court and the Ministry for Regional Cooperation - and following the lack of government policy. Absence of government policy: The Israeli government has not yet formulated a management policy Cross-border environmental in general and water pollution management Despite the far-reaching consequences of the issue, among other things, on the water reserves of Israel, on public health, and even on the political-security level. therefore, avoided or delayed Providing solutions to hazards due to continuous damage to the environment, to public health and in the broad Israeli interest. [translated by [Duaa Husein](#)]*

While the hospital beds and number of healthcare workers increased even higher than the population increase, health problems persist. For example infant mortality rate is still higher than surrounding countries (PCBS Palestine in Numbers 2021 <https://pcbs.gov.ps/Downloads/book2604.pdf>). The same reference showed per capita emissions of CO₂ to be 1/8th of Israel's per capita emissions. The same can be said for solid and liquid waste produced locally. While detailed studies need to be done, clearly Israeli industrial and military activities play a role in Palestinian health issues (as shown elsewhere in this document). **Military activities and locating Israeli military bases** in the WB is also harmful to our environment by creating pollution and sequestering large areas for military exercises (Brophy & Isaac 2009). The military is literally trashing the land in the name of security (Oren 2005; Oren & Regev 2008). While Israel has air and

noise pollution policies (Abatement of Nuisances Law 1961; Donagi 1973; Yinon & Thurston 2017; Lavee & Menachem 2018; Hustim et al. 2018; Negev 2020), the activities of the Israeli military goes unregulated and unchallenged. The Israeli military should be studied not only in terms of its military basis and military firing zones like that explained in section 7.2 but also in terms of how much air, soil, and water-resource pollution it generates (see also Gordon 2013). Yet, Braverman (2023, p. 205). cites the head of the INPA as stating: “I don’t know many armies in the world that contribute to the conservation of nature as much as the Israeli army”!

In summary, the situation of wastewater, solid waste, air pollution, noise pollution in the WB is very difficult thanks to policies of occupation and Israeli hegemony. Palestinians cannot implement adequate policies to deal with these under the current regime of occupation and disempowerment but have options to challenge the system in legal or other ways (see sections 5 and 6).

2.4 Energy (including oil and gas)

Due to the weak economic structure, including an almost non-existent industrial economy, Palestinian emissions of greenhouse gases are low compared to most countries. However, this should not make us complacent: energy use is still significantly tilted towards non-renewable sources of energy like petrol and gas. Moreover, Palestine is hugely dependent on energy imports, both importing diesel and gas, and importing electricity, 95% of which comes from Israel (Purtscher 2018). As a result of this dependence, even though energy consumption is much lower in Palestine than elsewhere in the Middle East, Palestinians pay vastly more for energy, both electricity and fossil fuel imports, than anyone else (Abu Hamed, 2012). In fact, the lack of development presents the ideal scenario in which to ensure that future development (which is sure to come in conjunction with ending the occupation and gaining independence) will be sustainable development with much emphasis on renewable energy sources (RES). There is a lot of potential for developing wind, geothermal, and solar energy in the OPT (Yaseen, 2009). According to a 2012 study, renewable sources could provide for huge chunks of the Palestinian population: 13% of electricity demand through solar, 6.6% of electricity demand through wind, 20% of rural energy needs from biogas produced with animal waste, and 5% of imported diesel replaced with biodiesel (Abu Hamed, 2012). A 2016 study by Juaidi et. al. adds that geothermal energy might also have potential in the Gaza Strip and the north of the West Bank (Juaidi, 2016).

RES already accounts for 18% of energy uses and 80% of households use solar energy for water heating (Görlach et al., 2011). And in May 2019, Telesur reported on the first solar power plant in the OPT, which was almost fully constructed at the time of the reporting (TeleSur, 2019). The plant, located in Jericho, aims to produce 7.5 megawatts of electricity from 20,000 solar panels, and two other plants in Tubas and Jenin are also in the process of being built, all in Area A locations. The Palestinian Authority has also

managed to circumvent the restrictions on building in Area C by taking advantage of the control it has over the schools in Area C to install solar panels for villages on school rooftops. Further plans to invest in renewable energy are being developed by the Palestine Energy Authority (PEA), which is the responsible government authority for laying out legal and procedural issues, and the Palestinian Energy & Environment Research Centre (PEC), which is the national institution that is tasked with R&D relating to energy sector (Tsikalakis et al., 2011). All of these developments are extremely positive and exciting in terms of considering Palestine's energy independence and investment in green energy.

However, as with most attempts to build infrastructure in the OPT, the effects of the occupation can be felt strongly, particularly in Area C. While limiting possibilities for Palestinians to invest in small-scale renewable energy, Israel has been taking advantage of the climate to build its own solar power in illegal industrial settlements located in the West Bank, with 4 commercial solar fields operating as of 2018 (Crystal 2018, Al Haq, p. 8). In contrast, when much smaller scale green energy projects are implemented by Palestinians, there is no guarantee that they will not be demolished or destroyed by Israeli forces. For example, in 2017, solar panels donated by the Netherlands were installed in Jubbet al-Dhib, a village in the West Bank, which previously had only had intermittent access to power generated by diesel generators for at most 3 hours a day, even as the illegal Israeli settlements close by enjoyed full connection to the power grid (McKernan 2017). The panels were confiscated and destroyed by Cogat, an arm of the Israeli military, citing lack of proper building permits, which are, as has been mentioned in other sections of this book, notoriously unlikely to be granted. In fact, an Al Haq report on destruction of solar panels in the West Bank notes that according to Israel's own figures, only 1.5% of Palestinian permits to build in Area C (which again, is the majority of the land in the WB according to the Oslo Accords) are approved (Crystal 2018, Al Haq, p.5). The report further explains, "under Israel's planning process in Area C, one condition for setting up 'authorized' solar panels is that the structure upon which the solar panels are built must have a permit; this requirement excludes nearly all buildings in Area C" (6). Such actions on the part of the Israeli military have sparked international outrage and condemnation, but they also make it a more risky proposition for NGO's to invest in Palestine's renewable energy infrastructure, given the deliberate denial of building permits by Israel and the subsequent likelihood of destruction of any project. However, there is also a possibility that international support can stay Israel's hand, as in 2012, when a project funded by Spain to install solar panels in Masafer Yatta was faced with demolition orders and challenged by the Spanish government (Alfred, 2012). Without an end to the occupation, in short, it is extremely difficult for the OPT to make substantial gains in renewable energy use, even with extremely small-scale, localized solutions.

The USGS (2010) estimates there are a mean of 1.7 billion barrels of recoverable oil and a mean of 122 trillion cubic feet of recoverable gas in the Levant basin (overlapping Lebanon, Jordan, State of Palestine, and Israel). Palestinians have no control over their legally protected oil and gas resources which are now explored and utilized for Israel. Israel actually placed fishing restrictions on local people partly to keep them away from

these resources (Ismail et al., 2013). There are significant conservation challenges in relation to exploration and utilization of hydrocarbon resources (Mazor et al., 2018). The occupation also threatens cultural heritage/cultural resources (Rjoob, 2009). These can be considered a resource but are also important for a developed national and cultural identity that can empower people to act, including for protection of their lands and other natural resources. There are significant natural gas fields off the coast of Gaza that are theoretically available to the state of Palestine (but only after the end of the occupation). For now the energy situation of the state of Palestine is largely dependent on Israel, the occupying state. Israel has exploited the gas fields off of the mediterranean coast and has prevented the development of energy sources throughout historic Palestine (Pontin et al. 2015)

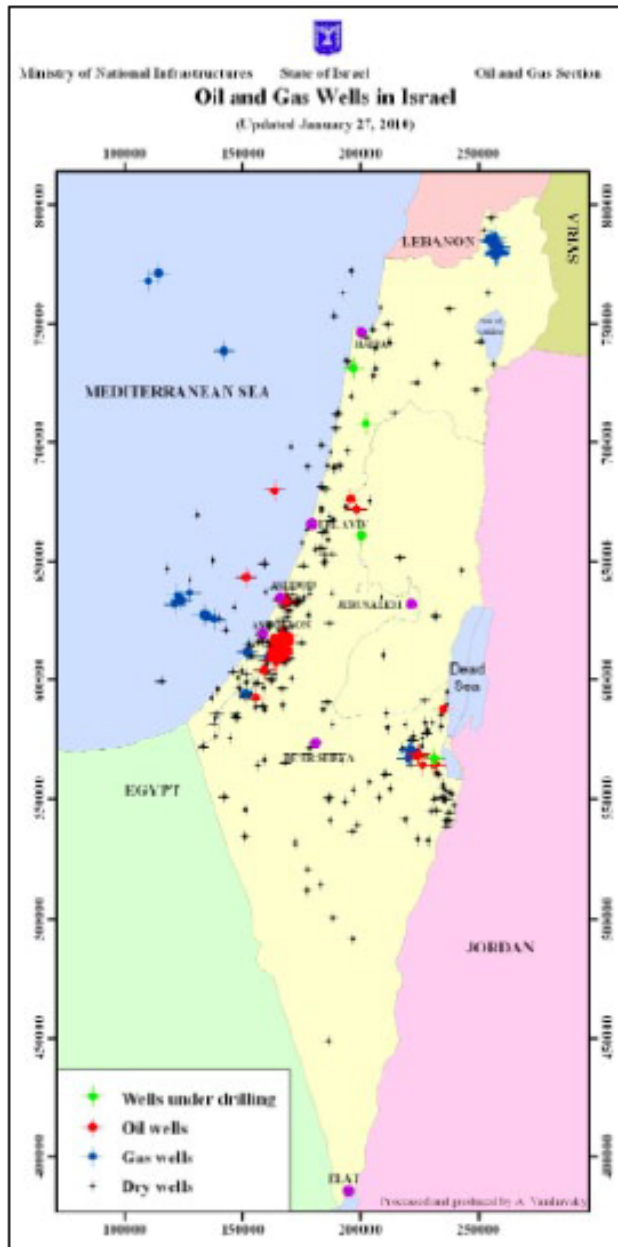


Figure 29 These are dubbed as “Gas and Oil wells in Israel” from State of Israel, Ministry of National Infrastructures, Energy and Water Resources, ‘Oil and Gas Wells in Israel’ (via Al-Haq 2015a). Notice many in West Bank and Gaza.

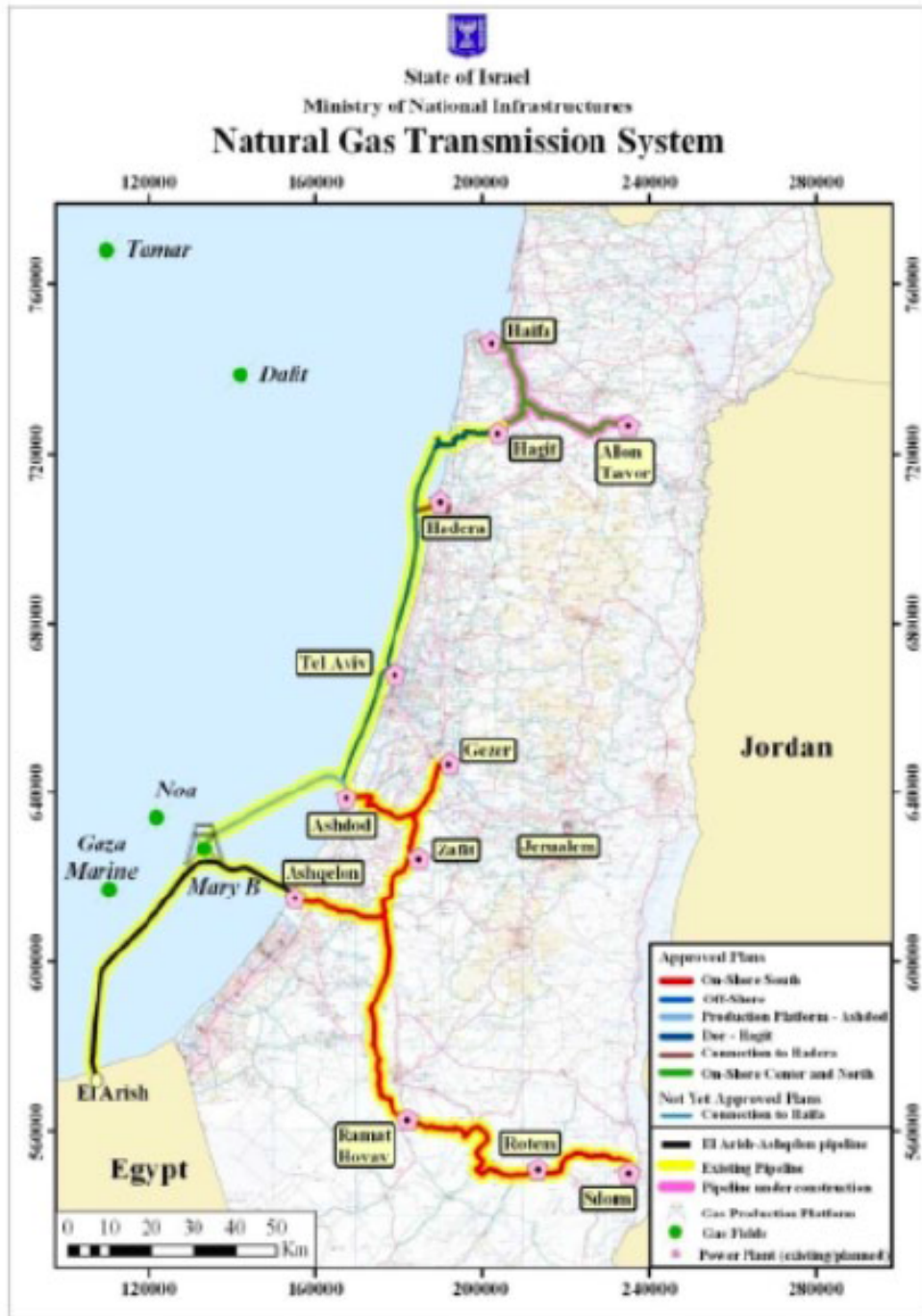


Figure 30 Gas pipelines developed and used for Israeli residents not Palestinians.

Israel with facilitation by the US has been pushing energy deals that lock out Palestinians and ensure their perpetual dependence on Israel. This is most evident in the Gas supply (Fig. 30 and Fig. 31). The El-Arish to Ashkelon undersea pipeline location is not known and the Egyptian-Israeli agreement on this was done without Palestinian approval and is likely due to corruption in Egypt since the price of Egyptian gas to Israel is way below usual market prices. The pipeline launch in 2008 ‘coincided’ with restrictions on

Palestinian fishing in their territorial waters (Al-Haq 2015a). Bacaru (2017) suggested that “In the immediate future, if gas deals persist despite popular opposition, Palestinian negotiators involved in prospective gas deals with Israel must at the very least insist on provisions that do not lock out the prospects for future gas from Gaza Marine. This could be done by creating the legal mechanisms that would allow the introduction of third-party access into the supply agreements. Although it would be difficult to negotiate such provisions, this is of vital importance as it leaves room for flexibility around future supply from Gaza Marine and reduced dependency on Israel. The gas supply contracts should also include provisions for revision of agreement terms in the case of major developments on the political front.”

Even the Jerusalem Electrical Company which has been given licence by the British mandate to produce electricity in Palestine has been curtailed in its activities and is forced to buy electricity from Israeli sources. The company was denied the concession for the West Bank and it was given to the Israel Electric Company with only distribution rights to Palesinian areas allowed (see Kretzmer 2002). In 2020, the WB imported 5,403,937 MWH of electricity of which 5,220,089 MWH (96.6%) came from Israeli Electric Company and the rest (3.4%) from Jordan (PCBS Palestine in Numbers 2021 <https://pcbs.gov.ps/Downloads/book2604.pdf>). Palestinians are not allowed to develop electricity sector either nationally or locally.

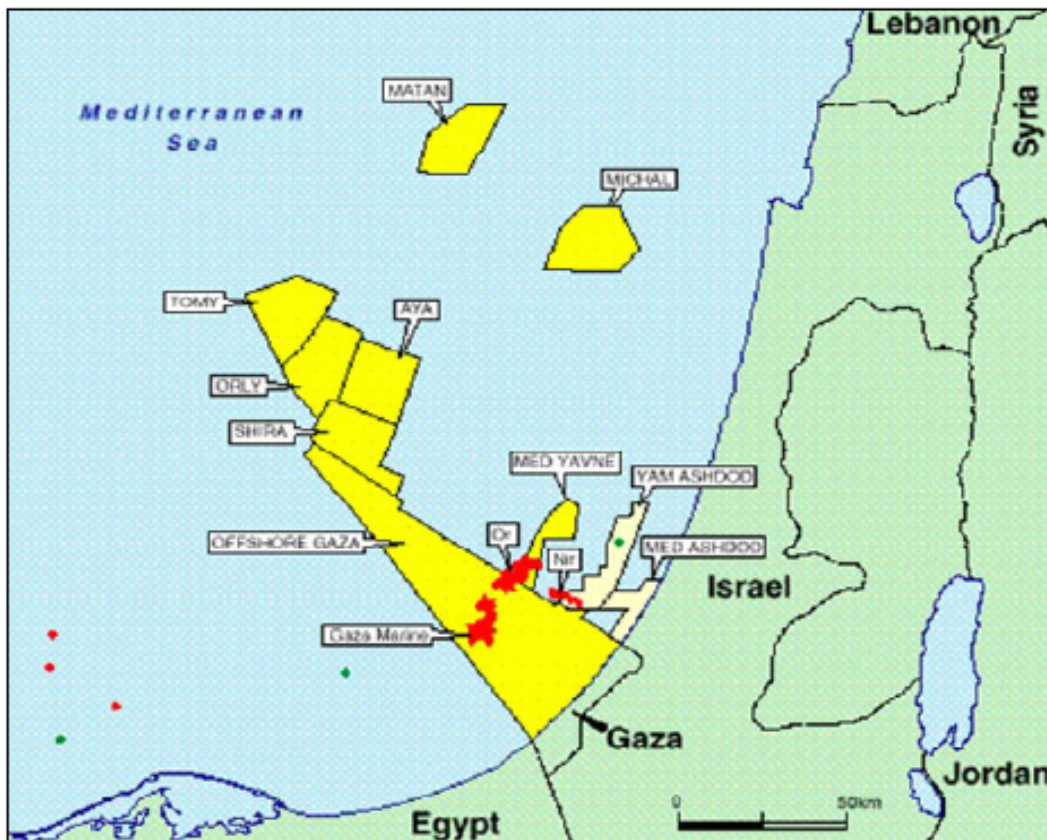


Figure 31 Gaza is besieged and its residents cannot venture more than 12 nm into the sea to protect exploited gas field (Al-Haq 2015a).

There are few exceptions: solar energy is being used at significant amounts in the Palestinian areas (including majority of households heating water via solar energy) and there is a desalination plant being built in Gaza (<https://www.un.org/unispal/document/auto-insert-202217/>).

While most of the energy use in Palestine is imported from Israel and over 99% of households are connected to the Public Electricity Network (PEN), the cost of electricity is higher in Palestine vis-a-vis Israel and other Middle Eastern countries although the consumption level is the lowest in the region (Hamed, Flamm, and Azraq, 2012; Salem, 2011). Due to the occupation, Palestine is barred from free electricity trading with its neighbours and are consequently met with monopolized and unfair electricity prices (Alsamamra et al., 2021). Furthermore, there are still tens of thousands of Palestinian households who live outside the remit of PEN and thus are without electricity (Salem, 2011). Over the past ten years, the Palestinian Authority has launched efforts to diversify means of energy production, particularly through solar initiatives launched by the Palestinian Energy and Natural Resources Authority, however efforts to generate solar energy is hampered by Israeli authorities, particularly in area C (Kittanah, Hilow, and Hamouda, 2012). Palestine has the capabilities and strong potential for renewable energy due to its long hours of sun and wind exposure throughout the year, with 3000 solar hours per year (Abboushi and Alsamamra, 2021). Yet, in 2018, Palestine used 5576 gigawatts/hour of electricity, 931 tons from oil derivatives, and just 169 tons of oil from renewable energy sources (Alsamamra et al., 2021).

Further compounding the issue around alternative energy development in Palestine is the confiscation and theft of their land. The Palestinian Statistics Center estimates that over 46% of the land was confiscated, which then prevented the creation and continuation of renewable energy projects on land that was highly conducive towards such projects (Alsamamra et al., 2021).

Renewable energy projects in proximity to the segregation wall have been terminated by the Israeli forces, such as the project in Jeb El Deeb, Bethlehem (Energy Research Center, 2020). In the mountainous areas, the wall has also obstructed opportunities and potential for the construction and operation of wind turbines and the infrastructure needed to implement wind energy projects (Zughayer, 2015). It is virtually impossible to do renewable energy projects in the occupied territories by (Abu Hammad et al. 2012; Kittanah et al. 2012).

In summary, Israel practises energy apartheid that results in energy poverty for the non-Jewish native Palestinians (Teschner 2020).



Figure 32 Energy Infrastructure Map by Office of the Quartet (<http://www.quartetoffice.org/>).

2.5 Protected and forested areas

Why does Israel have 530 nature reserves and national parks comprising 25% of its land: the answer is not to be found in love of nature but in denial of Palestinian access throughout historic Palestine (Braverman 2023). In the case of the WB, Israel set up military rule and a so called “Civil Administration” which operates by giving out military orders which act as law of the land including on environmental issues. This formality did not seem to prevent Israel from exercising its full control to 1967 areas as in 1948 areas. And of course Israel expanded area of Jerusalem and illegally annexed it and no longer considers it part of the “disputed areas of Judea and Samaria” (West Bank). This civil administration appointed staff officers to deal with issues including an officer in charge nature reserves and national parks. As early as 16 August 1967, Military Order 89, was issued titled “Order Concerning Public Parks: Amendment to the Law of Public Parks and the Preservation of Nature, 1963” (Rabah & Fairweather 1993). Order Concerning the Protection of Nature Reserves (the West Bank Area) 1967, n.d.; available from: http://www.antiquities.org.il/article_Item_eng.asp?sec_id=42&autotitle=true&subj_id=228&id=453&module_id=6#as

In 1969 a military order number 363 for the Protection of Nature in “Judea and Samaria” declared that “no one will harm a protected natural value [*erech teva mughan*]” (Braverman 2023 p. 166). Military Order number 373 issued 1970 states that once an area in the “Judea and Samaria” is declared a park or a nature reserve, the commander of the area should appoint an authority to manage it and the authority was subsequently delegated to INPA (Braverman 2023). Laws, declarations and delegations were clearly about political/colonial Zionist agendas rather than preserving a land whose people lived in relative harmony with nature for millennia (Braverman 2023). Israel designated two services one for nature reserves (for nature and more protected areas) and one for national parks (human historical areas) starting in the 1960s. In 1998, a “National Parks, Nature Reserves, National Sites and Memorial Sites Law” was passed consolidating Israeli “protection” (read exclusion) laws. The law exempts the Israeli military (security trumps conservation as Braverman 2023 puts it). The law also created the Israel Nature and Parks Authority (INPA <https://parks.org.il>) as Israel’s administrative arm for management of these sites. The use of both national parks and nature reserve to exclude indigenous people and their domestic animals is well documented and the extension of Israeli National bodies like INPA to manage and issue admission to these areas is de facto annexation and is contrary to international law (see Braverman 2023, see also Shiff 2017 and Emek Shaveh 2018).

There are many other issues where the occupation can affect sustainable development and protection of the environment (see MOPAD 2014 for a summary). There is a significant theft of natural resources in contradiction of the 4th Geneva Convention (good review in Al-Haq 2017). The confiscation of **land** for settlements is a major threat to Palestinian nature reserves. One of the most important examples is the confiscation of Ras Imweis and six adjacent areas, one of which is called Nahal Shilo, located northwest of Ramallah. Cases of destruction and distortion of nature reserves in the occupied West Bank for the implementation of various Israeli colonial projects is an integral part of Israeli practice. Israel has exploited the term “Nature Reserve”, for example in the Bethlehem Governorate when Har Homa settlement was established in 1997 on Abu

Ghneim Mountain, which was considered one of the largest forests in Bethlehem. Israel has also given freedom to Israeli corporations to benefit from Palestinian natural resources including land (Longobardo, 2016).

Between 1967 to 1995 when the Oslo accords began to be implemented), Israel **designation of “nature reserves”** in the West Bank totalled 221,3 km² (see also (Qumsiyeh and Amr 2016). Most of these areas in the WB area in ‘Area C’, under Israeli civil and military control (Görlach et al., 2011; Garstecki et al., 2010; <http://www.nsp.pna.ps/en/>). 36.2% of the designated protected areas overlap with Israeli settlements and 39.5% overlap with closed military areas and bases. Such utilization of a protected area confirms that their declaration does not correspond to the international definition of a protected area, which calls mainly for biodiversity conservation Protected areas in Israel are representative of the 23 ecological units (17 land and 6 marine) but are mostly selected for ideological zionist reasons (Dromi and Shani 2020; Rotem and Weil, 2014). The largest reserves are in the Galilee, Negev, and West Bank where remaining Palestinian populations are found. In the analysis, it will be seen more clearly with details and data on each PA as to reasons for its earlier designations and as our criteria have shown so far on some 50% of studied areas with data available, that the majority of earlier (Israeli) designated PAs are actually designated for political purposes.

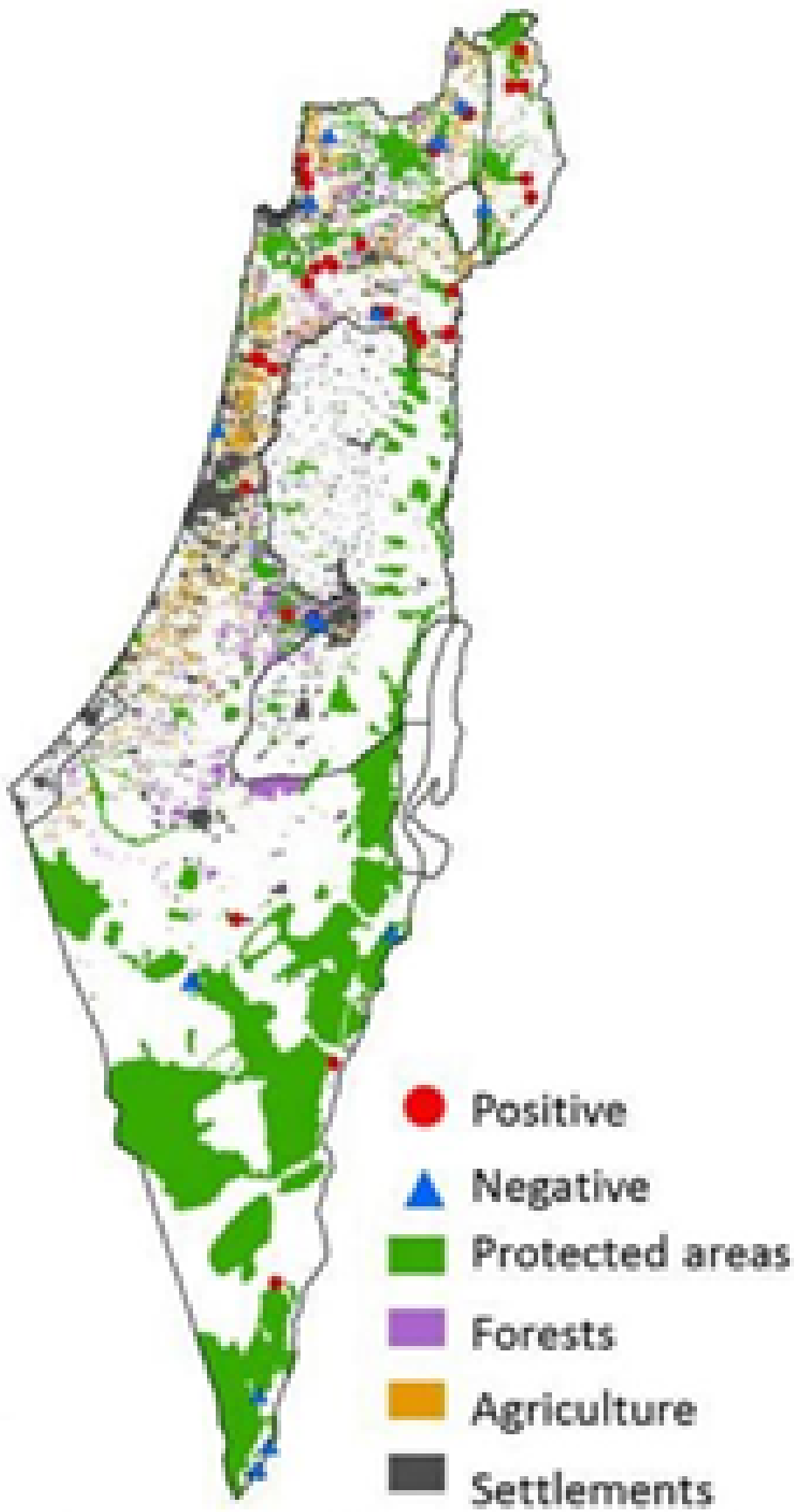


Figure 33 Map of Israeli designated “nature reserves” in historic Palestine and the annexed golan heights. The map reflects political and military needs of Zionism rather than environmental value.

Of the 19 protected areas that were handed over to the Palestinian Authority under the Oslo agreement, only eight are under the actual control of MoA, amounting to less than 15 sq km. The remaining 10 are within area C or overlapped areas. A pamphlet released by the Department of Nature Reserves, Ministry of Agriculture, includes a list of 48 protected areas, and these are discussed in the section on protected areas. On 15 January 2020, Israel minister Naftali Bennet declared seven new “reserves” and expanded borders of 12 others to make a total of 333.8 km² (increase of 50% and represents 5.7% of the West Bank area). Most of these areas are designated to exclude indigenous Palestinians and allow for expansion of Israeli settlements which do on many occasions even in the middle of the supposed reserve. For instance, Israel cut over 60,000 pine trees over a ten year period starting from 1997 in order to build the Jabal Abu Ghnaim settlement (Salem, 2011). Due to limited capacity and involvement of many external actors in the process, there was never a real (re)evaluation of so called “nature reserves” until 2022 when EQA, PIBS, and IUCN examined all the 50 areas plus 8 more (seven identified by initial Marxan analysis and one by data collected not included in Marxan). Criteria were developed with stakeholder consultation and applied to the 58 areas. Twenty-two did not receive a high score to be included in the PAN. These 22 included 10 that were apparently designated by the Israeli authorities for political purposes, 9 that offer no biodiversity value (small patchy remains or plant covers of no significance to PAN), and three that are of similar habitat to other areas (other areas allow for a strong PAN without those). The remaining 36 areas were then examined for issues of area covered and potential consolidation. As a result of that analysis, some areas were combined and others were adjusted for borders to arrive at a PAN of 27 areas. The total protected land mass increased from 9% to 11% with better quality and representation of habitats and species.



Figure 34 New protected area network (red lines) versus old PAN (EQA, unpublished).

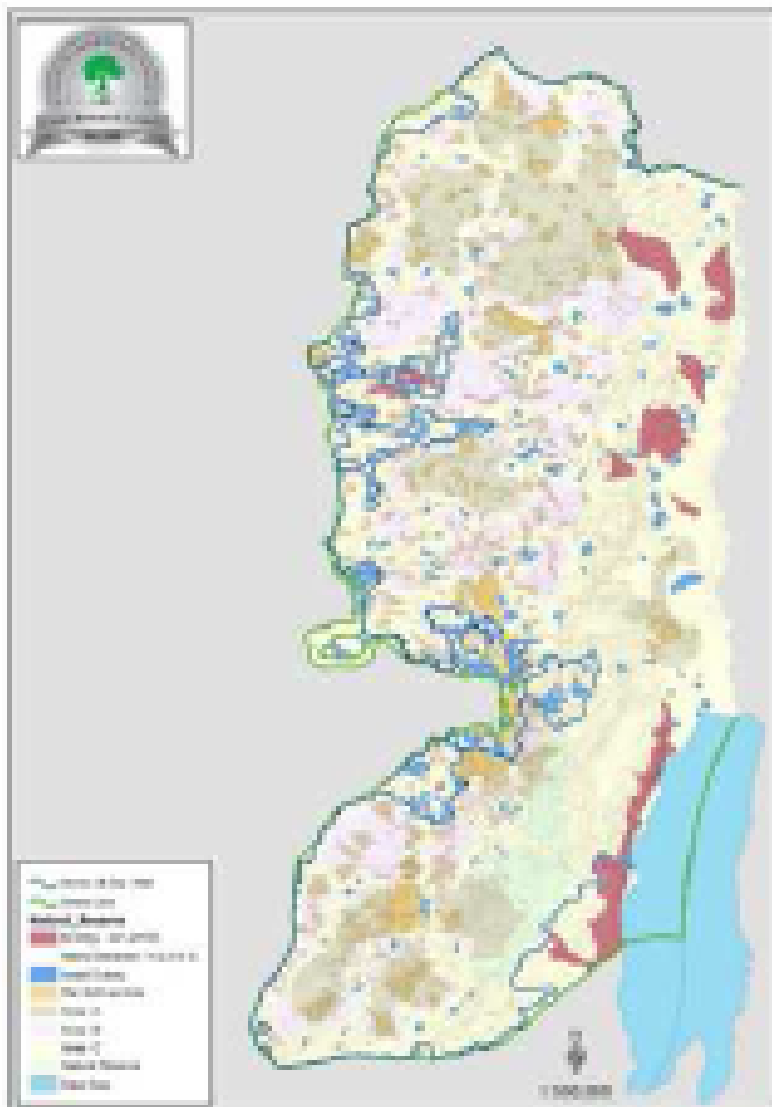


Figure 35 Seven recently designated 'Nature Reserves' (NEED better map) (LRC 2021). Ta total area of (118,513) dunums. Namely: Surik cave/ Jerusalem , Wadi Al-Miqliq / Jericho , Olive mount "The eastern Slopes", Wadi Al-Malih / The Northern Jordan Valley , Ash- Shwe'ier "Petrenot" / The Jordan Valley, The northern Jordan Valley (AlGhor) , Wadi Al-Fara'a / Tubas.

Designated protected areas cannot be actually protected the local people to have sovereignty on their land and natural resources (i.e. ending the Israeli occupation). For more on this subject see Qumsiyeh and Amr (2016) and Qumsiyeh and Albardeya (2021). The State of Palestine is currently engaged in developing a network of protected areas and adjusting management plans to meet the NSP and is also engaged in updating its NBSAP. This will have significant positive effect on protected areas provided the SP is given sovereignty over its land and Sea.

Clearly protected area coverage from the KBAs is small (Figure). Spatial overlaps between digital polygons for Protected Areas and KBAs are done per global standards (<https://unstats.un.org/sdgs/metadata/files/Metadata-15-01-02.pdf>), and <https://unstats.un.org/sdgs/metadata/files/Metadata-15-04-01.pdf>

Many new studies started to appear on the biodiversity, environment, and conservation of protected areas in the West Bank of Palestine after the fifth national report in 2015 or where not mentioned in that report.

Wadi Quff in Hebron Governorate: The area was studied by professionals in Biodiversity and covered all fauna, flora, and threats that this Protected areas have and facing, this study translated to several scientific publications in a special issue at the Jordan Journal of Natural History in 2016 covers (Vertebrate, invertebrate, protected area introduction, birds, flora, protected areas) (Qumsiyeh et al., 2016; Qumsieyeh and Amr, 2016; Kahlilieh, 2016; Al shaikh and Mahassna, 2016, Qumsiyeh, 2016). As a conservation first move in Palestine, a management plan for Wadi Quff was published (EQA, 2014). Forested area degradation and fires happen frequently in Wadi Quff (ARIJ, 2016) and there is an Israeli military base on site.

Wadi Zarka AL Ulwi (on the borders between Ramallah and Salfit): An intensive study for the fauna and flora of this area was done by the Palestine Museum of Natural History and the Palestine Institute for Biodiversity and Sustainability, this study translated in a report send to the EQA and related ministries and stakeholders, an education awareness for local on biodiversity and the important of the area done (PMNH 2018)

Wadi Janata (Al Hashimy): A survey for biodiversity conducted by the PCC under the supervision by Mrs. Roubina Ghattas, provided a management plan that includes fauna, flora, threats, conservation, ecotourism and others (PCC, 2018).

Wadi Qana and Wadi Zarqa Al-Ulwi: Detailed studies of flora and buffer zones and some management plans are available (see Qumsiyeh et al. 2022; Qumsiyeh and Al-Sheikh 2023)

Wadi Al Makhrou: This is part of al Quds Key biodiversity area and not a nature reserve yet. The area was studied intensively by experts in biodiversity who developed some management and protection plans for habitat protection and ecotourism and this led to its designation as a protected area (Qumsiyeh et al. nd).. Battir was also recognized as a World Heritage Site in the year 2014. However, the UNESCO state of conservation report 2017 placed Battir and its landscapes on the list of WHS in Danger, as it is affected by a number of threats including: (1) changes in traditional ways of life and knowledge systems, (2) changes in local population and community identity and social cohesion,(3) invasive/alien terrestrial species and (4) potential construction of a separation wall (<http://whc.unesco.org/en/soc/3541>). Any efforts that would reduce these threats are highly welcomed by UNESCO. See also Abu Hammad (2016),

Far'a and Jerash: an integrated watershed management plan was developed and partially implemented (EQA + MoENV 2004 and stakeholder feedback)

The main threat to effective management of the new PAN is lack of sovereignty followed by need for capacity building and better Palestinian management structure. The segregation wall and other Israeli activities endanger many protected areas (ARIJ 2005). While the state of Palestine needs to develop better plans for managing the resources, a big impediment to implementation of the many existing plans (e.g. for water resources) or to comply with signed International treaties is the fact that the State essentially has no control over most of its natural resources (due to the Israeli occupation). The report by the UNEP (2003) made over 100 recommendations to address the environment in Palestine and seven of them deal with natural resources but none could be implemented without having sovereignty over our land and resources. Further, the Israeli occupation is one of causes of habitat destruction leading to a decline in the biodiversity of Palestine.

Palestine needs to deal with the five major global threats (**Climate Change, Habitat Destruction, Pollution, invasive species., and overexploitation**) plus the local one in Palestine (Israeli colonization/occupation, political instability). There need to be tailored responses (action plans, activities, targets) to the regional, national, and local community situation which also link directly to global/international strategies, agendas, and policies as adopted by international conventions. Transboundary and regional issues should be taken into consideration in strategy actions (Mason et al., 2020; Perrings & Halkos 2012; Al-Sa'ed & Al-Hindi 2012). In fact, there could be transboundary protected areas that increase cooperation (Sandwith et al. 2001). There is also increased desertification and risk of fires exacerbated by monoculture of Pine trees started at the time of the British mandate and continued under Israeli occupation (Turco et al. 2017).

Land use and allocation of protection is done for ideological reasons and thus “more than half of protected areas are located in desert areas and are thus biased in their representation of land cover classes[HH1] [GU2]” (Shaffer & Levin., 2014). According to Alterman (2001): “Under the Law for National Parks and Nature Reserves, the Ministry of the Environment has ministerial responsibility for two of the three major national open space authorities: the National Parks Authority and the Nature Reserves Authority. They initiated the important national statutory plan for parks and nature reserves. The third body active in this area is the Jewish National Fund (JNF)—the second non-state body of the Jewish people which, like the Jewish Agency, carries out quasi-state functions (Davis & Lehn 1978). The JNF plans and manages the country’s major forests and has initiated a national statutory plan for that purpose.” The JNF is an organ of the World Zionist Organization which advertises on its page that JNF is the “custodian of the Land of Israel on behalf of its owners Jewish people everywhere” and is thus not an institution that is interested in preserving indigenous people connectivity to land or conserving land for use of indigenous communities and this is evidenced by outcome of spatial planning (Lehn., 1974; Davis & Lehn., 1978; Shilony., 1998; Alterman, 2001, Assif, n.d.).

The JNF played a significant part in the ethnic cleansing of Palestine (Bishara., 2018) and still does today. Many Israeli authors already described how spatial planning is used to prevent native Arabs and allow space for future expansion of Jewish settlements (Orenstein & Hamburg., 2009). Even in agricultural land use we note the following disconnect: “*In Israel, as we have seen, starting in the 1990s there has been an*

incompatibility between the land use planning policy and the substantial increase in environmental awareness, on the one hand, and the land policy created by the ILC decisions, on the other. This paper proposes one explanation for this dissonance. The explanation is based on the centrality of the Zionist-nationalist narrative in Israel's land policy and on the changes over time in the attitudes of the ILC members toward the principle of preserving agricultural land." (Hananel, R., 2010; see also Reut Institute., 2009). In fact "Israel's transformation of the land was very much related to different ideological and geopolitical trends" rather than driven by conservation (Lehn., 1974; Schaffer & Levin., 2014; Dromi & Shani., 2020). As Edward Said (2000, p. 184) put it: "What we never understood was the power of a narrative history to mobilize people around a common goal. In the case of Israel, the narrative's main point was that Zionism's goal was to restore, reestablish, repatriate, and reconnect a people with its original homeland." This reshaping of an imagined "land without a people for a people without a land" has been devastating and recognized as illegal theft even by Israeli authors (Yiftachel 2006; Tal 2002, 2008a,b; Shalev 2012; Leshem 2013; Braverman 2023)

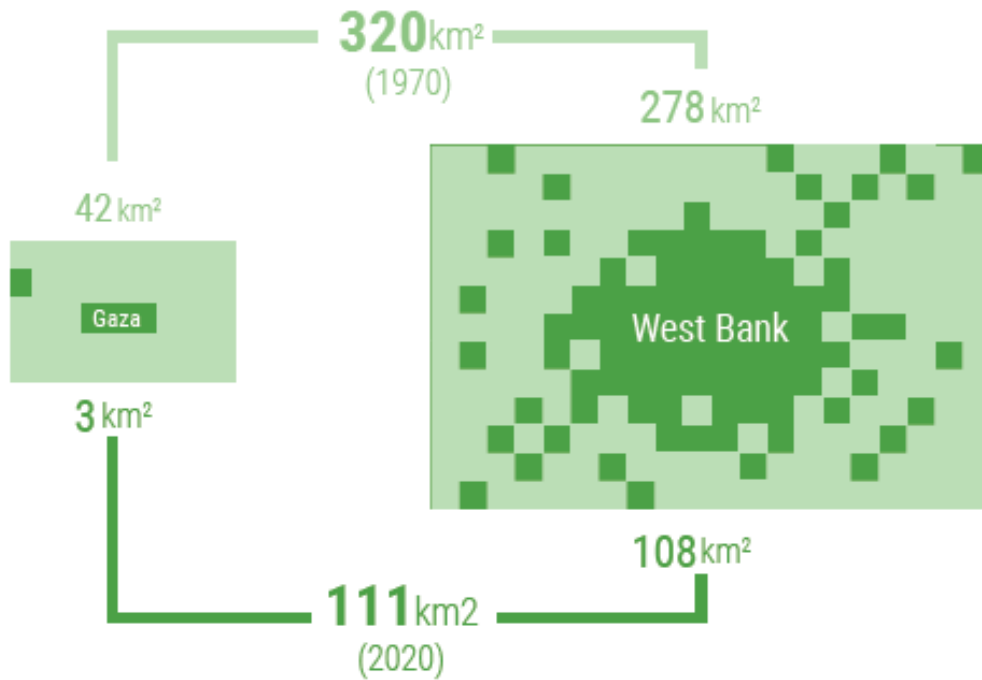
The publicity and use of "greening" and green initiatives in Israeli discourse is now termed "**greenwashing**" a system of cover-up of removal of natives from their lands in favor of JNF's policies of making the land "Jewish" (by and for the Jewish people") (George, A. 1979; Levidow 1990; Hughes et al., 2022). The Society for the Protection of Nature in Israel (<https://natureisrael.org/>) boldly proclaims Israel as a "Green Beacon for the World" Touting green technologies and nature protection

In fact, it is ironic that the "KKL-JNF - Jewish National Fund actually are the managers of planted forest and large native landscapes in Israel" (Rotem & Weil., 2014). This is called plan 22 or NOP 22 (Kaplan., 2011) and as Tal (2008) pointed out, decisions by KKL-JNF are driven primarily and overwhelmingly by Zionist political agendas not by biodiversity conservation needs. Open space policies and development of space is driven by Zionist ideology and this is especially true in peripheral areas of territories Israel seeks to control (Yiftachel & Segal., 2010; Orenstein & Hamburg, 2009). In fact, the JNF and Israeli authorities expanded their works in the occupied West Bank starting with the "expanded" Jerusalem borders using designation of "Nature Reserves" as a ruse to expand illegal settlements (Etkes & Ofran **2007**). Twelve decades after it was formed, the JNF continues to funnel hundreds of millions of dollars annually to help dispossess more Palestinians like is happening in the Negev now with the fake campaign of creating "Green areas" (<https://imeu.org/article/fact-sheet-what-is-the-jewish-national-fund>). The idea of using "greening" to replace natives who lived in harmony with nature for millennia is not new and happened in many parts of the world. But in this case, the plans are so blatant and bold: concentrate dozens of Bedouin Communities (most predated formation of Israel) into 3-4 "concentration areas" to "open-up" the Negev for "development". This campaign aims at nothing less than finishing the incomplete work done in 1948 of dispossessing people who lived on their land for thousands of years.

National Masterplan 22 was an ambitious plan to designate 10% of the land as forested initiated by the JNF to be executed by the Israel Lands Authority (ILA) and the Ministry of Interior (Tal 2008). JNF of course was not designating those areas based on nature or environment needs but on political ground. Peace Now (2020) did a detailed study on the role of KKL-JNF in settlement expansion in the WB.



Figure 36 Heimanuta (company associated with JNF) control of land in WB(PeaceNow 2020).



Source: Ministry of Agriculture, Records 2020, 2020.

Figure 37 Forest areas in OPT between 1970 and 2020 (SP 2020b).

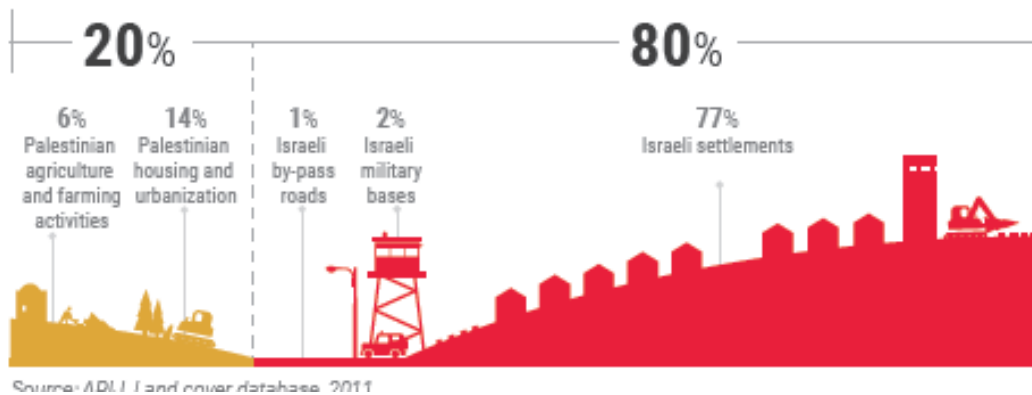
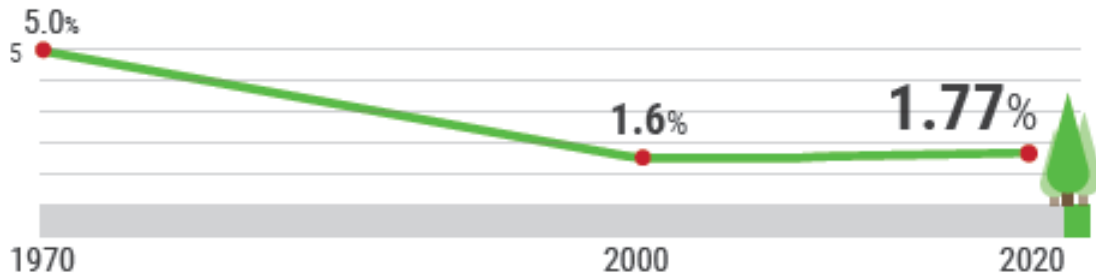


Figure 38 Causes of loss of forests (SP 2020b).



Source: Ministry of Agriculture, Records 2020, 2020.

Figure 39 Forest area as a percentage of OPT. (SP 2020b).

Uprooting trees: An estimated 2.5 million trees were uprooted in the WB since 1967 (Al-Haq). Trees are uprooted to build the wall, to drive Palestinians out of their lands claiming ‘state land’, and to punish Palestinians (by settlers or soldiers). Olive trees are especially targeted. Fig 39 shows olive trees uprooted in the WB to October 2021 (ARIJ 2021). Zionists plant pine trees which become then surrogate settlers in the intentionally emptied landscape (Braverman 2008, 2023).

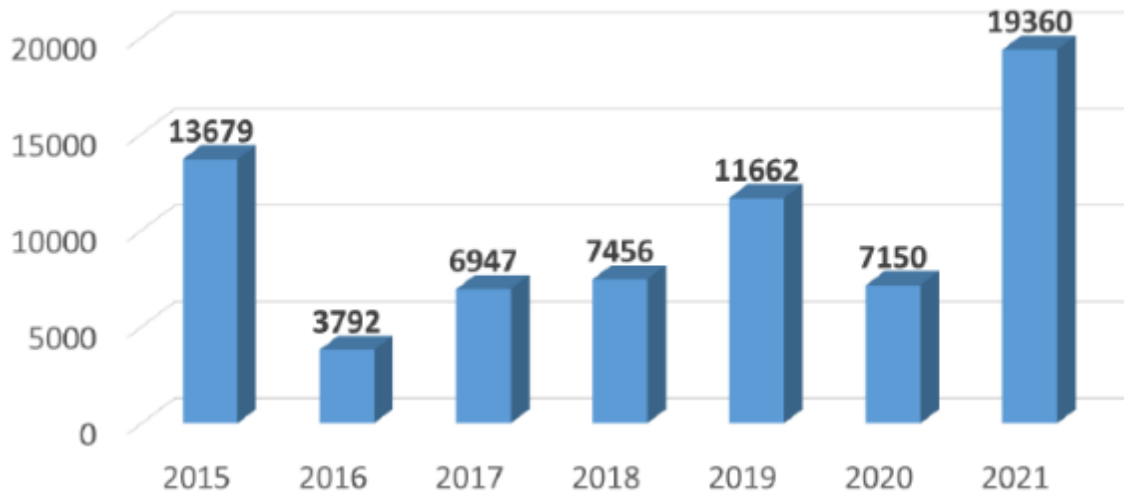


Figure 40 Uprooted olive trees in the WB- the numbers for 2021 were to October (ARIJ 2021).

2.6 Invasive species

The invasive species in Palestine are increasing both in the number of species and in the degree to which some of them have proliferated and essentially all of them come from Israeli activities (Roll et al., 2007a, 2007b, 2008, 2009; Dufour-Dror, 2012). UNEP-WCMC (2015) estimated loss of 15% in biodiversity due to invasive species globally. There was a recent study for the EQA on invasive species in the West Bank and it shows significant invitations related to habitat destruction and Israeli activities (EQA forthcoming). PIBS documented damaging effect of the invasive Indian Myna Bird (Handal and Qumsiyeh, 2021). We also recorded insects like Leptoglossus

occidentalis and *Deroplax silphoides* (Handal, 2017; Handal and Qumsiyeh, 2019). But the myna bird was not the only one brought by Israel and is damaging and competing very successfully with local birds (see Colléony & Shwartz 2020). Yet Israel dubs itself as a protector of native birds and a model to be emulated for nearby countries (see Braverman 2023 for an analysis of that mythology)

Currently, there are 11 species of 186 in Palestine which have been listed to be of concern due to its plant deficiency by the IUCN, although the verity and accuracy of this data is still debated. Research has identified 600 plant species that are of concern in the West Bank, 187 of which are endangered and 171 of which are considered very rare species (Al-Sheikh and Qumsiyeh, 2021). Flora are threatened by increased densification of human settlements, which has been further induced by Israeli settlements and forced densification of Palestinians into smaller geographical areas.

2.7 Quarries and Industrial Zones

Palestinian areas always had limited quarries supporting local needs. This is one of the many pillars of a functioning economy that existed and continue to exist and contributes to 4.5% of GDP and 25% of industrial production (<http://www.usm-pal.ps/en-all/industry/index.php>). Half of the Palestinian Quarries are located in area C and subject thus to harassment from Israeli authorities (ARIJ 2016).

Israeli stone quarries are built in the occupied West Bank Mountains, harming the environment and depriving locals of a key resource (Abdallah and de Leeuw, 2020). Recently, the JNF was also given the Green Light to “develop Judea and Samaria” which means destructive practices that will impact the 2.5 million Palestinians living there. Hundreds of thousands of settlers have developed environmentally damaging infrastructure including roads, residential and industrial settlements/colonies. Here we must also understand that the methodical **program to drive Palestinians out of our lands** are essentially damages to nature and Palestinian environmental rights. In the West Bank this started very early on with the 1967 occupation.

The occupation of the West Bank and Gaza by Israel in 1967 also opened up a window of opportunity for Israeli industries to escape the rejection by communities in which they existed. Many of the highest polluting companies simply moved, and actually were provided with tax incentives, to the West Bank and Gaza where Israeli Government regulations were more lax. There, the companies only faced the opposition of native Palestinians who had no realistic way to stop them. For example, Gishuri Industries, a manufacturer of pesticides and fertilizers which faced significant court setbacks in its original plant in Kfar Saba, was moved to an area adjacent to Tulkarm inside the West Bank in 1987. Significant pollution from this and other companies in this area has damaged citrus and vineyards (ARIJ, 2015). The first research on genotoxicity in SP showed significant impact of the Barqan Industrial settlement on Palestinians of Burqeen village (Hammad and Qumsiyeh, 2013).

The use of natural resources in the WB include excavations and removal of building material. The Israeli military order “Regarding Utilization of Natural Treasures (Order No. 389, 5730 – 1970), issued on 5 June 1970, directly permitted Israeli company mining in the West Bank contrary to International law.

There are at least nine quarries reported in 2014 according to <https://www.whoprofits.org/updates/an-updated-list-of-israeli-quarries-in-the-west-bank>:

1. Yatir Quarry – This is an equal partnership of Kfar Giladi Quarries (owned by Kibbutz Kfar Giladi) and Lime and Stone Production (Owned by Readymix Israel – a subsidiary of Cemex). The quarry is located south of the Palestinian city Dhahiriya and West of the Teneh Omarim settlement.
2. Meitarim Quarry – The quarry is owned by Yehoshua Koren, Yoel Azaria (through the Oron Group) and Daniella Zamir and Rafael Rodnik (through Dhahiriya Quarries). It is situated close to the settlement of Teneh Omarim.
3. Beit Hagai/ Lahav Quarry – The mining rights for this site are owned by the settlement of Beit Hagai, but the quarry is operated by the Israeli company Medan – Roads and Quarries. In September 2012, the Civil Administration allowed Medan to expand the quarry’s activity to the land of the Palestinian town Dura. The quarry is located near the settlement of Eshkolot, close to the Green Line from its eastern side.
4. Adora/ Trans-Judea Quarry – The quarry is operated by the Elyakim Ben Ari company. It is located near the settlement of Adora and Highway 35, known as the Trans-Judea Highway.
5. Salit Haadumim Quarrying and Factory for Stone Works – Located north of the Mishor Adumim industrial zone, on Road 437.
6. Nahal Raba Quarry – Situated near the settlement of Elkana. It is owned by Hanson Israel, a subsidiary of Heidelberg Cement – the world’s largest cement producer.
7. Natuf Quarry – Situated near Nili settlement. It is owned by Shapir Civil and Marine Engineering.
8. Beitar Illit Quarry – Owned by Ashtrom through its subsidiary Netivey Beitar. It is located in the area of the Beitar Illit settlement.
9. Kochav Hashahar Quarry – The quarry is owned and operated by Mordechai Binyamin and Sons Earth Work. It is located near the settlement of Kochav Hashahar and sprawls onto the land of the Palestinian village Kafr Malik.

LRC lists 10 quarries (Tabx xxx)

Table xxx Quarries according to LRC (2016)

بيسكورس	ترااب ناعم طن	حصمة طن	المساحة المصادرة بالدونم	سنة التأسيس (تقريباً)	موقع الأراضي المصادرة لصالح المحجر	المحافظة المقام عليها المحجر	اسم المحجر أو الكسارة الإسرائيلية	الرقم حسب الخارطة
طن								
0	160	250	194	1990	بدو طريق أبو جورج - نخيلة	القدس	عيليت	1
750	600	0	642	1992	أبو الحنة - البرج	الخليل	ميدان	2
0	380	400	347	1995	خربة الرهوة	الخليل	واد الخليل	3
350	200	0	280	1996	سوبا ، اذنا	الخليل	كسارة بن أري	4
0	340	400	325	2014	مديمنة - جنوب الظاهرية	الخليل	جال عيليت	5
0	400	400	350	2002	خريثا بني حارث	رام الله	هار موديعين	6
300	0	350	318	2003	ثقبا	رام الله	توف	7
0	500	700	675	1997	الزاوية	سلفيت	كيتير	8
0	90	130	119	2013	كفر الديك	سلفيت	علي زهاف	9
0	360	300	272	2009	جيوس	فلقيلية	تصوفين	10

1400	3030	2930	3522	المجموع
------	------	------	------	---------

One large quarry called Salit HaAdumim in Mishor Adumim Industrial complex has according to a tender published by the Israeli Civil Administration in 2018 provided 80,000 tons of material for the Israeli industry and 10,000 tons of material in the West Bank annually

(<https://www.whoprofits.org/company/salit-haadumim-quarry-stone-processing-plant/>)

The Wadi Al-Teen quarry in the Tulkarem district, on an area of 9,685 dunums. In the Ramallah district, an Israeli quarry is located near Kufr Malik village, on a 2,523-dunum area. Israel plans to construct another quarry in the Ramallah district on land belonging to the villages of Rantis and Shuqba. In the Hebron district the following areas have been confiscated for quarries: 1,744 dunums between Dura and Al-Thahiriya; approximately 2,677 dunums from Tarqumiya, Dura and Khirbet Jamroura villages; and 2,077 dunums of land belonging to the village of Surif. Lastly, a quarry is located on land which belongs to Majdal Bani Fadel village in the Nablus district (Qumsiyeh 1998)

According to the Union of Stone & Marble in Palestine, this industry accounts for ¼ of total Palestinian industries and estimated \$450 million in revenue (<https://www.usm-pal.ps/industry.php?lng=2>). While the extent of total Israeli quarrying in the West Bank is not known it is very likely approach those numbers (see also Sayara 2016 but more research is needed).

An Israeli group called Shomrim Hanatzach (Guarding Eternity) which sprang from the Israeli settler Regavim has lobbied to declare 1000 sites in the West Bank (primarily in area C) as “archeological sites”. This is again to prevent Palestinian sovereignty and control of natural resources (Greenberg & Keinan 2009)

Due to this peculiar arrangement, a runoff of wastewater, pollution from industrial colonists in declared “**industrial zones**”, and soil erosion have directly impacted Palestinian communities located in the lower areas adjacent to these colonies. The UN Commission on Human Rights documented these negative effect in 2000 and the situation only got worse since. Palestinian sources estimate that at least 200 Israeli factories operate in the West Bank. Some of the products are identifiable, but detailed information on quantities produced, labor, and waste generated are not available. The environmental impact is illustrated by reports on the Barqan industrial settlement (Hammad and Qumsiyeh, 2013).

One of the main dangers is the industrial zones that Israel has built in the West Bank, of which there are 19 as of a 2015 ARIJ report, some inside of residential settlements or near them (ARIJ 2015 report citation needed, p. 121). In Tulkarem, an Israeli industrial settlement was built near the Apartheid Wall to house, among other factories, a chemical

plant run by Geshuri Industries, an Israeli company that manufactures pesticides and fertilizers (“Israeli settlement industries polluting Tulkarem, Palestine”).¹ The existence of this chemical plant in the West Bank is particularly noteworthy as an example of gross environmental injustice, because it was originally located in an Israeli city near the Mediterranean coast. However, the Israeli residents of the city of Netanyana protested the toxic air pollution from the factory, and in 1982, it was closed down and then reopened near Tulkarem within an industrial zone called, ironically, “Nitzanei Shalom” (“Buds of Peace”). A 2013 study on the effects of the industrial settlement notes: “Results of several empirical studies suggest that as a result of proximity to industrial zones that house Geshuri and other factories that cause pollution, residents of Tulkarm have among the highest rates of cancer, asthma, and eye and respiratory health anomalies compared with residents in other districts” (Qato and Nagra, 2013). In the Geshuri factories, for instance, there are virtually no health or safety regulations in place, so people work 12 hour shifts for which they aren’t paid fully and are frequently sick because of exposure to toxic chemicals (APN-PANAP 2016).. In other agricultural settlements, many Palestinians, even children, do dangerous work spraying pesticides without proper protections, with severe negative health effects. The excessive use of insecticides and pesticides has serious and well-documented negative health effects (Safi et al., 2005; Sa’ed et al., 2010; Abu, 2013).

And even more blatantly highlighting how little Israel values Palestinian lives, the factories at Tulkarem shut down a few days every year when the wind shifts and there is a risk of air pollution blowing into areas where Israelis live (“Human Rights and Toxic Chemicals in the Occupied West Bank (Palestine)”, “Israeli settlement industries polluting Tulkarem, Palestine”). Thus, Palestinians exclusively bear the cost of these industries, and where otherwise a company might have been required to find ways of operating that harm the environment less, Israel has instead chosen to treat the occupied Palestinian territories as a “sacrifice zone” (Lerner 2010),

Other sources of air pollution, with its myriad health implications, are also linked to the occupation. Emissions from cars is a major source of air pollution in Palestine, and the labyrinthine system of checkpoints and apartheid roads can in many cases double or triple the amount of time people spend driving (Qumsieh et al 2001).

2.8 Other Environmental Injustice Issues

In line with the settlement master plans described in section 1 (Background), Israel declared large swathes of land especially around Jerusalem, in the northwestern areas of

¹ “Israeli settlement industries polluting Tulkarem, Palestine.” *Environmental Justice Atlas*. 2017. <https://ejatlas.org/conflict/israeli-industries-polluting-palestinian-city-of-tulkarm>

the WB, Eastern Slopes and the Jordan valley off limits to Palestinians (as nature reserves, closed military zones, or settlement areas but these are fluid and were interchangeable). Much of the land is taken from Palestinians (Peace Now 2016). For database on settlements, see

https://www.btselem.org/download/settlement_population.xls Vast tracts of Palestinian agricultural lands were thus essentially confiscated and many of them turned to Jewish settlements (Daibes and Daibes-Murad 2003). Even the act of simply wandering our country on hikes that we used to do is now impossible with all the checkpoints and walls dotting the landscape (Shehadeh 2008)

Israel has built an extensive network of so-called "by-pass" roads in the occupied areas. These roads stretched for 340 km in 2000 and now have increased significantly. They bypass native Palestinian towns and are used to serve Jewish settlements. Large tracts of lands are confiscated to build these roads, which include 75 meters on either side of the roads as "safety buffers". Trees and hills and any standing structure within the 75 meters on both sides are bulldozed and the areas are declared closed military zones to Palestinians. Israel built "by-pass" roads and other infrastructure in the occupied areas to serve the Jewish colonies. Lands were confiscated to build these, including extra "security zones and buffers" around roads, walls, etc. The landscape was severely damaged 51.2 km² were destroyed just in 2000 for roads that do not served the local population. Land that was used by Palestinians or by wildlife thus was urbanized. Palestinians in the West Bank make 2.5 million people living in a built up area of 367.7 km²; a density of 6800 Palestinians per square kilometer which is 10 times more dense than for Israelis (ARIJ 2015). The disparity between settlers and natives in land control, economy, and access is also compounded by disparity in use of natural resources discussed earlier (Gordon 2008; Weizman 2012). There are many other issues where the occupation negatively impacts sustainable development and the environment (MOPAD 2014). For example, tourism industry was mostly taken over and it is supporting Israeli economy while negatively impacting the Palestinian economy and the Palestinian environment (Shay 2016; Isaac et al. 2016; Isaac 2018; Ahmed 2020). Weizman (2015) used aerial photographs, contemporary remote sensing data, state plans, court testimonies, and nineteenth-century travellers' accounts to show that colonial policies are demonstrably linked to the progression of climate change and the destruction of Bedouins life in the Negev (creating "concentration areas" for them). In the future, as a result of climate change, the environmental issues discussed above could get much much worse in the occupied Palestinian territories. One study suggests that even more scarcity of water, caused by the intertwining factors of climate change and military occupation, could see a rise in incidences of diarrhea, cholera, and dehydration (Mimi et al. 2009).

In 2017, the Israeli government approved 800 million shekels (>\$300 million) for expansion of the network of settler roads in the WB.

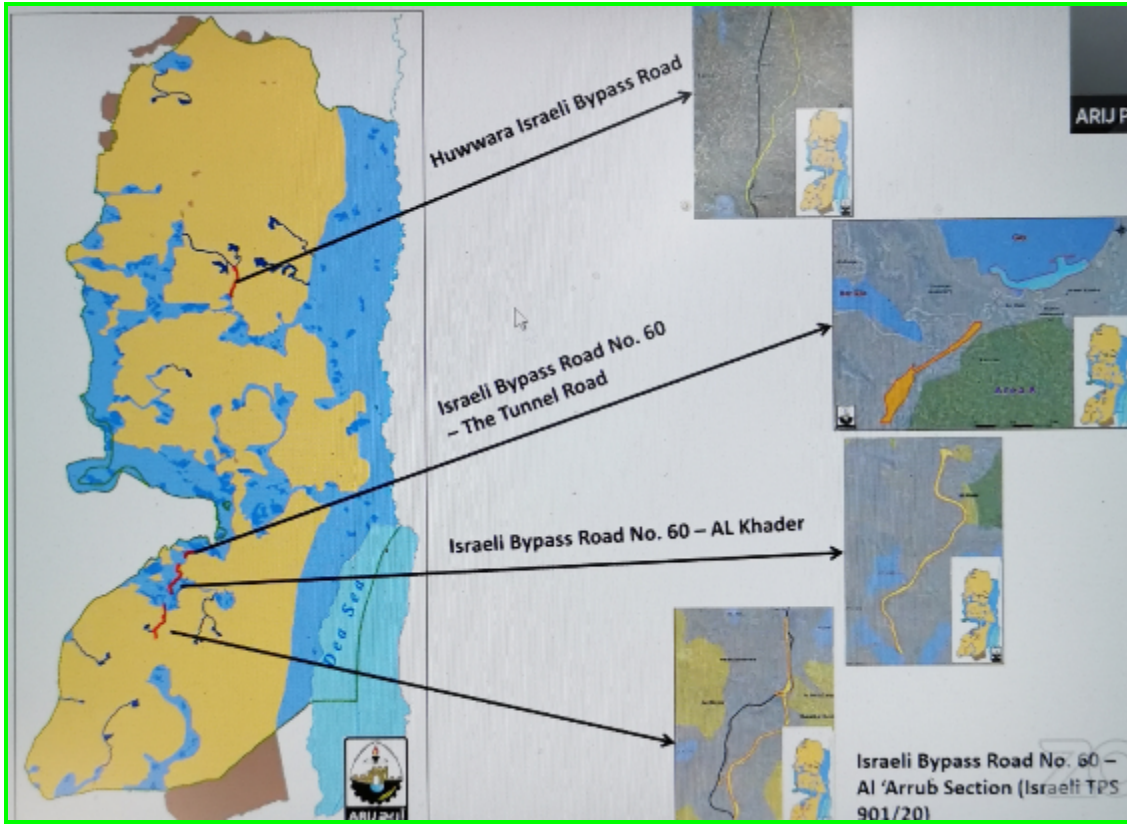


Figure 41 Israeli bypass roads in WB to be expanded (ARIJ).

Table 5 Israeli military orders just in 2021 impacted 6011 dunums (ARIJ).

Settlement Name	M.O. No.	Order Type	Area (Dunums)	Area	%	
Huwara Bypass Road	321	Expropriation for Public use	406	1285	21	
Bypass Road 60 – Al Arroub			401			
Bypass Road 60 - Husan			478			
Migron	1539	Outpost	1384	1860	31	
Tel Asaf			87			
Mitzpe Rahel			389			
Tel Menashe	5779	Change of usage from forest to residential	43	662	11	
			414			
Maale Shomron			25			
Zufin			59			
Hinanit			121			
Kochav Yacov	783	Expansion of the Jurisdiction Area	159	2098	35	
Nili			149			
Halamish			14			
Kochav Hashahar	1539		1003			
Yitzhar			527			
Yitzhar			172			
Kiryat Arba			20			
Nahlael	54					
Mitzpe Yericho	1539		Israeli Military Base	106	106	2

The whole concept of development of the state of Israel and its expansion is to grow Jewish communities (most gathered from around the world to replace the indigenous Palestinian communities. This is the idea of Zionism]: replace a multiethnic, multicultural, multireligious, and multilingual Palestine with a Jewish state of Israel. These create ramifications like the policies and environmental injustice issues explained above (see also Neumann 2011). They also create a process of ethnic cleansing which also impacts the environment. Today 8 million of 14.5 million Palestinians are refugees or displaced people. There are more than 871,000 registered refugees living in the West Bank, around a quarter of whom live in 19 refugee camps (<https://www.unrwa.org/where-we-work/west-bank>) . Many more live in Gaza. This population should be allowed to return to its homes and lands which can relieve a significant environment of the area.

Many areas like residents of Silwan and Al-Walaja being targeted for a second round of ethnic cleansing (they were removed in 1948). The Bedouins of Al-Jahhalin have an interesting story of being removed in 1948 to the Jordan valley from the Negev then moved again by pressure to remove the Jordan valley residents after 1967 which resulted in their presence east of Al-Eizariya (Khan Al-Ahmar area) then being threatened again by removal a third time. The data is compelling on this case and we discuss more in Section 3.9 on Jerusalem. The Jordan valley has been developed significantly into Israeli agricultural areas (Abu Kubi, M. 2005) thanks largely to using water that belongs to the local people.

Within the West Bank even by 2020, Israel had already legalized 17 outposts (these are individually initiated settlements not initially sanctioned by the Israeli governments) and added them to the large number of settlements already there while simultaneously targeting 173 Palestinian communities including with home demolitions and ethnic cleansing (LRC 2021).

Table 6 Home demolitions by governorate in 2020 (LRC 2021).

Governorate	Residences	Area (m ²)	Affected / Victims	Including children
Jerusalem	167*	12636	742	339
Hebron	54	3792	297	142
Bethlehem	17	1260	67	26
Ramallah	19	2257	99	43
Jericho	43	2556	214	112
Nablus	3	200	11	5
Salfit	1	220	4	2
Qalqiliya	-	-	-	-
Tubas	25	1479	126	54
Tulkarm	-	-	-	-
Jenin	8	974	39	16
Total	337	25374	1599	739

The attacks the Israeli military wages on the civilian population also have a devastating impact. For example, 2014 resulted in significant impact on the environment in Gaza (PENGON and FOE. 2015). The 2014 conflict alone inflicted an estimated \$33 million of damages to water infrastructure and losses of \$94 million to the entire water sector, and up to 90 litres of untreated or partially treated wastewater are being discharged into the Mediterranean every day (Office for the Coordination of Humanitarian Affairs 2016), contaminating Gaza's beaches and fishing waters. Moreover, Gaza's current catastrophic condition is a direct result of Israel's military occupation and blockade. Gaza does not lack the technical expertise to ensure the sustainable management of its resources, or the treatment of its wastewater; what it lacks is the freedom to do so (Al-Shalalfeh 2018). In Gaza, the occupation has caused extreme harm to people's health, primarily as a result of harming the environment and instituting a blockade, thus limiting the ability of people to either grow food for local consumption or import food from elsewhere. In a series of articles on health in the OPT published by The Lancet, the authors note that there are pockets in northern Gaza where the level of stunted growth among children reaches thirty percent.² Stunting, which is caused by chronic malnutrition and affecting cognitive development and physical health, poses a serious threat to normal childhood development and may cause severe health problems for children in the future. The report's conclusions

² <http://www.thelancet.com/series/health-in-the-occupied-palestinian-territory>

that the main reasons for the ailing Palestinian health system are the occupation, and particularly the recent conflict in Gaza.

According to OCHA (2022b):

- *During the first eleven months of 2022, a total of 851 structures were demolished or seized and 966 people were displaced. The monthly rate of structures demolished or seized has slightly increased by one percent compared to the monthly average in 2021.*
- *In November alone, a total of 123 Palestinian-owned structures were demolished or seized. This is a 68 percent increase compared with the monthly average over the first ten months of the year (73) and the second highest number this year.*
- *Six donor funded structures, including one school were demolished in November 2022, and another donor funded school received a demolition order.*
- *Half of the targeted structures supported agricultural, herding, and commercial livelihoods.*
- *So far in 2022, the proportion of structures demolished or sealed off by their owners in East Jerusalem following the issuance of demolition orders, reached 53 per cent, up from 27 per cent in the previous five years.*

Israel also forces residents to demolish their own homes or they would be charged exorbitant amounts for Israel to demolish them (Fig. 41)

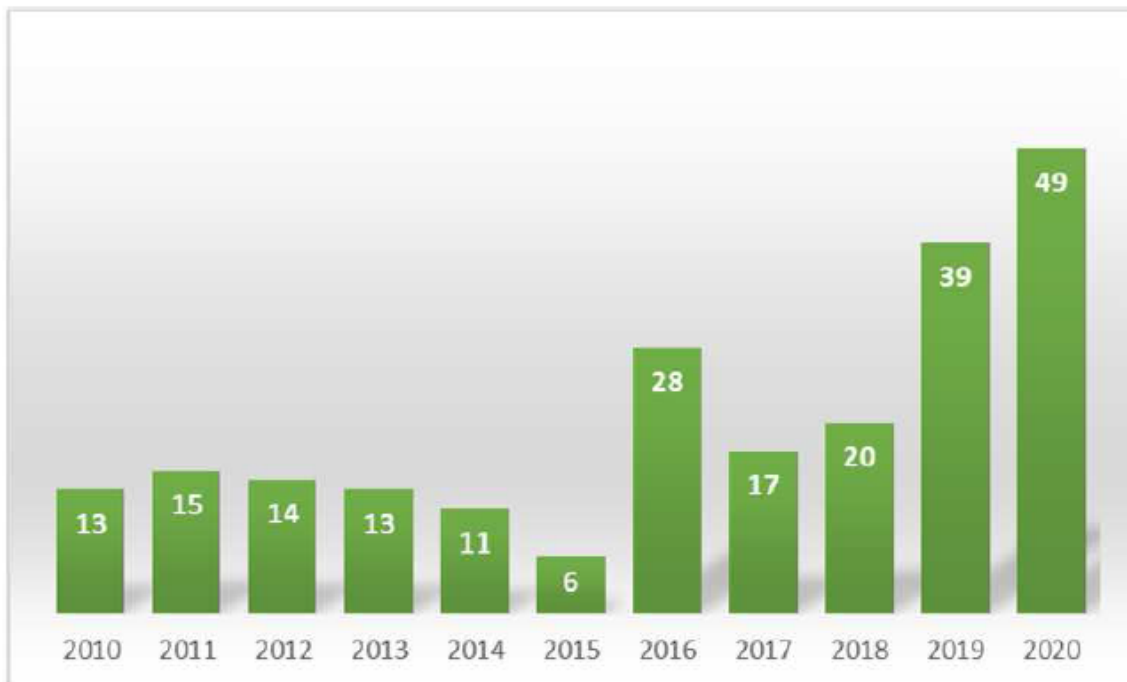


Figure 42 West Bank self-demolition (LRC 2021).

There is also much destruction of homes and buildings in the guise of “security operations” including demolition houses of families of resistance fighters and using heavy weapons in residential areas (LRC 2021). The Israeli authorities also destroy walls, water wells, barn sheds, shelters for sheep, water pipes and electricity developed by the

local Palestinians. An estimated 600,000 tons of debris were created in 2008 during “Operation Protective Edge” on Gaza in 2008 when 2,692 buildings were destroyed, releasing toxic chemicals and, through the ensuing fires, contaminating the rubble with “polynuclear aromatic hydrocarbons (PAHs) and, if chlorinated compounds are present, with dioxins and furans, all of which are extremely hazardous.” (Brophy and Isaac 2009)

Limitations on Palestinian **urbanization** outside of areas already developed in 1967 was the result of the Allon plan discussed earlier (Section 1) (see Toynbee and Abu-Lughod 1987; Masalha 1992, 2012; Benvenisti 2000; Pappé 2006; Cook 2013; Abujidi 2014; LRC 2021).

There is also the regular destruction of agricultural fields and crops carried out by the state. For example LRC(2021) documented that 3830 dunums were effected in all governoerrates for 2020

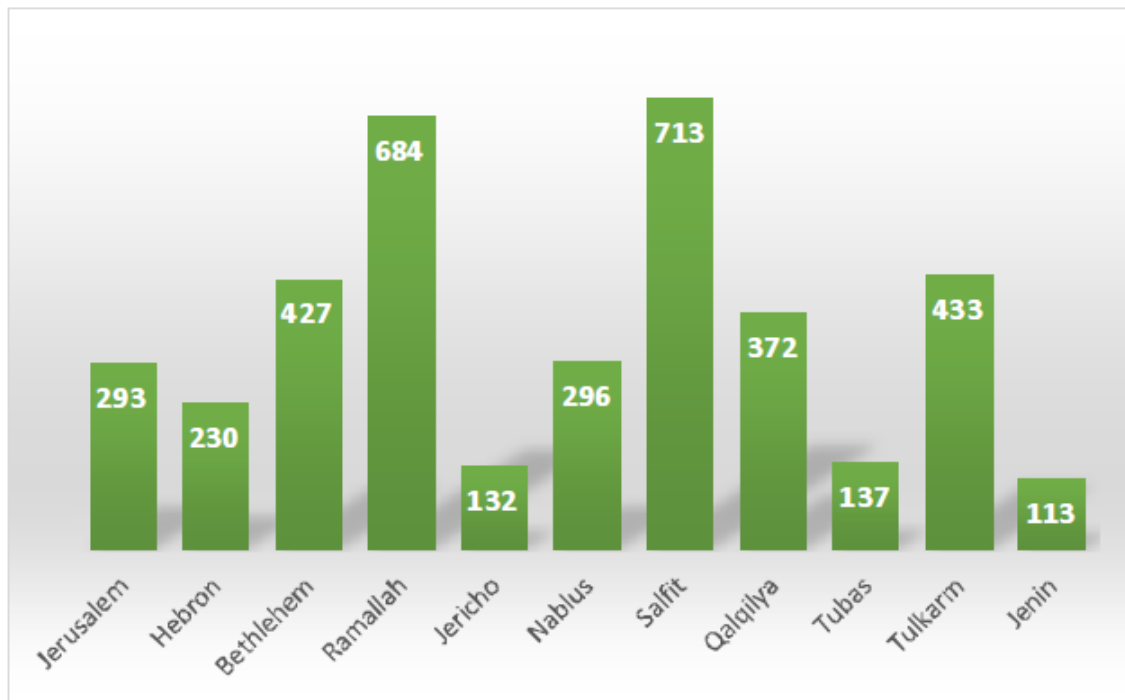


Figure 43 Agricultural land damaged by 2020 (LRC 2021).

Table 7 Destroyed Trees in the West Bank by year of attack and governorate 2008-2020 (LRC 2021).

Govern.	Years													Total*
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Jerusalem	40	55	3719	1094	12020	1672	1653	1834	1410	1400	1279	1208	1235	27384
Hebron	13	1142	2438	2222	5003	4166	4490	4980	3269	722	3497	4598	2862	36540
Bethlehem	-	380	1856	2034	10134	5171	3250	750	380	325	1688	3210	4284	29178
Ramallah	-	470	912	2736	15527	1699	4552	5573	672	656	1872	1937	4111	36606
Jericho	-	-	--	-	10	110	120	-	-	833	792	-	210	1865
Nablus	100	3136	57884	9280	4760	5193	2666	3195	994	1731	2590	6552	2948	98081
Salfit	40	2160	3090	2064	12122	3339	2174	3926	1022	1175	2099	1273	2679	34484
Qalqilya	65	398	2277	1080	4404	1008	794	710	994	1548	998	1216	1243	15492
Tubas	-	-	1000	-	-	24	2340	15862	-	70	460	1552	649	21308
Tulkarm	-	-	250	-	20	-	26	431	487	98	28	73	1403	1413
Jenin	-	-	-	90	-	1199	446	635	338	222	600	335	341	3865
Total	258	7741	73426	20600	64000	23581	22511	37896	9566	8780	15903	21954	21965	306,216

Setting fires to Palestinian crops and dumping sewage on farms are other ways colonialism impact the lives and livelihoods of people and damage nature (LRC 2021)

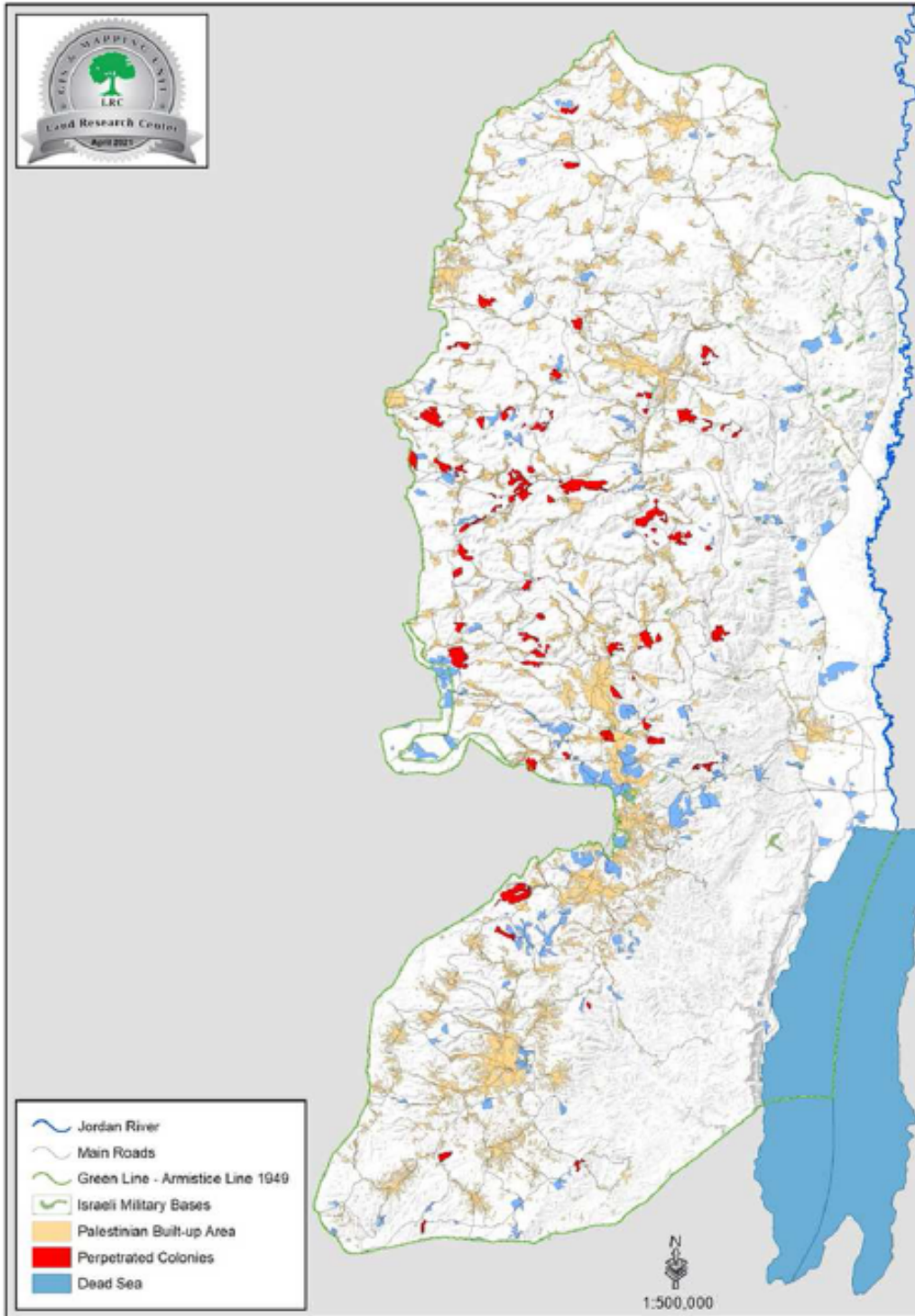


Figure 44 Israeli colonies producing polluted water that is dumped or leaked into Palestinian areas (LRC 2021).



Figure 45 Sewage from Shaarev Tikva settlement flows to are beyond wall including palestinian farmed land and Azzun-Beit Atma Atma School, Qalqilia governorate (LRC 2021).

Table 8 Destroyed reservoirs, pools, wells and springs in the WB (LRC 2021).

Governorates	Cisterns	Pools	Reservoirs	Artesian wells	Springs	Destroying a water reservoir	Total
Jerusalem	10	1	-	-	1	17	29
Hebron	*168	53	21	1	6	9	258
Bethlehem	22	4	-	-	6	1	33
Ramallah	7	1	4	1	4	16	33
Jericho	11	6	-	2	17	33	69
Nablus	12	10	13	2	5	17	59
Salfit	19	1	-	-	5	3	28
Qalqilya	5	8	-	-	-	7	20
Tubas	14	5	8	9	28	153	217
Tulkarm	-	-	-	-	2	3	5
Jenin	9	-	1	32	5	4	51
Total	277	89	47	47	79	263	802

Other infrastructure includes over 1500 kilometres of settler roads, most separated from existing (and often dilapidated) Palestinian road systems. There is accumulating evidence that Israel's use of substances like white phosphorus in the SP is harmful to human health and the environment (Naim et al. 2012).

Starting in 2005 the Israeli Government made literally concrete their previous fixed check points by constructing more than ten official terminals (Israel likes to think of these as border points but they are built inside the West Bank and Israelis are found on both sides of these). There are 23 other crossing points along the path of the Segregation Wall in the West Bank (ARIJ, 2010). Generally, refugee conditions and poverty also seem to encourage parasitic infections in the OPT (Mourad 2004).

The Israeli occupation authority, violating the 4th Geneva convention developed a system of pillage and use of >41% of the land in the West Bank. The number increasing yearly and include 8% settlement masterplans, 1% military bases, 18% closed up military zones (including nominal "nature reserves"), 12% nature reserves (non-militarized), 2% bypass roads (Isaac and Hilal 2011).

There is also an effect on Palestinian rights to education and freedom of movement including access to our cultural, religious, and archaeological sites (see ARIJ 2011; Berda 2017). The restrictions and blockage of freedom of movement in the country is contrary to the UDHR see Article 13: Everyone has the right to freedom of movement and residence within the borders of each state. Everyone has the right to leave any country, including his own, and to return to his country. and Article 12 of the International Covenant on Civil and Political Rights: “Everyone lawfully within the territory of a State shall, within that territory, have the right to liberty of movement and freedom to choose his residence.”

More indirectly, the occupation’s fragmentation of the land and ensuing reduction in biodiversity within the OPT also has a strong negative effect on the human beings who live here. For one family near Jerusalem, for example, Israeli settlements built all around their home basically has trapped them in one place: “In particular, the property can now be entered and exited only via an electronic gated corridor constructed by the IOF, the opening and closing of which is controlled by the IOF remotely from Jerusalem. For almost forty years the family has never left the property together, for fear that the gate would not be re-opened on their return” (Al-Haq 2015b). The psychological harm of such a lived reality is also a serious environmental injustice, in addition to how land fragmentation affects biodiversity. Preserving biodiversity is critical to human health, even in directly modulating the immune system (Rook, 2013). An unhealthy population is unlikely to divert resources and attention towards conservation efforts and conversely an ecologically disturbed system can be devastating to human health (Pimental et al., 2000). On the other hand, a healthy environment and rich biodiversity areas can provide us with many medicinal plants in Palestine (Ali-Shtayeh and Jamous, 2006; Ali-Shtayeh et al., 2014). Thus, issues of health are intricately connected to issues of environmental conservation.

It is not merely the Israeli government actions that attack and damage Palestinian lives and livelihoods. There are over a dozen right wing fanatical groups supported by the Israeli government that do this. Examples include the Hill Youth, Price Tag group, Ateret Cohanim, Ir David Foundation, Regavim, Women in Green, Jerusalem Periphery Forum,

2.9 Summation

Environmental threats are global in nature but are exacerbated in developing countries especially in regions of conflict. In Palestine, even in ancient times there is evidence of Canaanitic villages stripping their populations of gazelles. In the more modern era, forests in the Eastern Mediterranean region were cut down for household, industrial and commercial uses. Under British occupation (1917-1948), and Israeli and Jordanian rule (>1948) destruction continued but also interventions that were supposed to be beneficial like forestation were done mostly with European pine trees (monoculture of *Pinus halepensis*) (Qumsiyeh 1996).

The changes in the Palestinian environment over the past 100-150 years are the result of many factors, some due to colonialism and some due to local human activities. For example, settlement growth in the Bethlehem region coupled with native population growth (including refugees from 1948 areas) resulted in the decline of vertebrate biodiversity (Qumsiyeh et al 2014). Saeed and Qumsiyeh (2020) also showed that researching ancient travelers' books such as those of Tristram can reveal significant negative impacts on fauna, especially birds. A good example of a bird that was impacted by human activity is the Eagle Owl. A study conducted in Al Makhrour valley showed the owl's diet had significantly deteriorated from a very rich diet including hedgehogs, various birds and lizards to one dominated mostly by house rats (Amr et al., 2016). Results also show that climate change coupled with colonial activities do impact sensitive invertebrate species like land snails (Amr et al., 2018) and can also lead to expanded presence of invasive species (Handal and Qumsiyeh 2019). When the public were asked about the threats to the environment in Palestine, most of them indicated the occupation as the major threat to the environment (33%) followed by building areas expansion (21%) and pollution (19%) (data collected in preparing the NBSAP).

Under Israeli occupation and colonization, Palestinians were prevented not only from doing much of their usual agriculture (Kittaneh 2020) but also from managing lands. Many forested hills were converted to residential Jewish-only colonial settlements (e.g. Jabal Abu-Ghneim became Har Homa colony near Bethlehem) and generated far more pollution than similar settlements inside Israel. The modern threats were not unanticipated. For example Ives (1950) discussed the land's capacity and the fact that trends started in the 1930s if continued would devastate the area. Not only was he right but more threats evolved since the 1950s (Qumsiyeh 1996; Tal 2002; Qumsiyeh 2004). And as soon as the Palestinians were allowed to have their own ministry of environment affairs under the OSLO accords, a draft study of the enfolding environmental destruction was done (MOIEA 2001). Alon Tal acknowledged even before he wrote his book (2002) that: "We came here to redeem a land and we end up contaminating it" (Beyer 1998).

The ranking of threats to the Palestinian Environment according to the 5th national CBD report are available and seem reasonable though could be adjusted when and if additional data become available (EQA 2015; Table. 1). Another report used the Delphi approach to ask some 'experts' what the main threats are and came up with a somewhat different answer (Abdallah and Swaileh 2011; AlHirsh et al., 2016). But the key threats need not even be prioritized to be analyzed. AlHirsh et al. (2016) used interviews with selected individuals involved in environmental issues in Palestine to see what are the threats that are most prominent to the majority of those individuals.

Table 9 Selected threats to the Palestinian environment (after EQA 2015).

Threats	Threat ranking	
	West Bank	Gaza
Habitats fragmentation (due to urbanization, destruction of forests, climate change, desertification, Israeli colonial activities)	Very High	Very High

Desertification and soil erosion (due to overgrazing, climate change, infrastructure construction etc.)	High	Very High
Urbanization and population growth	Very high	Medium
Removal of rocks for construction (stone quarries etc.)	Very low	Very high
Uprooting trees	Low	High
Overgrazing	Low	Very low
Land degradation (poor planning, soil erosion etc.)	High	Very High
Invasive alien species	Medium	Medium
Climate change	Low	Medium
Overexploitation (including poaching, overfishing etc.).	High	Very High
Pollution (waste water, solid waste, use of chemical pesticides/insecticides/fertilizers)	Medium	Very high
Colonial residential and industrial settlements and associated infrastructure (like the Segregation wall) and its associated adverse effects including vegetation cover shaving, waste water pollution, and habitat fragmentation	Very high	Very low

Climate Change: Human induced climate change will drastically effect the Arab world (Verner 2012). A World Bank study shows impacts include water resource decline will be drastic by 2040. In the West Bank and Gaza, while demand will double, supply will shrink dramatically! When coupled with population growth and habitat destruction (see Table 1), both the World Bank (Verner 2012) and the UN predict situation to become unlivable (UN 2012). Newer models attempt to integrate species own responses (ecologically, genetically etc.) in predicting changes in species distribution following climate change and its impact on the habitat (Lavergne et al. 2010). But preliminary data in Palestine in at least one study shows decline in vertebrate biodiversity as desertification spread into the Bethlehem District (Qumsiyeh et al. 2014). But climate change is a cross-sectoral issue and its damage is compounded by environmental injustice in Palestine (Al-Haq 2021; EQA 2016b,2017c,2020a; Mason et al. 2012; Salem 2011; UNDP 2010; Weizman and Sheikh 2015).

According to UNEP (2020) there has been a substantial increase in the Israeli settler population of the West Bank and East Jerusalem over past decades. In 2016, the Quartet reported that “Since the beginning of the Oslo process in 1993, the population of settlements has more than doubled, with a threefold increase in Area C alone.” (UN, 2016). During the years since this Quartet report was published, there has been a further increase in the settler population: there are now over 600,000 settlers in the West Bank including East Jerusalem (OCHA, 2017). The growth of the settler population has an impact on the environment of the occupied Palestinian territory. Settlement expansion and the developments of factories inside settlements has led to an increase in the amount of groundwater being extracted, to the pumping by some settlements of untreated wastewater (see ABT 8) into wadis and agricultural lands, to industrial pollution, and to land and soil degradation.

From its foundation as a Jewish state in a multiethnic, multicultural and multi-religious land, Israeli policy makers believed in segregation - the removal and enclosing of natives behind borders and walls. Walls were also used to force the natives to leave. For example, after the ethnic cleansing of 1948-1949, the nascent state of Israel wanted to remove the remaining Palestinians from some areas. The villages of Faluja and Iraq Al-Manshiya were actually populated after the war and the withdrawal of the Egyptian army was predicated on allowing the natives to continue living there. But Israeli planners wanted them out so, settling the natives in bordered villages (large prisons), they pressured them economically to finally “volunteer to leave”.

While the state of Palestine needs to develop better plans for managing the resources, a big impediment to implementation of the many existing plans (e.g. for water resources) stems from the fact that the State essentially has no control over most of its natural resources (due to the Israeli occupation). The report by the UNEP (2003) made over 100 recommendations to address the environment in Palestine and seven of them deal with natural resources (1, 2, 3, 4, 21, 23, 31, 40) but none could be implemented without having sovereignty over our land and resources. Further, the Israeli occupation is one of causes of habitat destruction leading to a decline in the biodiversity of Palestine. There are many ways how Israeli occupation affects the Palestinian nature and natural resources (ARIJ, 2007, 2015).



Figure 46 The organic relationship existing between environmental degradation in the OPT and the Israeli Occupation (Isaac and Hilal 2011).

In 2005, the last Millennium Development Goals (MDG) was published by the Palestinian National MDG Steering Committee, led by the Ministry of Planning of the

Palestinian Authority. In its remarkable honesty, it states that the targets for 2015 for sustainability and environmental issues will not be reached because of: “lack of control over natural resources, particularly water and land, due to occupation, and early stage of environmental protection.” There are very few biologists especially marine and wildlife biologists and taxonomists, oceanographers, conservation managers, etc., an adequate legal frameworks and environmental policy and legal framework on which to base all activities for the conservation and sustainable use of biodiversity and natural resources in Palestine. Furthermore, there are inadequate enforcement of laws, and weak coordination among national and local stakeholder agencies in biodiversity and inadequate awareness and commitment to biodiversity. There is a UN General Assembly Resolution regarding Palestine's control over its natural resources (A/RES/75/236).

3. Issue specific by governorate

3.1 Jenin

Jenin is a major agricultural area, yet much of the West Bank has been undertaking transformation in land use, one of which has been attributable to an involuntary expropriation of land due to Israeli occupation. The colonies occupy approximately 2.7% of the total governorate area and the separation wall has seized 3.1 square kilometres of land and created a buffer of 6.3 square kilometers of deserted land behind it, which has deterred Palestinians from using areas of Jenin for land use (Thawaba, Maher, and Özerol, 2017; Özerol et al. 2018). In 2021, 89 dunums of land in Jenin was confiscated for the construction of settler roads and residences by the State, settlers, and colonial organizations (LRC, 2022).

The vulnerability of Jenin is further compounded by a heavy reliance on rain-fed agriculture; while production of olive and citrus trees can tolerate a degree of aridity, wheat and fodder are highly reliant on rainfall yield (Mason et al. 2012). The uncertainty and fluctuation of rainfall with worsening climate change is also further burdened by the political situation over groundwater access, and a forecast for increased water salinization in the future. With estimates of reduced rainfall, Palestinians living in rural areas reliant on agriculture for their livelihoods are likely to face reduced aquifer recharge and reduced rainfall will lead to a lower water supply from Israel. This reduction in agricultural land use is often used as justification for Israel to appropriate their land and take land ownership away from Palestinians due to lack of active land use for harvesting (Mason et al. 2012). What available land and potential for fruitful crop harvest exists in the region has been jeopardized by attacks on the land, with 95 dunums of land affected by Israeli destructive land practices, including soaking the land with sewage or with water. Furthermore, the Israeli government has continuously targeted water tanks and reservoirs in Jenin, with 7.5 cubic metres of reservoir storage capacity demolished in 2021 (LRC, 2022).

Ajarma et al (2016) showed the negative impact of the wall on people and agriculture in the village of Anin near Jenin.

Um Al-Rihan protected area is perhaps the most valuable protected area for its size in the West Bank. It now lies behind the wall

Land use changes are evident in the Jenin area and it is an area increasingly becoming an important agricultural governorate as the Jordan valley was made off-limits to Palestinians (Thawaba et al. 2017).

3.2 Tubas

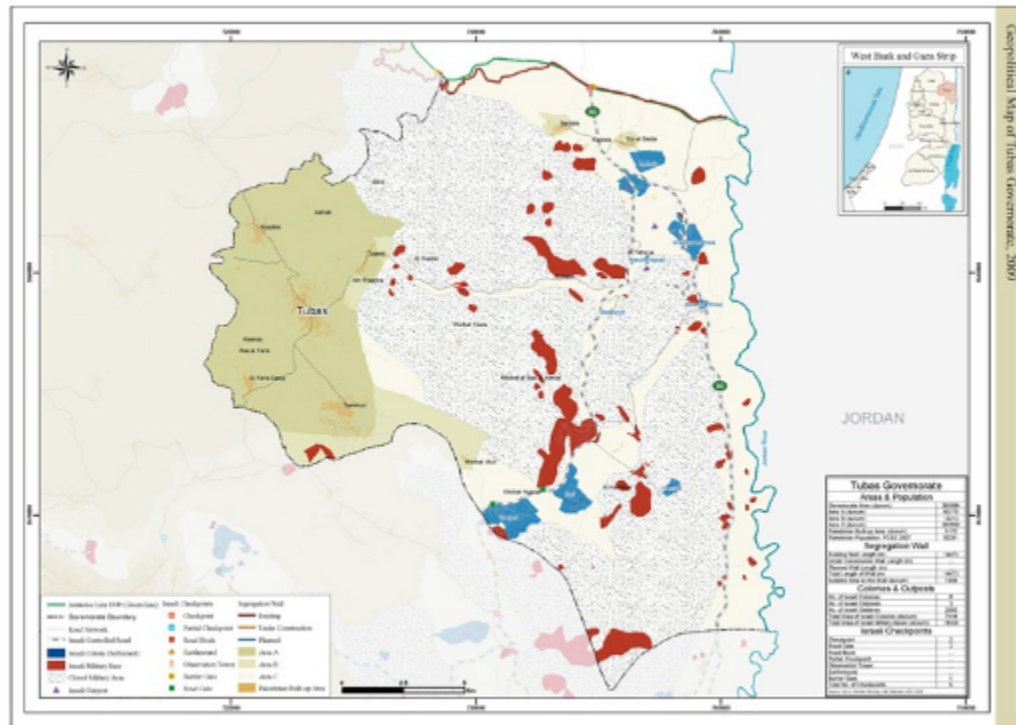


Figure 47 Tubas Governorate (ARIJ).

Tubas is another region highly reliant on agriculture for Palestinian livelihoods and economies, yet have been met with increased and continual periods of desertification and drought. Consequently, farmers have been limited in their capabilities to irrigate their crops and harvest (Mason et al. 2012). In 2021, 84 dunums of land were compromised due to vandalism and conversion of land to pasture due to the colonial occupation, and 747 trees were uprooted (LRC, 2022). This follows an upward trajectory where 21704 trees have been destroyed in Tubas from 2012-2021 (LRC 2022). This is further exacerbated by the issue of water accessibility, wherein half of the population in the Governorate is not connected to the Palestine water network, which makes them dependent on sources such as rainwater and tankers. Several villages in Tubas, such as the areas around Al-Bikai'a have been blocked due to Israeli blockades, which prevent many from access to agricultural land; these same communities are also obliged to pay higher costs for resources and receive low quality water (Mason et al. 2012). At the same time, Tubas has experienced demolitions of springs and waterlines, reservoirs, and tanks, with 1565 cubic meters of storage capacity demolished in 2021 (LRC, 2022). Tubas continues to suffer from high rates of land confiscation; in 2021, there was a reported 1633 dunums of land leading to evictions, 209 dunums confiscated by settlers and colonial organizations, 42 dunums confiscated under the veneer of Israeli "conservation" and the creation of natural reserves, and 38 dunums were ordered for transfer due to the water law 92 for 1967 (LRC, 2022).

3.3. Tulkarm

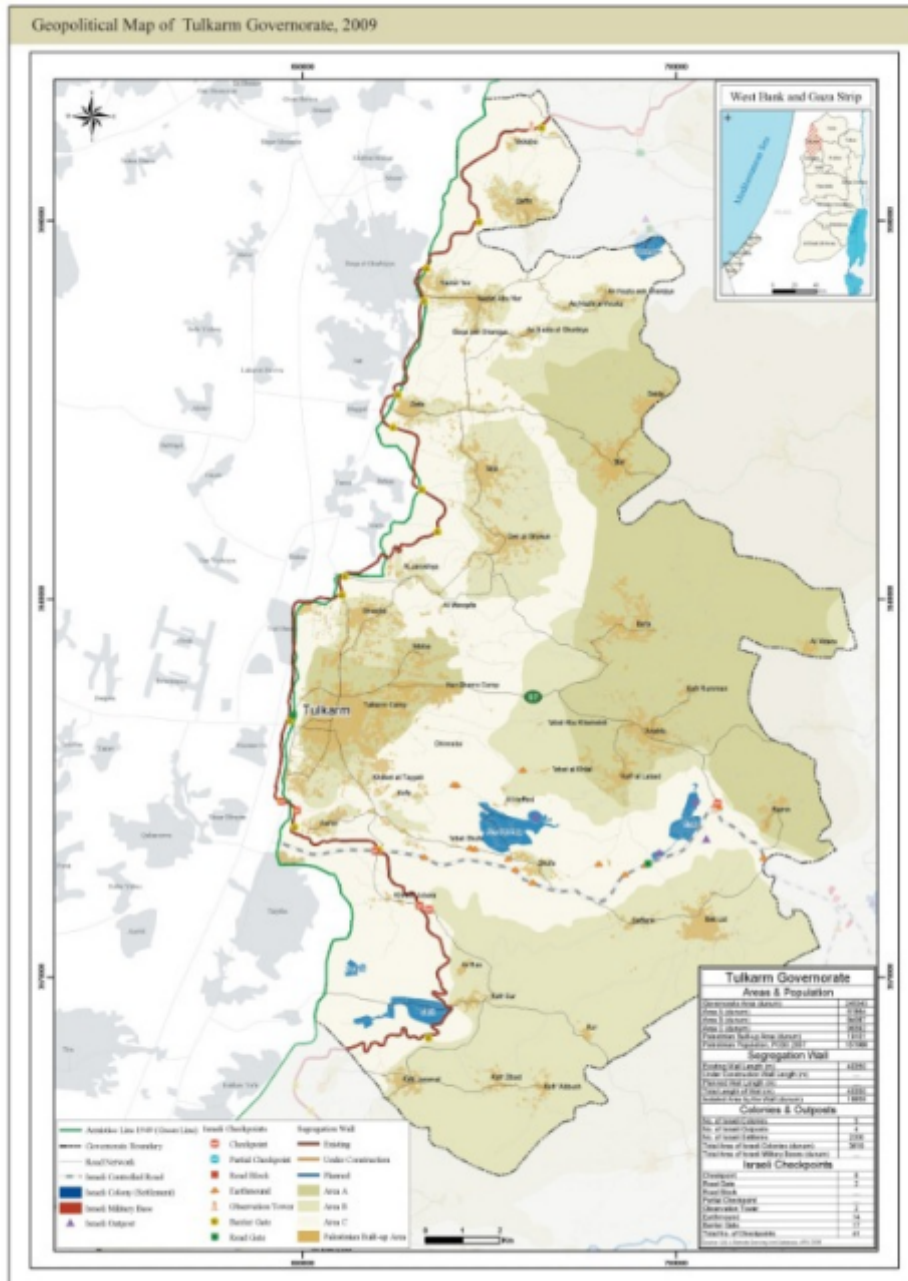


Figure 48 Tulkarm Governorate (ARIJ).

Tulkarem is originally known as aramaic Canaanitic Tur Karm for area of generosity or productiveness in allusion to its rich agriculture. Wadi al-Shaer (Poet's valle stretches to the east into Nablus governorate. Today, the governorate continues to face a multitude of environmental challenges due to the occupation. To exemplify, untreated toxic waste has been pervading areas of the city due to the Geshuri Industrial Complex. Groundwater and soil are now infertile, which has had grave implications for residents who have lost productive land for crop harvesting and livestock (Aidy et al., 2017). Limited access to

land will continue to worsen as there was a reported 276 dunums of land planned for the building of colonial roads and residences in 2021 (LRC, 2022).

In this area, there is the Nitsanei Shalom (=Sprouts of peace) industrial park owned by the Geshuri family which has severe effects on the local environment and health ((EQA 2016a; Qato and Nagra 2013; ARIJ 2016a). It includes major chemical production facilities including pesticides and fertilizers and is located right next to Tulkarem city (relocated from near Nethania after Israeli citizens complained). Besides the toxic byproducts and waste (gas, liquid, and solid), some of the products are also sold to Palestinians, many without the more rigorous use checks done within the Green Line so result also in pollution of water resources (Ghanem et al. 2011; PENGON 2018). Significant pollution from this and other industries in this area has damaged citrus and vineyards (ARIJ 2015). In 2021 alone, 85 trees were uprooted and 28 teams were damaged due to intentional soaking of trees with sewage water (LRC, 2022). For example nitrates are now polluting the Palestinian aquifers (Al-Masri et al. 2020)

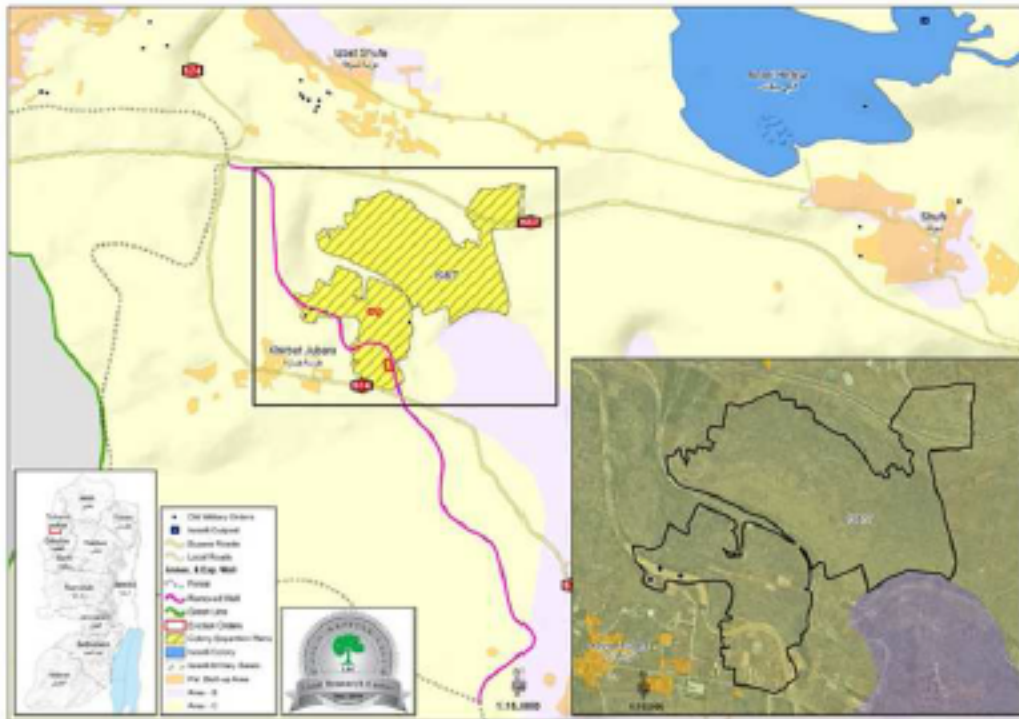


Figure 49 November 2019 plans to build new industrial colony on 788 dunums of land of Jubara and Shufa (LRC 2021).

According to Btselem (2009) “a plan to build a [Tulkarem sewage treatment] plant was submitted to the JWC in 1996. It was not until 2006, after a year of negotiations over the plant’s location alone, that the JWC reached a memorandum of understanding regarding location in Area C. However, when the plan was presented to the Civil Administration in December 2008, the head of the International Organizations Desk recommended that “establishment of the facility in Area A be examined, and that care be taken that it does not extend into Area C.”⁷⁵ The plan will not be realized if the site agreed on by the JWC

is rejected, given that the Tulkarm Municipality does not have available land on which to build such a facility.”

The Segregation Wall runs 41 km along the western side of Tulkarm Governorate effecting not just the city but 17 villages and “destroys 604 ha of their lands, and isolates 2,836 ha located behind it in the Seam Zone” (AbuHafeetha 2014). The hemming in of Tulkarm affects its agricultural landscape (Nassar et al. 2019).

3.4 Nablus

Nablus was founded in 72 AD when the country was under Roman Rule. It used to be the industrial center of Palestine but has been devastated economically and limited geographically since 1967. It has historical Palestinian sites of significance that are threatened by Israeli activities including at Joseph’s tomb. In the governorate itself, we find archeological sites like Tel Balata and Sebastia. Around Sebastia there are forested areas (Pistacia, Oak, Carobs).

Very detailed work on the governorate as a profile including environmental issues and occupation challenges is provided in ARIJ (2014e). Here we summarize some things and provide more updated information but much more work can be done. There are 14 colonial settlements housing about 15000 settlers.

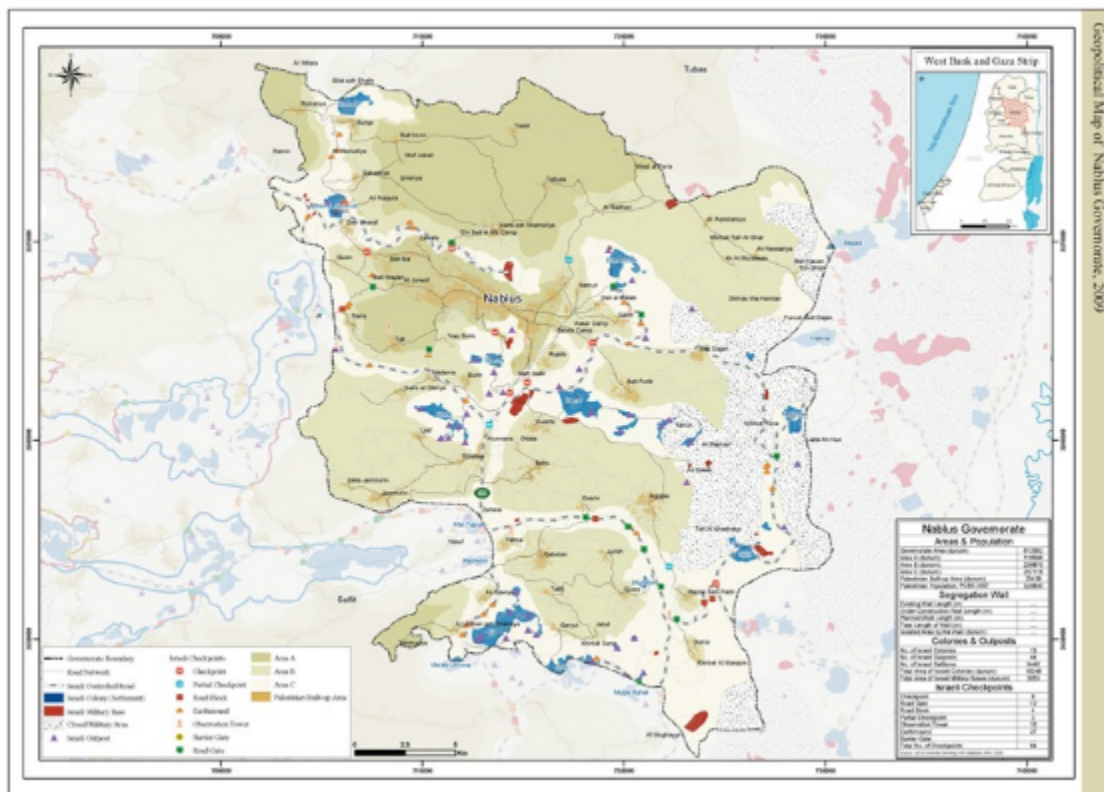


Figure 50 Nablus Governorate (ARIJ).

Table 10 Israeli violations in Nablus governorate 1994 to June 2014 (ARIJ 2014e).

Year	Land Confiscation (in Dunums)	No. of Uprooted Trees	No. of Demolished Houses	No. of Houses threatened of demolition
1994	0	85	4	0
1995	40	0	0	0
1996	3000	1050	0	0
1997	16781	10700	10	0
1998	13420	8120	13	0
1999	9162	11215	3	0
2000	7134	8159	0	2
2001	4260	25360	6	0
2002	308	1350	30	3
2003	44	2725	84	3
2004	727	6165	35	5
2005	9730	4650	5	50
2006	4312	345	16	50
2007	1046	8060	17	3
2008	238	4220	1	8
2009	1989	5697	5	169
2010	864	2496	25	69
2011	659	7697	39	4
2012	3987	1493	17	33
2013	851	6933	7	30
Jun-14	904	540	14	23
Total	79456	117060	331	452

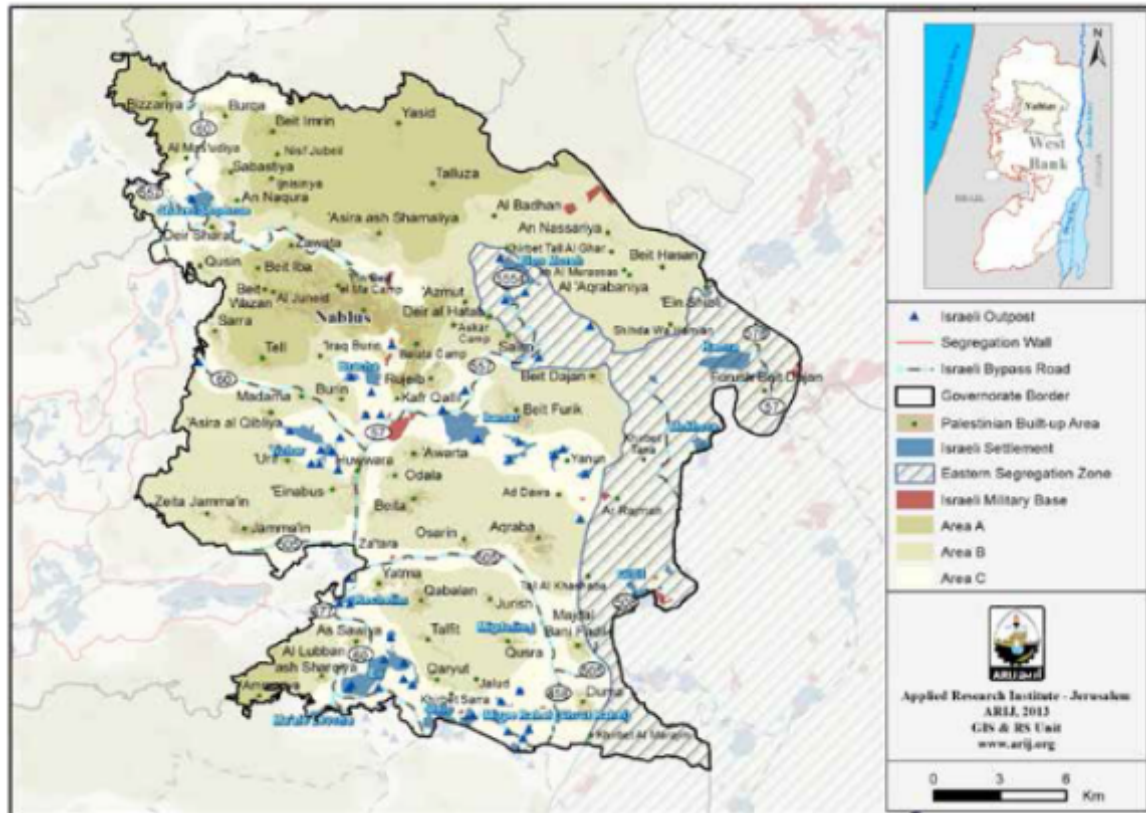


Figure 51 Part of the Nablus governorate is in the eastern segregation zone which includes protected areas being developed for settlement expansion (ARIJ 2014e).

Wadi Al-Badan or Wadi el-Fara is a key site of springs to the Southeast of Nablus. It was well studied including the settlements established around it like Hamra, Masua, Mekhoura (Abdulfattah and de Vries 2006). Wadi AlUweinat (called by the Israeli occupiers Nahal Alexander) flows from the Nablus mountains to the Mediterranean.

According to B'tselem (2009) “A plan to build a [waste treatment] facility for West Nablus was submitted to the JWC in August 1997. The Civil Administration demanded a change in location twice, and it was not until May 2008 that permits for its construction were issued. Construction has not yet begun. A plan to build a similar facility in East Nablus was cancelled due to delay in obtaining approval.” While there are solutions to sewage flows in the Wadi Zomar that flows from Nablus west Through Tulkarem governorate, these solutions face economic and political obstacles (Khayat, S. 2020.)

Nablus faces significant environmental obstacles due to the colonial enforcement of blockades and demolishment of natural resources. In 2021, 1103 dunums of land were confiscated for colonial roads and residences, 149 dunums were confiscated by colonial organizations and settlers, and 24 dunums were confiscated to create Israeli natural reserves (LRC, 2022). The region has also experienced significant destruction of land and crops, with 15 dunums of land having been bulldozed, 190 dunums soaked with sewage water, 32 dunums damaged due to arson attacks, 5 dunums chemically poisoned, and 72 dunums vandalized and destroyed for a total of 314 dunums in 2021. Nablus also suffered

from 3173 tree loss due to torching, uprooting, and damage due to soaked sewage water and breaking and stealing crops. Over a 9 year period, almost 34000 trees have been damaged due to Israeli operations (LRC, 2022).

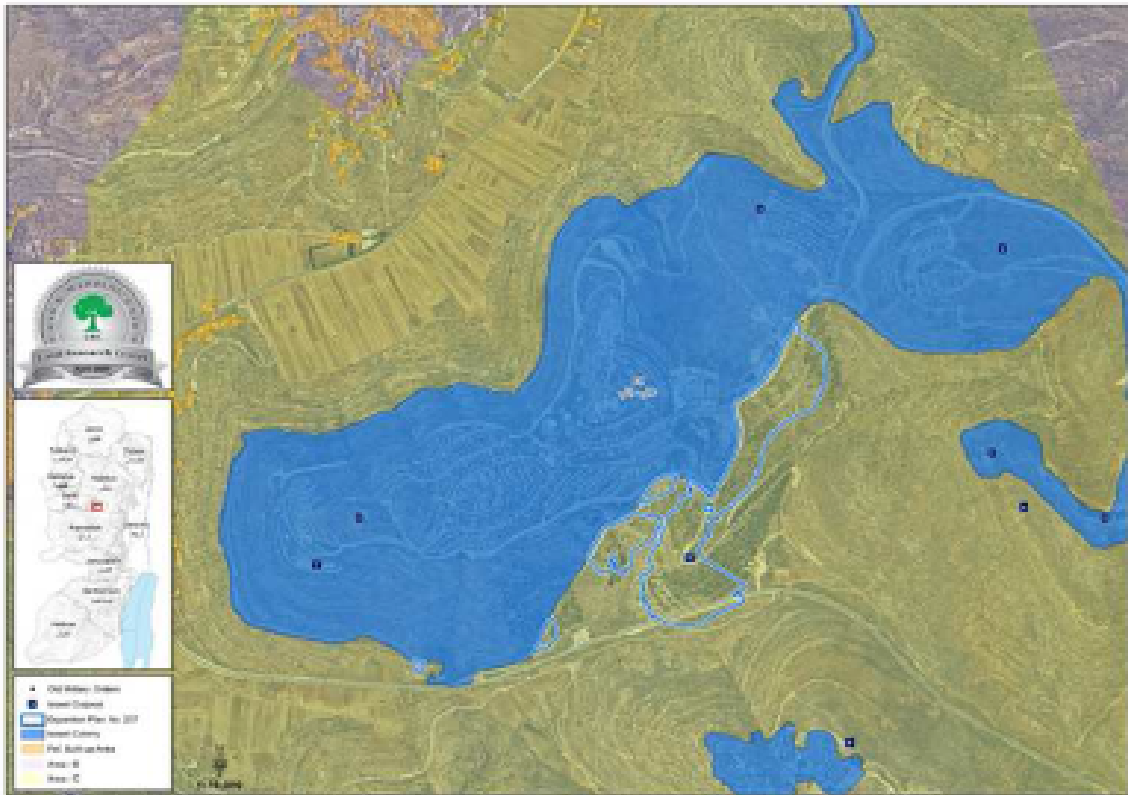


Figure 52 Al-Lubban Ash-Sharqiya and As-Sawiya : Ratifying Plan number (237) for the favor of Eli colony , on 235 dunums to build 620 additional units- March 2020 (LRC 2021).

Solid waste also poses a challenge in this governorate (Al-Khatib et al. 2010)

3.5 Qalqilya

Very detailed work on the governorate as a profile including environmental issues and occupation challenges is provided in ARIJ (2014f). There are 16 colonial settlements and nine outposts housing >40,000 settlers by June 2014. Here we summarize some things and provide more updated information but much more work is needed.

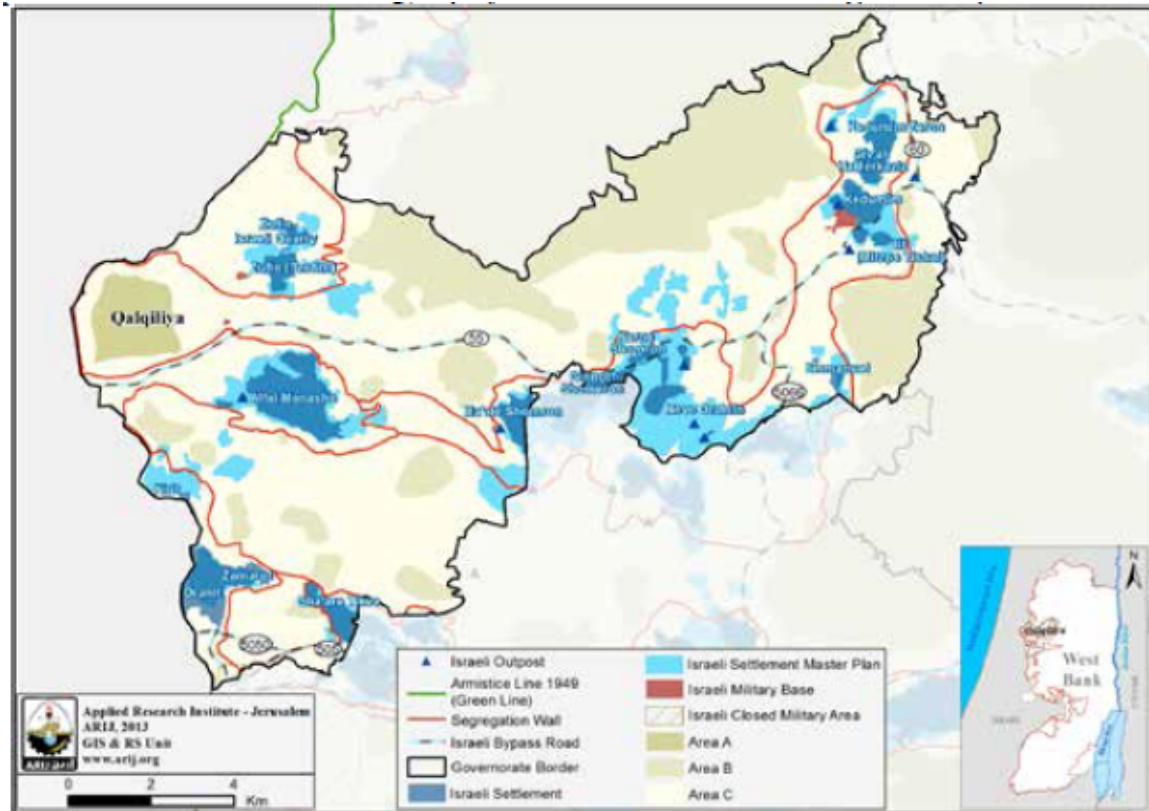


Figure 53 Qalqilya governorate with settlements (dark blue) and settlement master plans for expansion (light blue) (ARIJ 2014f).

Qalqilya continues to suffer from the confiscation of their land, damage of soils and waste into Palestinian communities, and destruction of their natural resources. Over 400 dunums of land have been confiscated, with reasons attributed to evictions, work stoppage, military takeover, the creation of ‘public lands’, colonial road and settlement construction, and the creation of Israeli natural reserves, among others in 2021 alone (LRC, 2022). In the same year, the occupation authorities have also bulldozed, immersed with sewage water, carried out arson attacks, and used as pasture 378 dunums of land (LRC, 2022).

Table 11 Israeli Violations from 2000 to June 2014 in Qalqiliya governorate.

Year	Land Confiscation (in Dunums)	No. of Uprooted Trees	No. of Demolished Houses	No. of Houses threatened of demolition
2000	1261	4575	0	8
2001	391	5160	0	1
2002	21864	3721	7	4
2003	4718	2622	9	31
2004	4269	8059	16	43
2005	1030	8405	1	4
2006	1460	0	9	0
2007	97	450	10	0
2008	663	1280	7	0
2009	0	530	0	27
2010	11	323	0	19
2011	131	1072	4	8
2012	1480	545	1	8
2013	0	353	0	10
Total	37374	37095	64	163
2009	1989	5697	5	169
2010	864	2496	25	69
2011	659	7697	39	4
2012	3987	1493	17	33
2013	851	6933	7	30
Jun-14	904	540	14	23
Total	79456	117060	331	452

The villages of Falamyia and Jayyous are isolated from their lands and from even water resources (six wells and infrastructure that they depended on) by the segregation wall (Al-Haq 2011). From the late 1980s to early 2000, Israel dumped waste, both industrial and domestic, on a family farm in Jayyous without consent from the family or municipality. The Jayyous landfill is estimated to contain about 450,000 tonnes of waste from Israeli settlements and military bases (Aidy et al., 2017). The release of these chemicals into the soil are located near an aquifer that is used by five villages and near a water access point of Azzuun. Lead and other toxic heavy metals have been detected in Azzuun municipality, and this is often seen as one of the prime reasons for high cancer rates in the municipality (Aidy et al., 2017).

Israeli authorities decided in April 2020 to cancel a forest reserve to allow for expansion of the colonial settlement of Alfei Manashe (Fig. 54; LRC 2021). In 2021, the Israeli authorities and settlers destroyed 1473 trees, mostly due to damage from soaking the soil with sewage water and trails of uprooted trees (LRC, 2022).

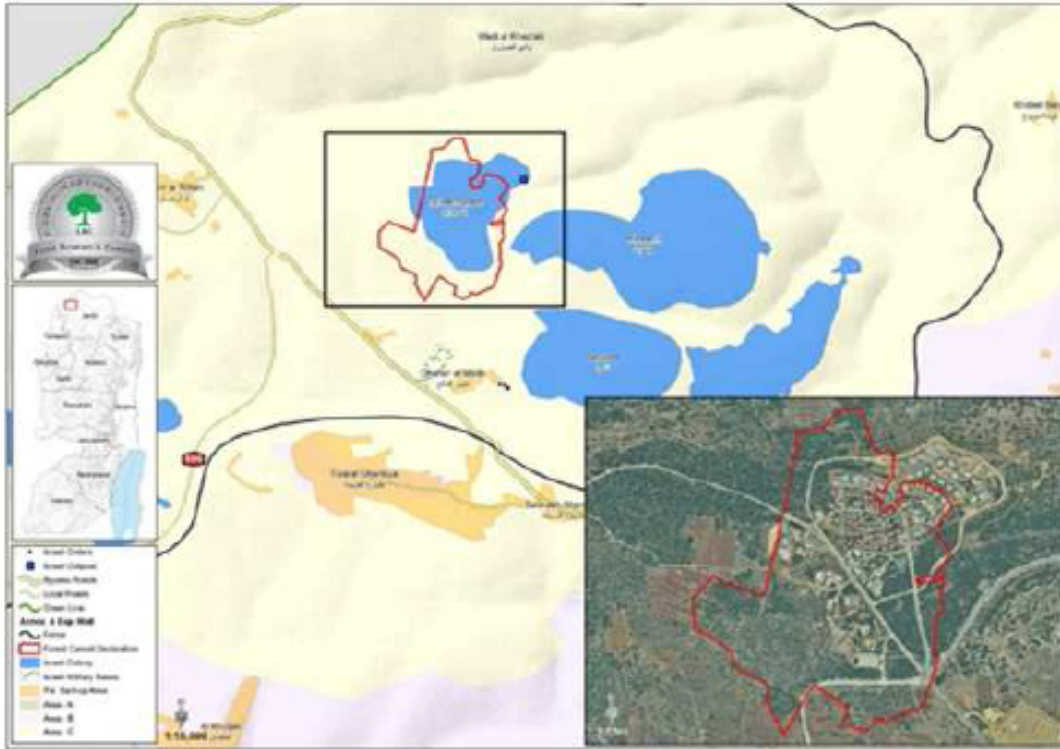


Figure 54 Expansion of block of settlements in Qalqilia (LRC 2021).

3.6 Salfit

Very detailed work on the governorate as a profile including environmental issues and occupation challenges is provided in ARIJ (2014d). There are 24 colonial settlements and 9 outposts. Here we summarize some things and provide more updated information but much more work is needed.

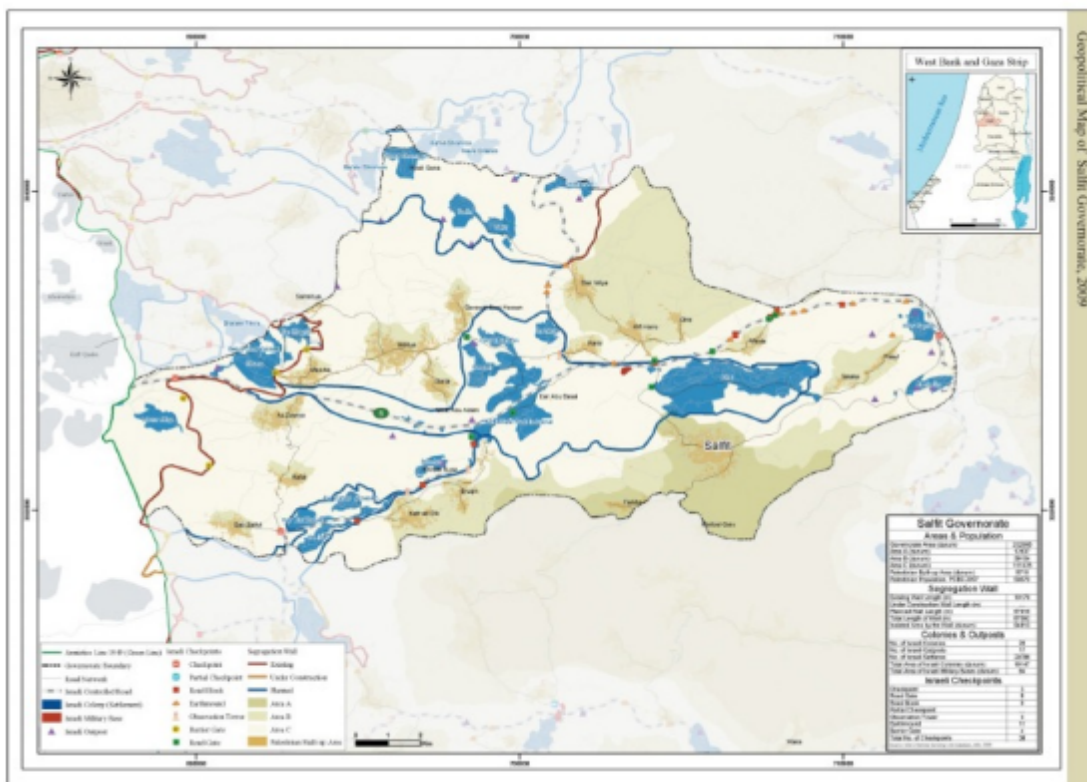


Figure 55 Salfit Governorate showing Israeli settlements.

Table 12 Israeli violation sin the Salfit governorate 2000-2013 (ARIJ 2014d).

Date	Confiscated lands (dunums)	Uprooted trees	No. of demolished Palestinian houses	No. of threatened Palestinian houses
2000	1020	200	0	0
2001	265	2115	0	7
2002	0	30	3	0
2003	40	1100	3	3
2004	106	400	8	4
2005	16	1660	1	7
2006	64	0	6	3
2007	405	100	2	36
2008	0	0	0	21
2009	1049	0	0	22
2010	614	1035	1	31
2011	1523	2517	4	24
2012	2241	786	19	13
2013	23	40	1	0
Total	7366	9983	48	171

Israeli settlers dump untreated sewage in Wadi Qana which impacts the environment (Naser and Ghanem 2018). To exemplify, the wastewater in Barkan Industrial settlement is released every Saturday through pipelines and sewage channels that feed into the villages of Bruqin and Haris (Aidy et al., 2017). This contaminates the soil and underground aquifer which is accessed by Palestinians and is used for residential purposes. Farmers have also grazed animals near the wastewater, where testimonials of residents have purported that the milk of local livestock has been contaminated by heavy metals and chemicals (Aidy et al., 2017). 625 dunums of land and crops have been destroyed in 2021, and have been vandalized, bulldozed, and soaked with sewage water (LRC, 2022).

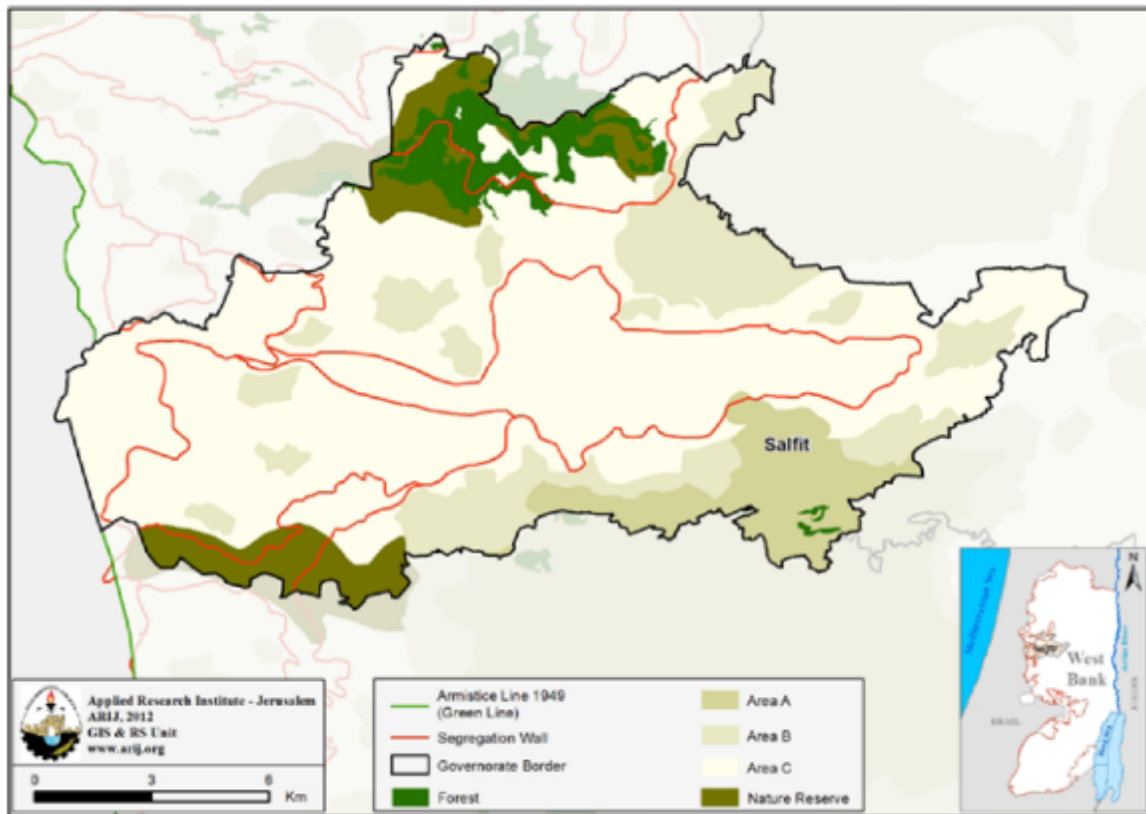


Figure 56 Salfit governorate with areas A, B, and C and Israel designated “Nature Reserves” (ARIJ 2014d).

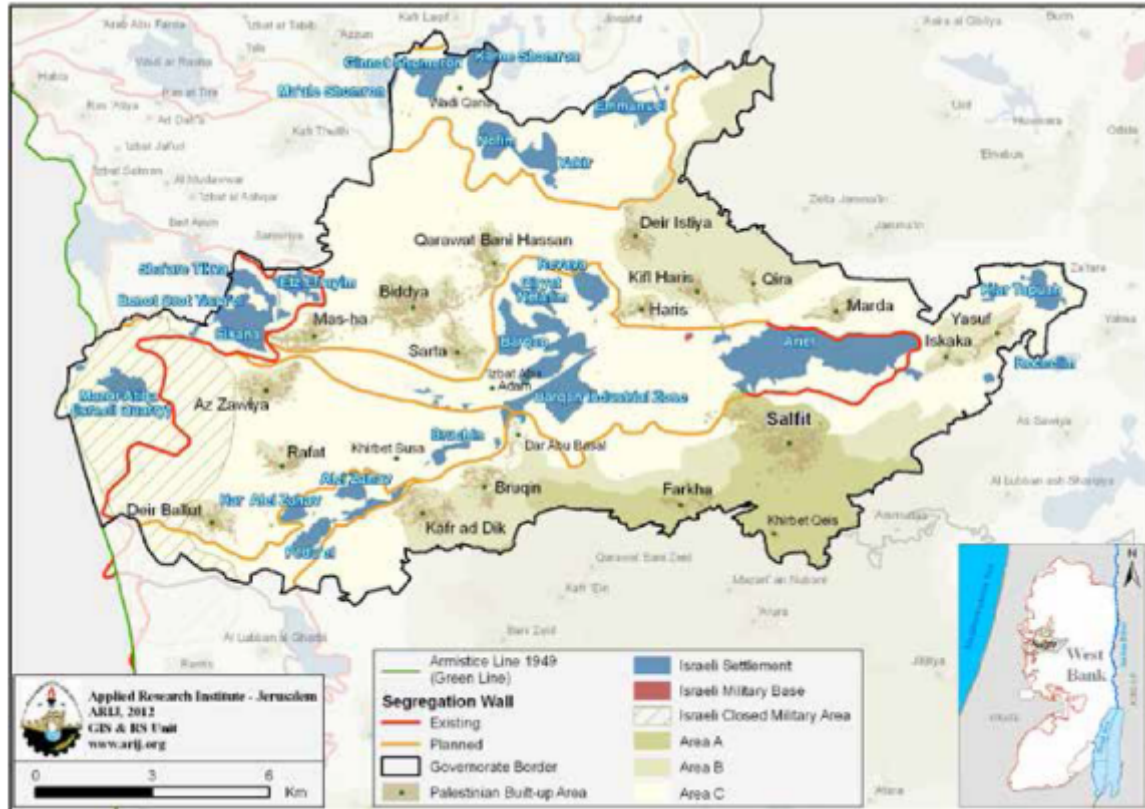


Figure 57 Planned bypass roads to serve settlers in the area. Note passing through supposed nature reserves (compare to previous figure) (ARIJJ 2014d).

In 1926, the British declared “Wady Kanah” a forest reserve of approximately “excluding land at present cultivated.” (Plumer 1926; Braverman 2023). In 1983, the Israeli Civil Administration designated the “Nahal Kana Nature Reserve” (B’Tselem 2015). But Israel used these designations to allow for expansion of colonial settlements that dotted around the valley and to stifle the villages around like Jinsafut and Deir Istiya (Braverman 2023).

A recent study comparing flora, habitats, and threats to Wadi Qsana and Wadi Al-Zarqa al-Ulwi showed some similarities and differences (Qumsiyeh and Al-Sheikh 2023). The study notes that the area of Wadi Qana is unique and needs to be protected. However, Israeli settlements have already expanded significantly damaging the environment. As in other places to occupation forces used protection of nature reserves as a ruse to expand settlements while restricting Palestinians (LRC 2022; Fig 58)

Salfit has suffered from extreme land confiscation in recent years, with 2021 counting high numbers of attacks on Palestinian land, trees, and natural resources. With over 10000 dunums of land having been confiscated for multiple reasons, such as the water law number 92 from 1967 and the creation of Israeli natural reserves, most of the land theft can be attributed to the planning of settler roads and settlements (LRC, 2022). Yet, Salfit District is highly dependent on olive cultivation and stone construction, and 11% of the working population in Salfit works in the agricultural sector (Aliewi and Al-Khatib, 2015). Salfit area has six Israeli polluting industrial zones with two significant ones and Barqan and Ariel (ARIJ 2001). In one year alone 2015, six industries were added to Barqan zone (POICA 2015). We showed a significant genotoxic effect of the Barqan established 1981 on Burqeen village lands (Hammad and Qumsiyeh 2013). ARIJ (2001) showed impact also in health of local communities (Brukin, Kufr Deik, Hares) including diseases like Oxyuriasis, Amebiasis, Scabies, Herpes Sozter, Ascariasis, Giardiasis, and Leishmaniasis. The occupation authorities have further damaged land in Salfit, with over cases of 625 dunums of area having been vandalized or destroyed, bulldozed over, or soaked with sewage water in 2021, and 2421 trees have been damaged by authorities or by settlers in the same year (LRC, 2022).

In the Salfit government, the Israeli authorities regularly expand Jewish presence at the expense of native lands. For example in August 2020, notice was given to take 77 dunums of olive groves (Fig. 59)

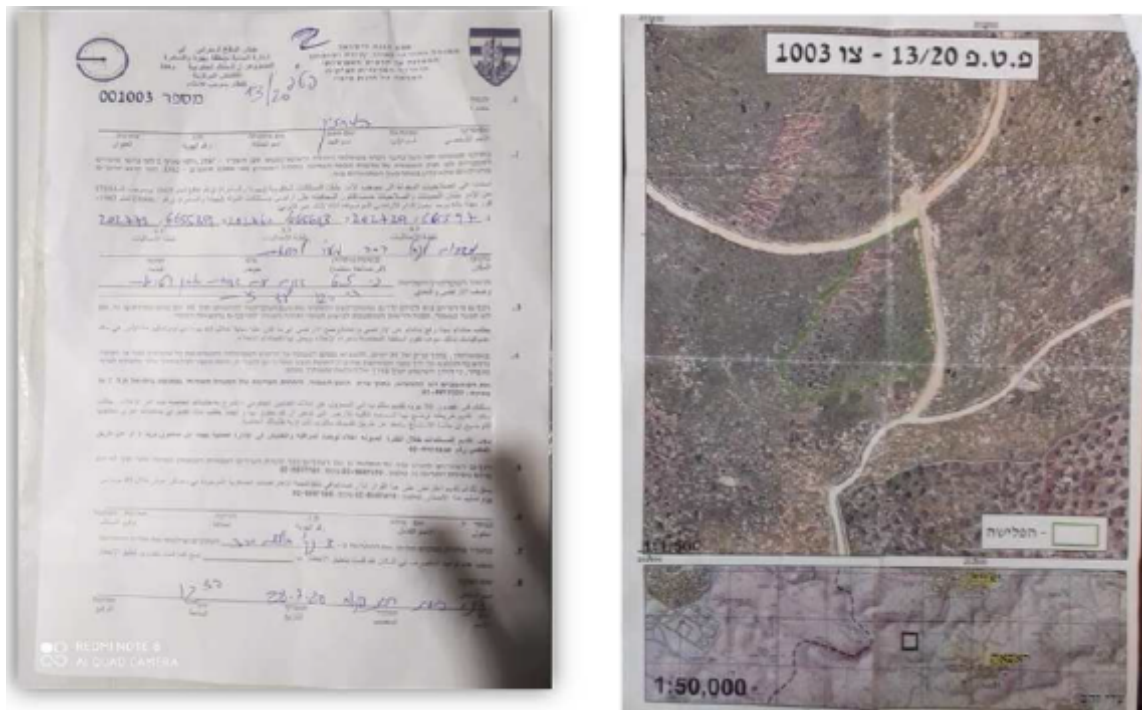


Figure 59 Olive grove to be taken via a military order (LRC 2021).

3.7 Ramallah and AlBireh

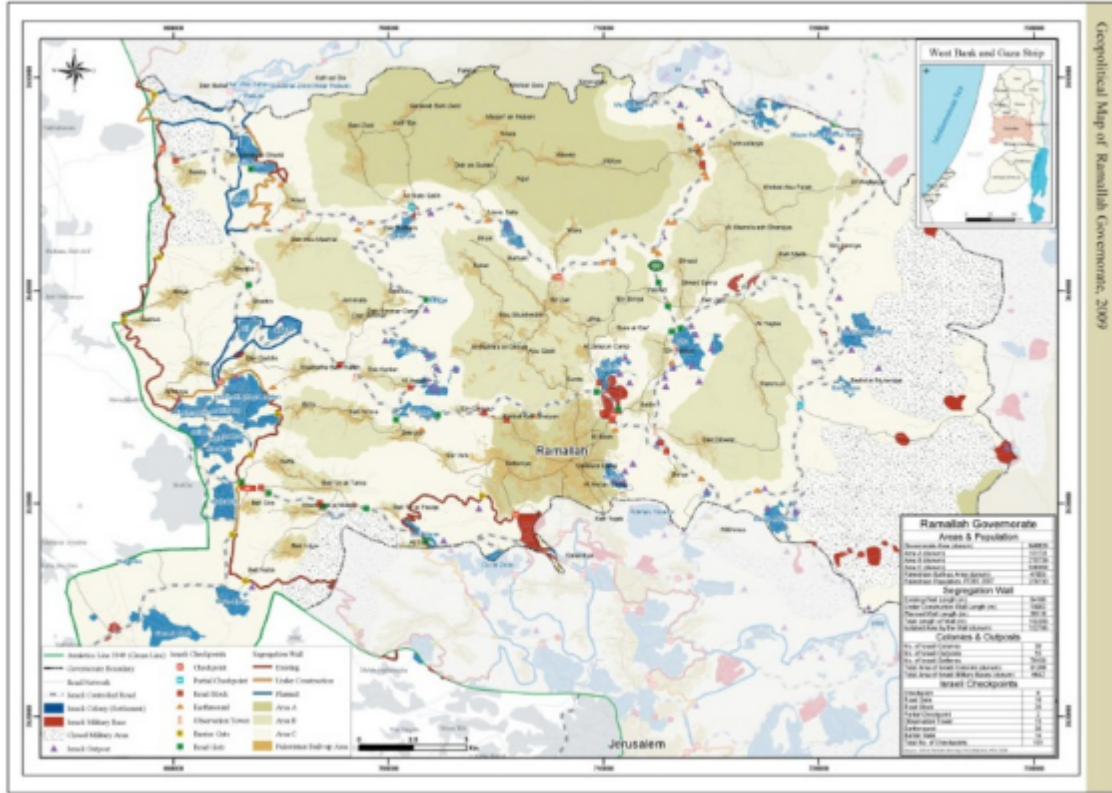


Figure 60 Ramallah Governorate (ARIJ).

This governorate is named after the two adjacent villages (one that was predominantly Christian and one predominantly Muslim). The villages prospered starting in 16th century and became large towns by the 19th century. The governorate has many villages of fame like Al-Jib, Um AlSafa, Nabi Saleh, Beilin, Deir Dibwan, and many others each with its interesting and deep rooted history. For example significant archaeological finds are in Beilin and in Tel Al Tel (near Deir Dibwan going back to 3300 BC). In this governorate is the Latrun area which is contested area between the West Bank and 'Israel' and between 1949-1967 was a no-man land in terms of military. Three villages were destroyed in this area and replaced with what is called Canada Park.... Al-Latrun Monastery near Bab Alwad.

Very detailed work on the governorate as a profile including environmental issues and occupation challenges is provided in ARIJ (2014c). Here we summarize some things and provide more updated information but much more work is needed. Thirty three settlements and over 50 outposts housing over 121,000 settlers are in this governorate.

Table 13 Israeli violations in the governorate 2001 to 2011 (ARIJ 2014c).

Date	Land Confiscated (Dunum)	Uprooted Trees	Demolished Houses	Houses Threatened of Demolition
2001	12,758	9,420	5	24
2002	834	282	35	0
2003	4,655	64,398	28	30
2004	22,002	30	17	8
2005	10,383	1,607	2	6
2006	705	500	10	1
2007	500	0	1	0
2008	320	81	2	3
2009	179	635	0	4
2010	7,243	845	10	54
2011	1,315	435	8	1
2012	30	790	0	2
Total	60,924	79,023	118	133

One of the areas of injustice explained by Al-Haq (2015b) is the situation of Rantis which lost lands to Israeli building of the wall that excluded the village from oil fields which were now on the other side of the wall. Israel justified this by security needs (military order issued in Rantis, “Order to Seize Lands No. 03/69/T (Judea and Samaria) 2003 . However “military need” advanced immediate military need cannot be used in this case [see *Lucchesi v. Malfatti*, Court of First Instance of Florence, December 10, 1945, Annual Digest and Reports of public International Law Cases Year 1946, (London Butterworth & Co. (Publishers), Ltd., 1951) p. 378, Case No. 160; *Play v. Ruffin*, France, Tribunal Civil de Rouen (Summary Jurisdiction) May 13, 1946, Annual Digest and Reports of public International Law Cases Year 1946, (London Butterworth & Co. (Publishers), Ltd., 1951) p. 382.] It was clearly to benefit Givot Olam Oil Exploration for the production of petroleum. Indeed in *Duweikat et al v Government of Israel* (1979), the Israeli High Court of Justice advanced that “the military necessities to which the Article [52] refers cannot include, by any reasonable interpretation, the needs of national security in their broader sense” (HCJ 390/79 *Dweikat v. State of Israel*, PD LED (1979) p. 17. via Al-Haq 2015a)

Seven of 12 springs in the Natuf area west of the district showed fecal material pollution (Ghanem 2021). To the north of the governorate is a cluster of villages (Beni Zeid Village cluster wit important agricultural and natural landscape that is threatened by a number of threats produced locally (urbanisation, septic tanks etc) and by Israeli activities (Aqua and Hope 2021; Qumsiyeh and Al-Sheikh 2023) There is a non-regulated solid waste dump site between Aboud and Beit Rima.

Land degradation and overuse of natural resources in the northeastern third of this governorate is highly evident and is related to economic impoverishment - a direct consequence of the Israeli occupation (**Abu Hammad and Tumeizi 2010**)

According to B'Tselem (2009) “ After a plan to build a facility in West Ramallah, submitted to the JWC in July 1999, was approved, the Civil Administration demanded a change in location, on grounds that it was located along the planned route of the Separation Barrier. In September 2008, the head of the Civil Administration approved construction of the plant but required the Palestinians to connect the Beit Horon settlement to it. The plan for the facility has not yet been submitted to the Civil Administration for approval.”

Israeli authorities continue to expand settlements at the expense of Palestinian villages and state land in this governorate. For example on 3 August 2020 it advanced plans to expand the settlement of Talmon by 377 dunums at the expense of Ras Karkar area (LRC 2021; Fig. 61). In 2021, the Land Research Center (2022) found that the occupation authorities, settlers, and colonial organizations confiscated over 3500 dunums of land, planning 1714 new colonial units and 2 dunums of land for settler roads and residential units. Furthermore, from 2012 to 2021, the occupation authorities and settlers have destroyed just under 40000 trees, mostly olive trees and demolished 22 reservoir and tanks and cisterns in 2021 (LRC, 2022).

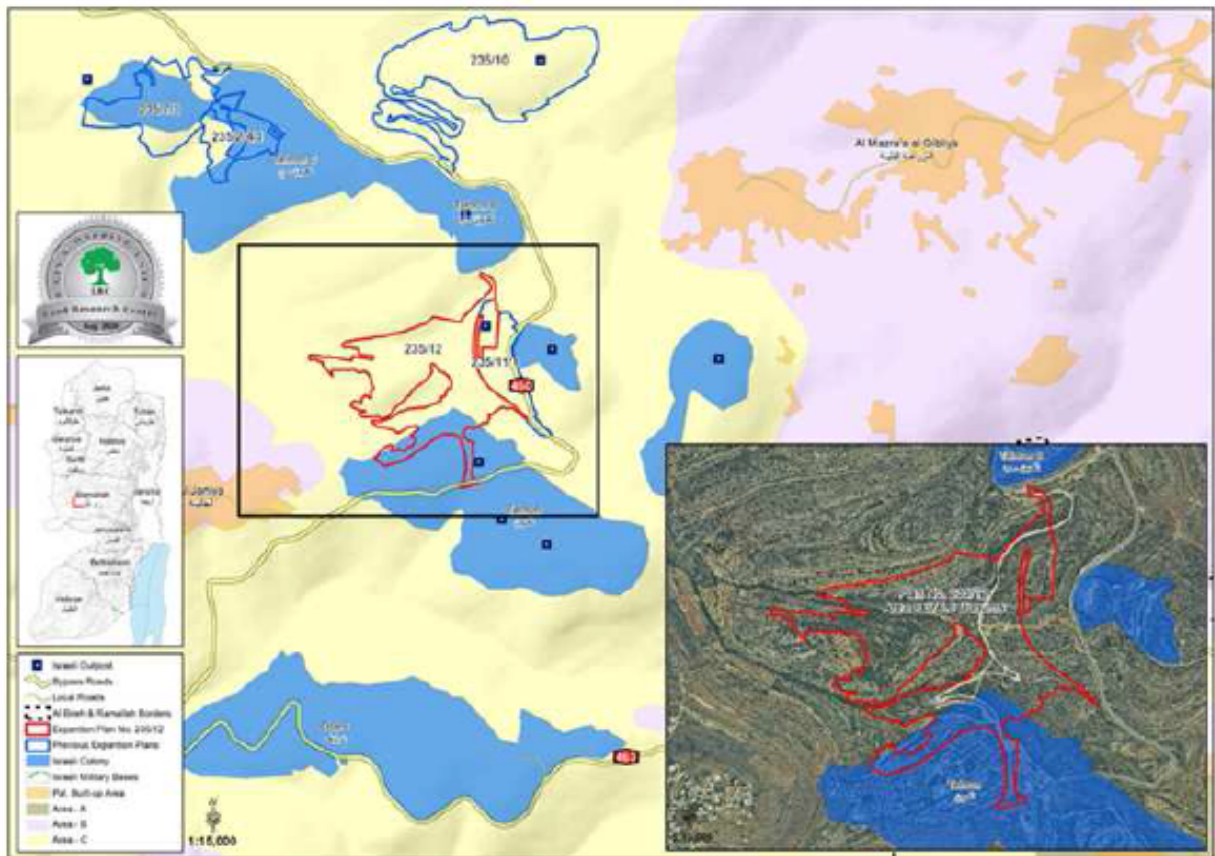


Figure 61 Plans to expand settlement of Talmon (LRC 2021).

3.8 Jericho

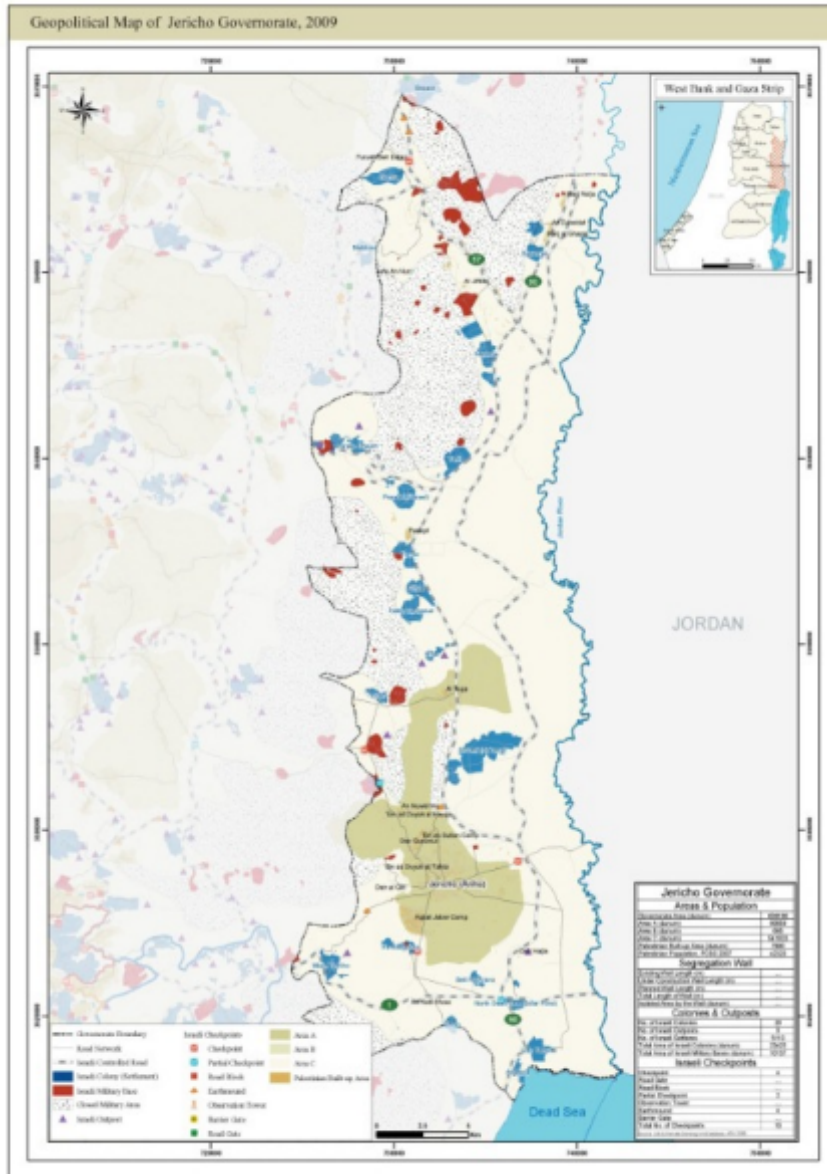


Figure 62 Jericho Governorate (ARIJ).

Jericho is a town that was continuously inhabited since the dawn of agriculture era, about 11,500 years ago. As one of the oldest (if not the oldest) town/village, it has amazing features including the archeological site of Tel Al-Sultan. There were two refugee camps in Jericho stemming from the Nakba (Ain AsSultan and Aqbat Jaber) but most of the residents fled to Jordan in 1967. Wadi Al-Qalt brought water from three springs (Fara, Fawwar, Qelt) for thousands of years. Together with local springs like Tel-AlSutan, Ain Al-Auja and others, Jericho had ample agriculture including in the old days sugar cane. Sugar cane press and many other archeological sites (Tela Abu Al-Alayiq, Herod's winter palace, The Sycamore tree mentioned in the Bible in association with Jesus, the Babtismal site etc). There is also Deir Hijleh Monastery (one of the oldest historically

455 AD by St Gerasimus), and Deir Qarantel (Monastery on the soi called Mount of Temptation). Qumran caves are also the caves where the Essenes kept bible scrolls that were in the Palestine Museum (aka Rockefeller museum) in Jerusalem but were illegally taken to the Israel museum in West Jerusalem.

In Faisayel village, located in Jericho Governorate, solid lead waste has been transported from inside the Green Line into the village (Aidy et al., 2017). In 2014, 25 cows were killed, likely due to the ammonium in the water discharged from the settlements. Upon analysis of water content, it was discovered there are also high levels of pH and nitrate and since 2010, there is strong evidence that liquid waste has been released into the Jordan River from Tovlan, an Israeli dumping site (Aidy et al., 2017). Land confiscation and damage are sites of continuous destruction to Palestinian culture and environment, with 1308 dunums of land confiscated for colonial purposes, such as the construction of Israeli natural reserves and settler roads (LRC, 2022).

According to B'Tselem 2011 “East of Route 90, along the Jordan River, are 64 sections of land – 16,973 dunams, constituting 1.1 percent of the Jordan Valley and northern Dead Sea – in which Israel buried hundreds of thousands of mines, most of them anti-personnel. Even following the Israeli-Jordanian Peace Treaty, in 1994, Israel did not remove the minefields. On the East Bank, the Jordanians cleared some 100,000 mines, enabling the land to be used once again as farmland...In 1995, Israel signed the Convention on Prohibitions or Restrictions on Certain Conventional Weapons, and in 2000, joined Protocol II of the Convention, which restricts the use of mines that are liable to be excessively injurious. In November 2006, Israel reported to the Convention's committee that the army had removed 40 minefields against tanks in the northern Jordan Valley, at a cost of five million shekels.60 Israel has not signed the Mine Ban Treaty, which took effect in 1999. The treaty completely bans the use of mines and requires their removal.”

According to B'Tselem (2011): “ Israel drilled three deep wells west of al-A'uja, next to the Yitav settlement (Naran 2, 3, and 4). The drillings, like those next to Bardala and Ein al-Beida', are located on the hydrologic channel of the Mountain Aquifer, between the recharge area of the aquifer in the central West Bank mountain strip and the aquifer's eastern outlet in the Jordan Valley. As a result, the quantity of water produced from the seven active wells in the area of Al-Auja dropped by 38 percent from 2000 to 2008: in 2000, the Palestinians pumped 700,000 m³, and in 2008, 433,000 m³, which were intended for the village's 4,717 residents. The quantity of water pumped in 2008 was only 21 percent of the quantity that Israel pumped in the nearby drillings for the Yitav settlement that year, 2.06 million m³. Of the water pumped, 1.2 million m³ were allocated to Yitav, in which 227 settlers live, and the remainder for nearby settlements. Representatives of al-A'uja Local Council told B'Tselem that, as a result of the Israeli pumping, the quantity of water that al-A'uja's wells can pump in December and January drops and the village's principal spring is dry eight months of the year”. From 2008 to 2021, Jericho has recorded 83 cases of demolished and damaged cisterns, pools, reservoirs, artesian wells, and springs in Area C (LRC, 2022).

Israeli colonial settlers exploit water and land of the Jordan valley and according to B'Tselem (2011): “The agricultural produce of settlements in the Jordan Valley and northern Dead Sea amounts to about 500 million shekels a year [$>$ \$130 million], most of which is for export, mostly by the Agresco company and under the ‘Carmel’ brand name.”. From 2012 to 2021, Jericho governorate suffered from 2075 tree loss and damage due to occupied forces and settlers (LRC, 2022).

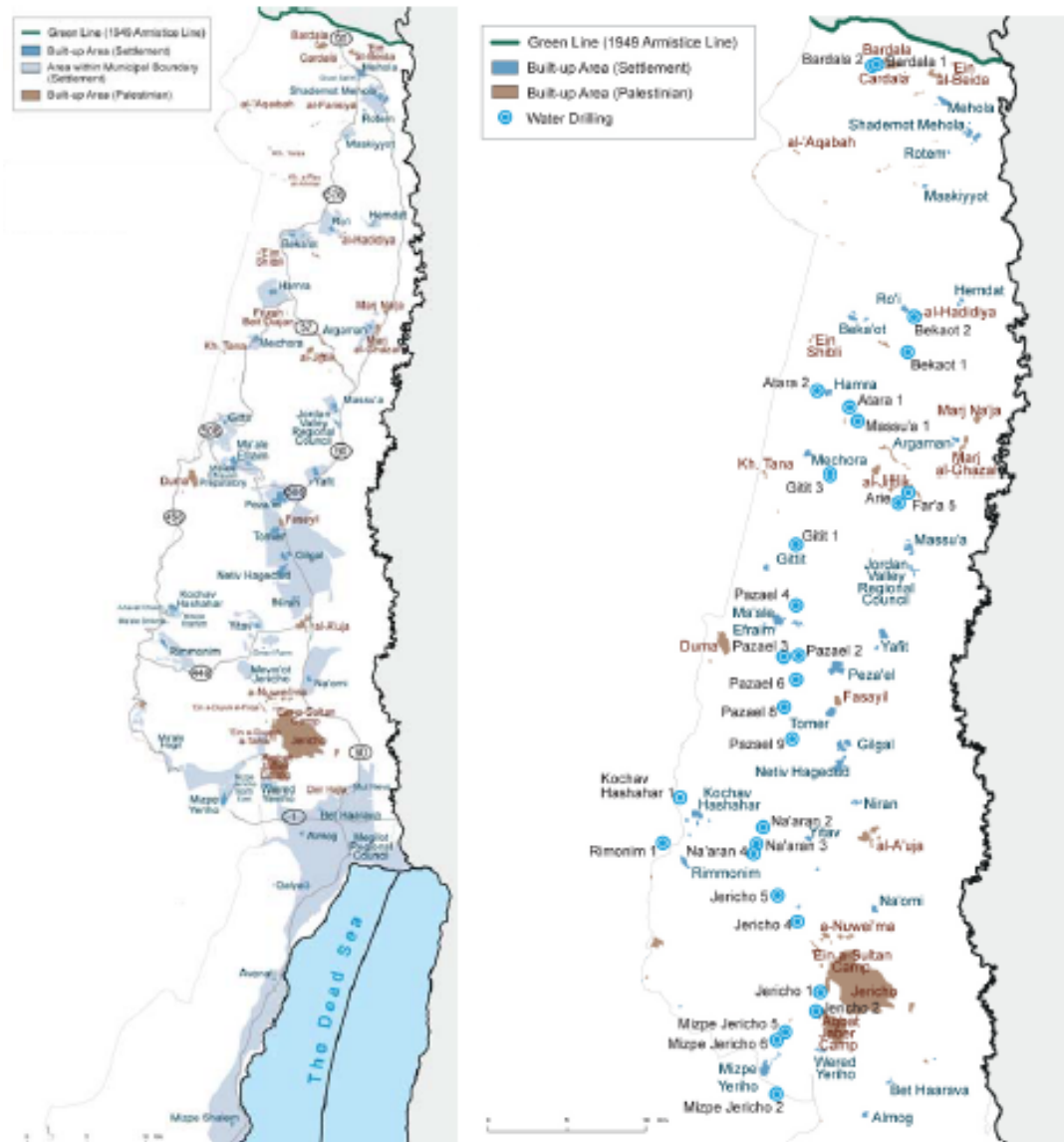


Figure 63 Settlements (left) and Israeli water drilling in the Jordan Valley and north dead sea (B'Tselem 2011).

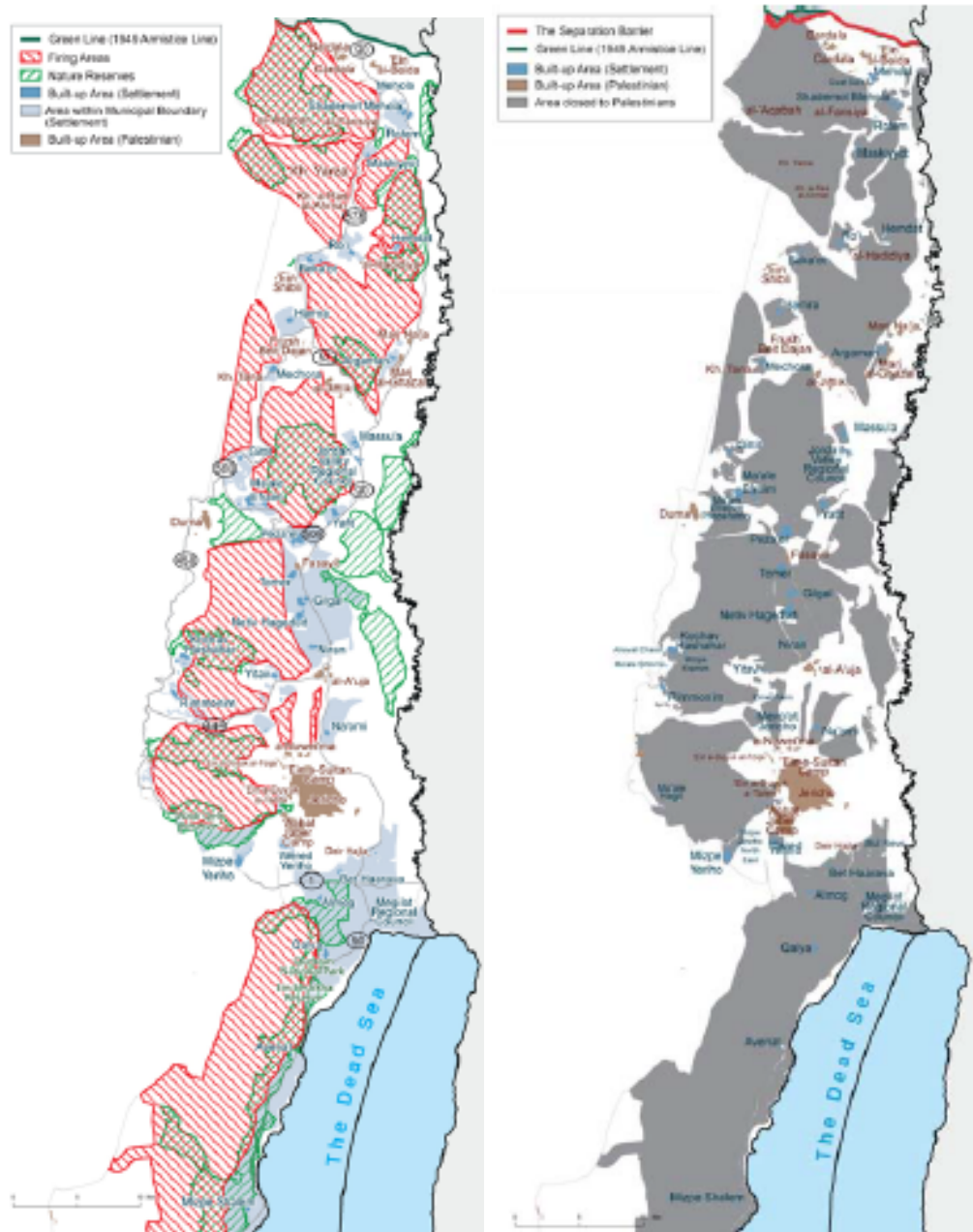


Figure 64 Firing range and Nature reserves (left) and areas closed to Palestinians (open to Israeli settlers) (right) in the Jordan Valley and north dead sea (B'Tselem 2011).

Checkpoints restricting movement and diminishing quality of lives and livelihoods for Palestinians in the Jordan Valley (B'Tselem 2011):

- Tayasir, east of the village al-Aqabah,
- Hamra (Beka'ot), east of the Hamra settlement.
- Ma'ale Efraim Checkpoint, at the Gittit junction, west of the Ma'ale Efraim and Gittit settlements.

-Yitav Checkpoint, west of al-A'uja, is the southernmost checkpoint in the Jordan Valley. It controls Palestinian movement toward the central and northern sections of the Jordan Valley. Movement in the direction of Jericho is unrestricted

-A checkpoint in the northern Dead Sea area, north of the Mizpe Shalem settlement

-A checkpoint, intended to prevent entry into Israel, in the northern Jordan Valley, north of the villages Bardala and Cardala.

“North of the Yafit settlement, next to Tirza Reservoir, the Samaria Towns Environmental Association operates the Tovlan waste-disposal site. Alongside it is a fertilizer-manufacturing operation that uses the waste from the Tovlan site. The Tovlan site has been operated since the 1990s as a private business, without a plan approved by the regional council, and without infrastructure to prevent ground pollution and emission of greenhouse gases, or a plan to rehabilitate it. In 2004, the Towns Association upgraded and enlarged the facility to give it a “national dimension,” with a capacity of a thousand tons of refuse a day.” (B’Tselem 2011)

Israel also exploits touristic and archeological sites in the area including Qumran Caves, Ain Fashkha, Qasr Al-Yahud (Baptismal site), and Wadi Qelt.



Figure 65 Baptismal site showing the decreased level of water now basically a cloudy stream. Also shown Jordanian side across the stream (photo 24 Jan 2023 by PIBS/Qumsiyeh). The picture is taken from the vantage point of where water was in the 1940s.



Figure 66 Ein Al-Qelt (photo 8 Jan 2023 by PIBS).

For home demolitions and other destructions of lives and livelihoods in the Jericho governorate and the rest of the Jordan valley, see B'Tselem (2011).

3.9 Jerusalem and its "envelop"

Jerusalem, the central city in Palestine remains also at the center of the conflict. Under the UN General Assembly Resolution 181 recommending partition of Palestine into a Jewish and an Arab state with economic union and integration, Jerusalem area including Bethlehem was envisioned to be a *corpus separatum* – a separate entity not under the jurisdiction of either state (see Fig. 67). In 1949 Israel occupied the western Part of Jerusalem ethnically cleansing all communities there. In 1967 Israel occupied East Jerusalem and proceeded to wreak “havoc with prevailing conceptions over what constitutes Jerusalem.. [s]ymbolic and social boundary reconstruction is at the heart of the Israeli–Palestinian conflict, a powerfully organized mechanism that tilts power to Israel with the use of bulldozers, bricks, and cranes as well as tanks and weapons” (Shlay and Rosen 2010). Israeli colonial history of Jerusalem is understood now as a process “transformation of the material, symbolic, and political landscape of the metropolitan area of Jerusalem” (Allegra 2013). Further Identity politics (aka Zionist discourse) shaped city planning in Jerusalem (Andersson 2011). Master plans were promulgated early on driven by ideology for the greater Jerusalem are catastrophic for Palestinian presence in Jerusalem to essentially Judaicize Jerusalem ad the eternal capital of a Jewish state (Benvenisti 1984; Adalah 2008; Chiodelli 2013, 2016; Chesin et al. 1999; Clarno 2008).

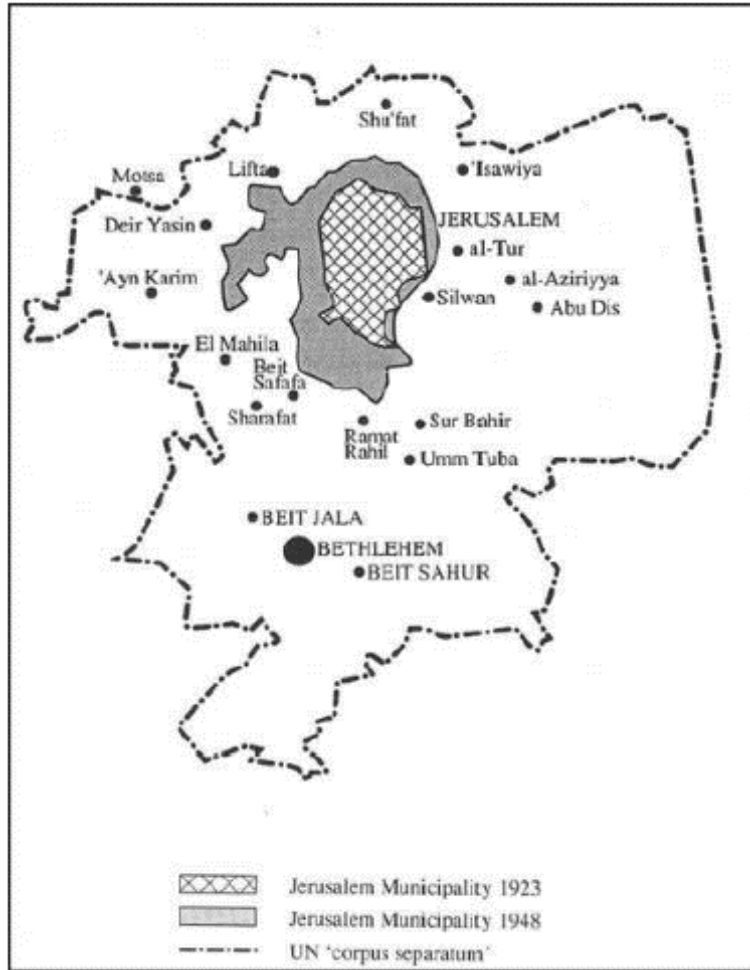


Figure 67 Jerusalem proposal per UNGA181 (Dumper 1996).

The situation of Jerusalem is particularly of concern. Israel occupied Western parts of Jerusalem in 1948 removing the Arab population there and occupied the Eastern Part of Jerusalem including the old city in 1967 subsequently annexing it and other areas as a “greater Jerusalem” under its jurisdiction. The latter is not recognized by the world community and is against International law. Consensus emerged supported by the European Union that the areas occupied by Israel since 1967 are to comprise the Palestinian state in a “two-state solution”. Israeli actions such as colonial settlements in the Occupied West Bank (including Jerusalem) and separating Arab East Jerusalem from the rest of the West Bank are deemed illegitimate and contrary to International law. These projects also break a social and economic fabric forged across hundreds and thousands of years.

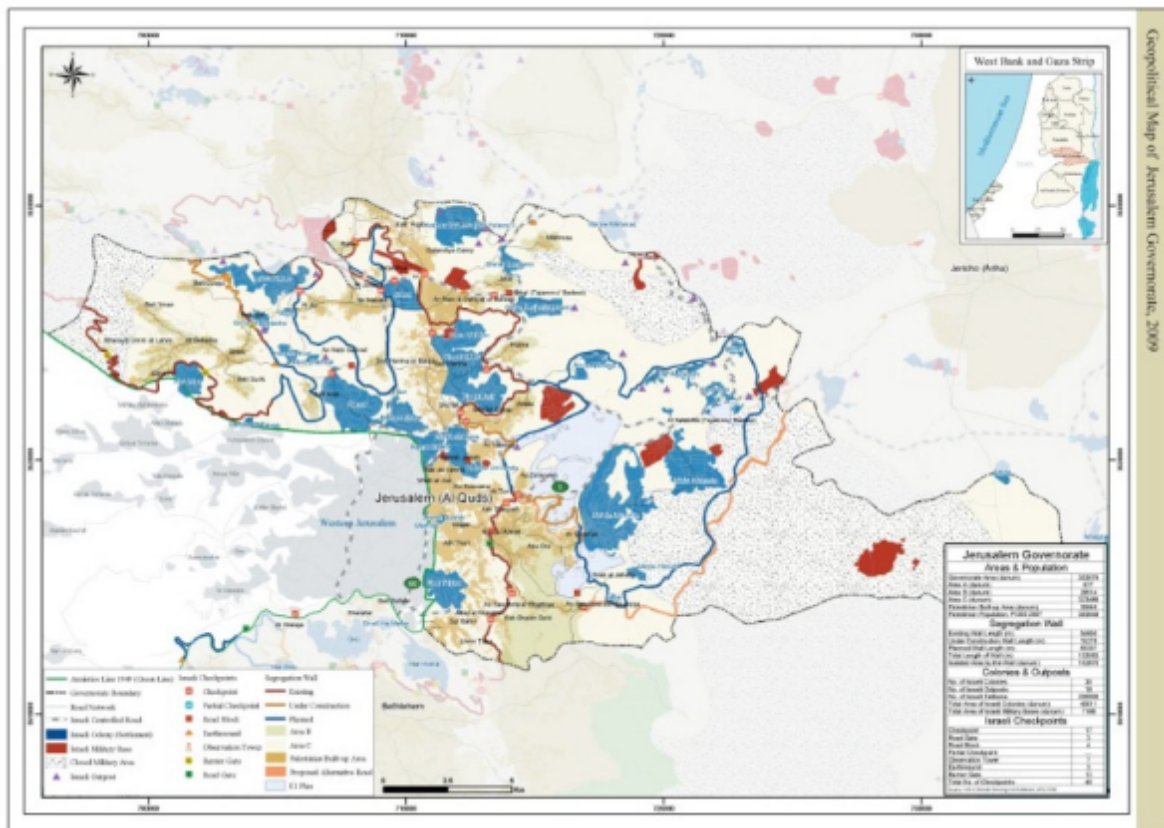
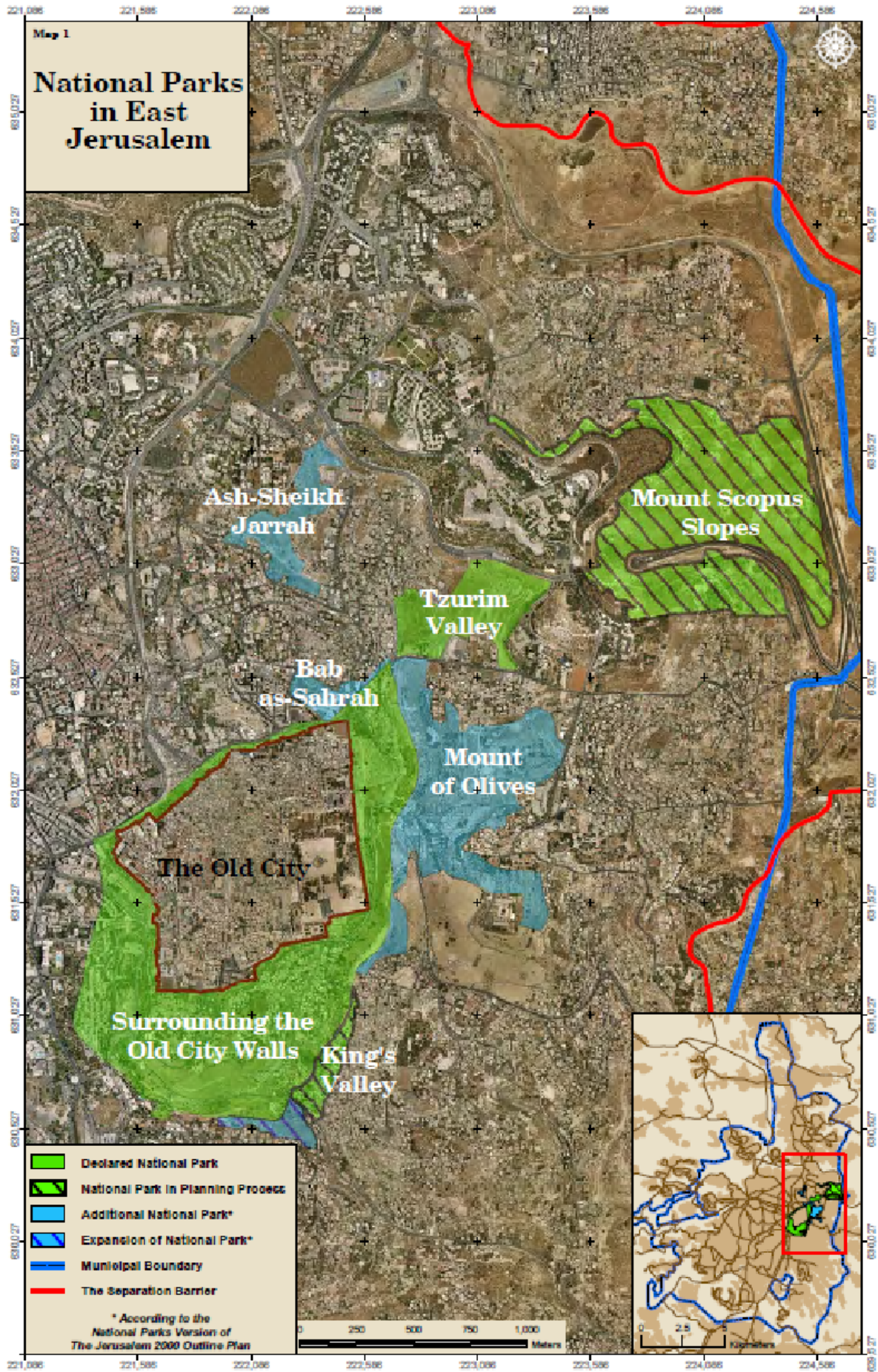


Figure 68 Jerusalem District (ARIJ 2014a).

The main city in this governorate is Jerusalem, established at least 6,000 years ago by the Cananitic tribe calling itself Yebus (Jebus or Jebusites) and named Ur Salem by them (the abode of their deity Salem or Shalem). Later conquered by many kingdoms and empires (Persians, Romans, Egyptians, Israelites etc). But it was continuously inhabited by the local Cananites even as they converted to new religions (mosais laws, Christianity, Samaritism, Rabbinical Judaism, Islam, Bahai etc). Ruled since the 4th century AD as part of Islamic lands but respecting the other local religions. The current old city is one of the best models of Islamic cities with Armenian, Christiian, Muslim, and Jewish quarters. The two holiest places in Jerusalem are the Al-Aqsa mosque compound (including Al-Aqsa mosque and the Dome of the Rock) and the Chrch of the Sepulchre and the associated via de la rosa. To the east of Jerusalem is Al-Eizariya (Cananitic Bethany or Beitani) named after Eliazar who was raised from the dead by Jesus according to the New Testament. The village of Abu Dis now houses Al-Quds university with good research centers studying the human impact on the environment.

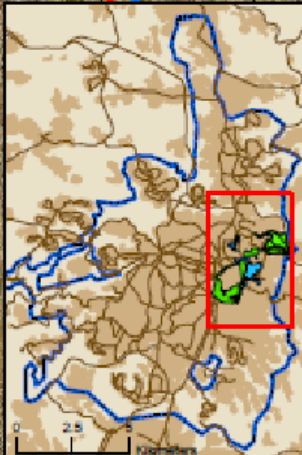
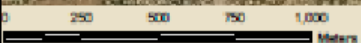
Very detailed work on the governorate as a profile including environmental issues and occupation challenges is provided in ARIJ (2014a). Here we summarize somethings and provide more updated information but much more work is needed.



May 1
National Parks in East Jerusalem

- Declared National Park
- National Park in Planning Process
- Additional National Park*
- Expansion of National Park*
- Municipal Boundary
- The Separation Barrier

* According to the National Parks Version of The Jerusalem 2000 Outline Plan



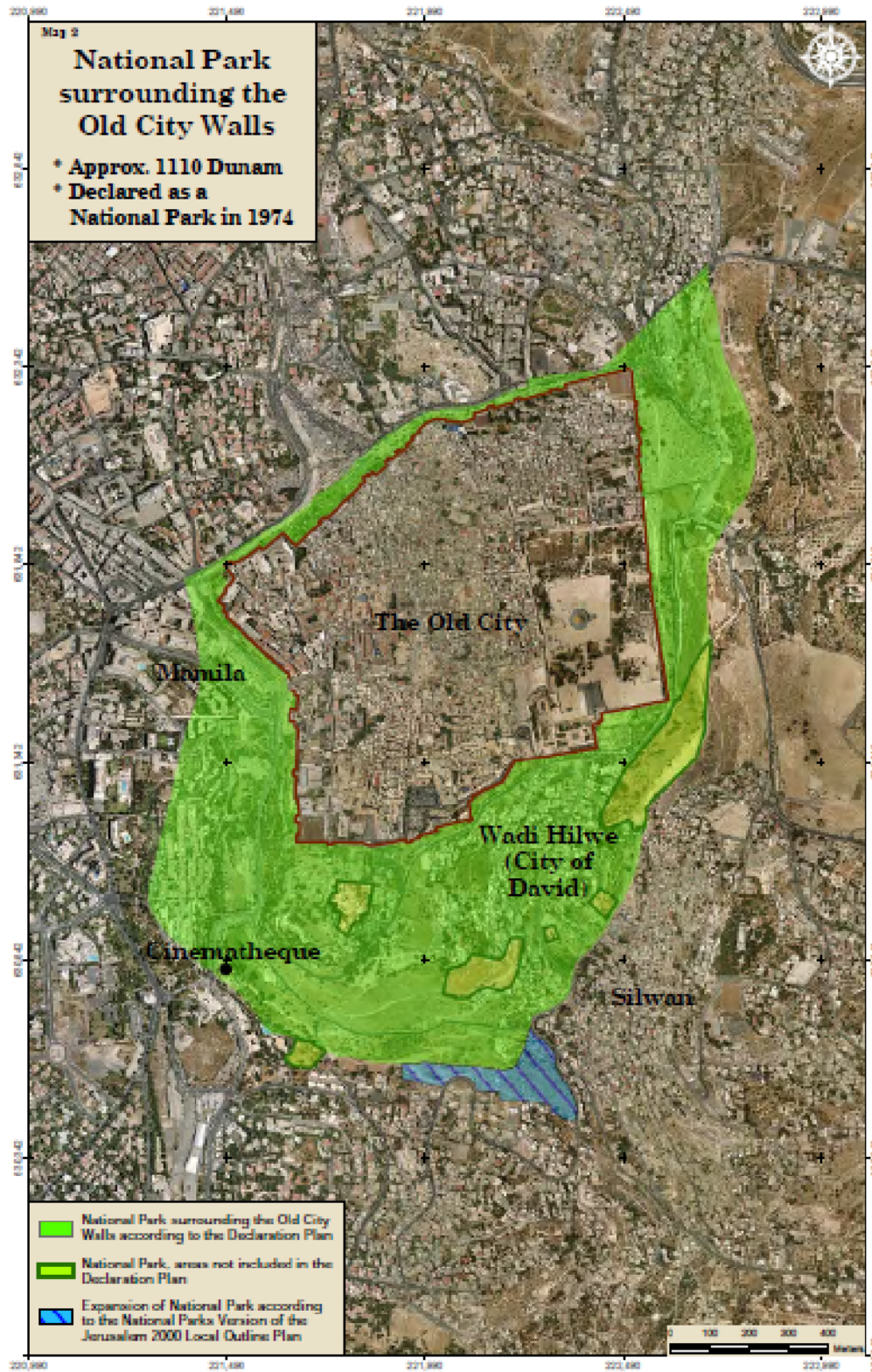


Figure 69 Use of “national parks” to drive Palestinians from Jerusalem (Binkom 2012).

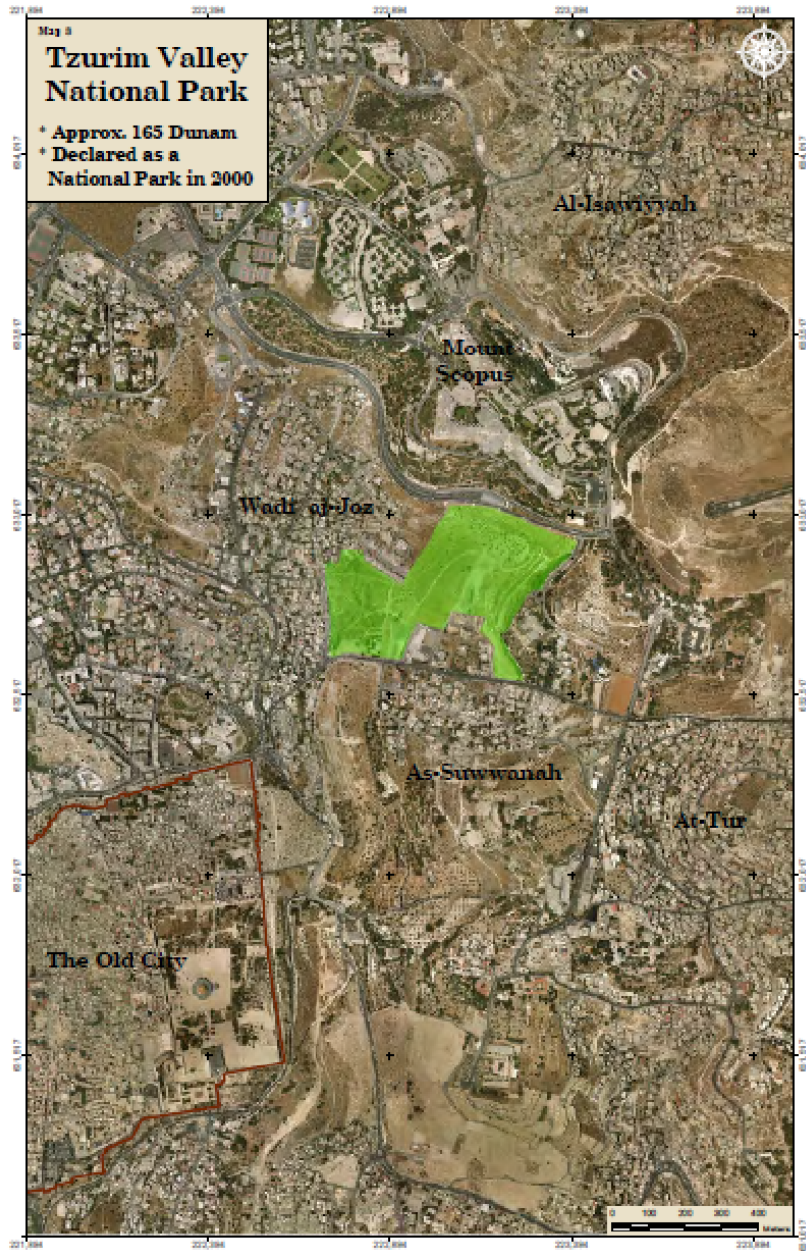


Figure 70 “Tzurim Valley National park” limiting Wadi Al-Joz and Suwwana development (Bimkom 2012).

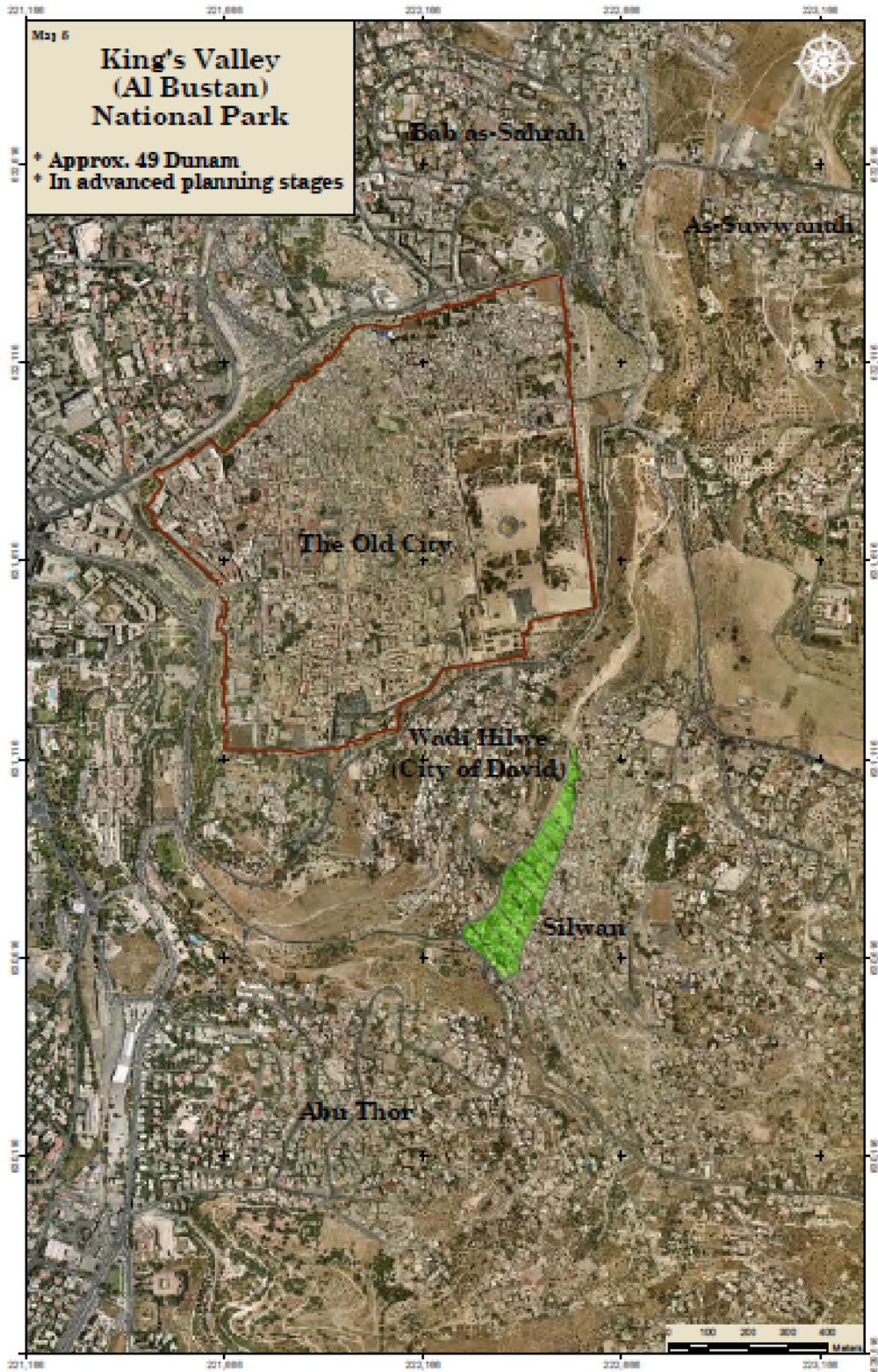


Figure 71 King's Valley National park" limiting Silwan and Wadi Al-Hilweh development (Bimkom 2012).

Elad, the right-wing Israeli nonprofit that INPA and the Israel Antiquities authority has entrusted in 2002 with managing the City of David National Park. Excavations

intensified and in 2018, the Israeli government allocated a staggering \$18 million to excavate (Braverman 2023). By 2015, 400 settlers occupy 54 outposts colonized Al-Bustan and Wadi Al-Hilweh neighborhoods of Silwan (UN Human Settlements Programme 2015). See also Greenberg (2009) on situation of Silwan.



Figure 72 Mount of Olives National Park (Bimkom 2012).



Figure 73 AlShaikh Jarrah “Shi,mon Hatzedek” National Park (Bimkom 2012),

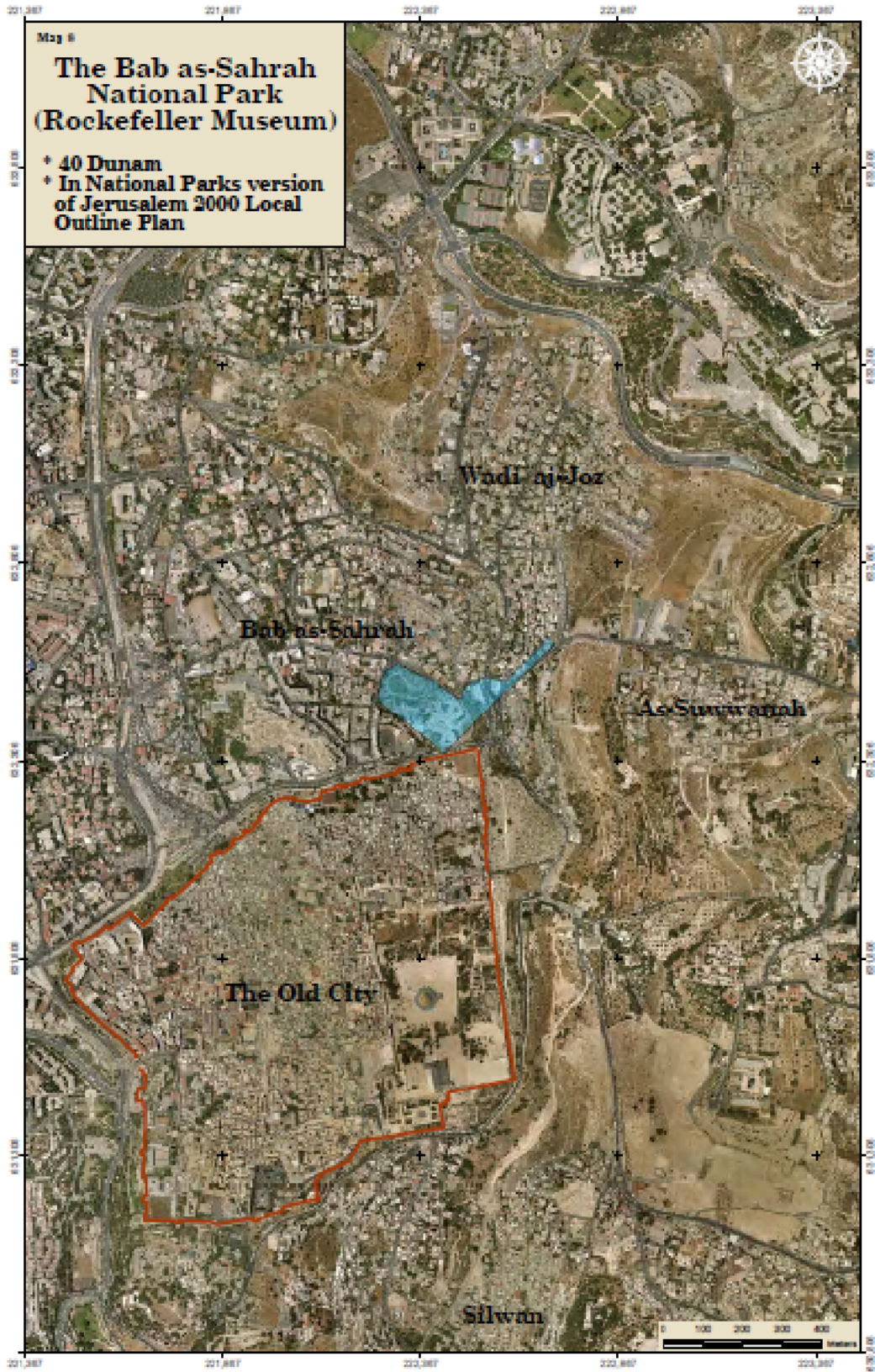


Figure 74 Bab Al-Sahera/Rockefeller National Park (Bimkom 2012).

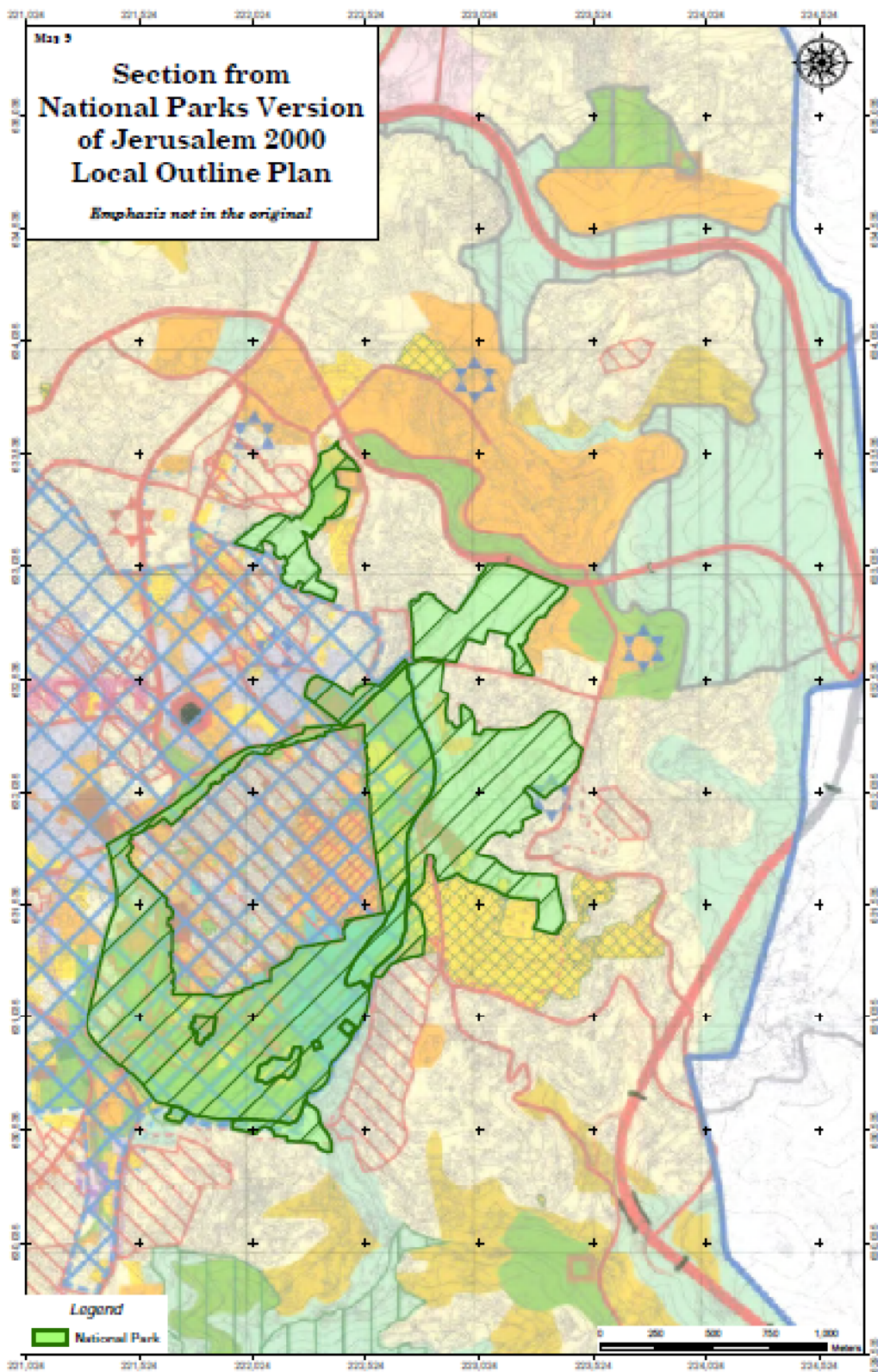


Figure 75 Map of so-called National Parks system intent on Judaizing Jerusalem (Bimkom 2012).

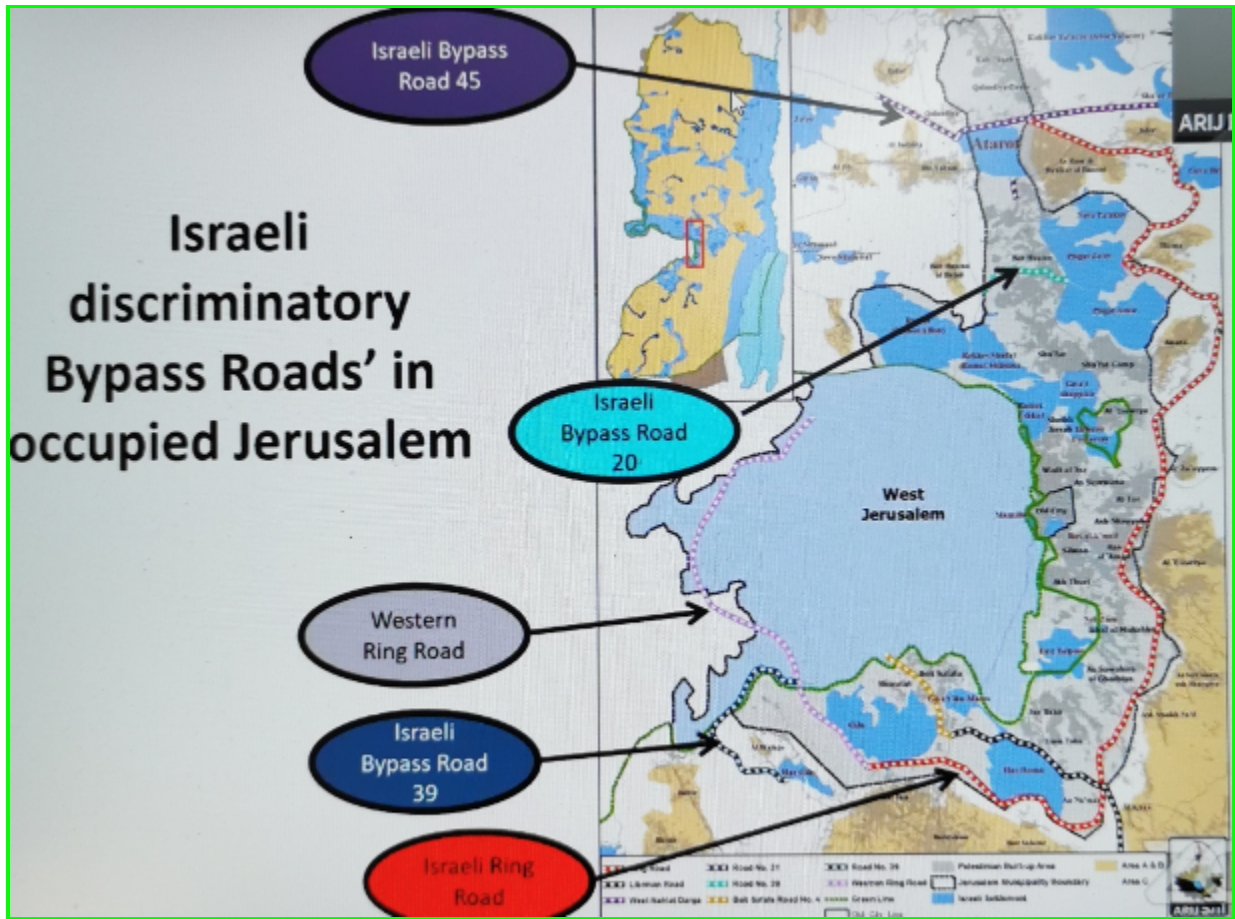


Figure 76 Alternative or bypass roads in the West Bank (ARJ).

Four new factories have been added to Sha'ar Binyamin the Israeli industrial zone in Jerusalem Governorate in one year 2014 (LRC, 2014). The growth since 2014 has been staggering. There is also the long delayed but soon to be implemented settlement in the E2 area just to the north of Maale Adumim which was suspended by US pressure on at least three occasions (Peace Now 2018b). Now, the greenlight was given by a recent decision by the high court to allow the removal of the Jahhalin Bedouin communities in the area (Khan Al-Ahmar).

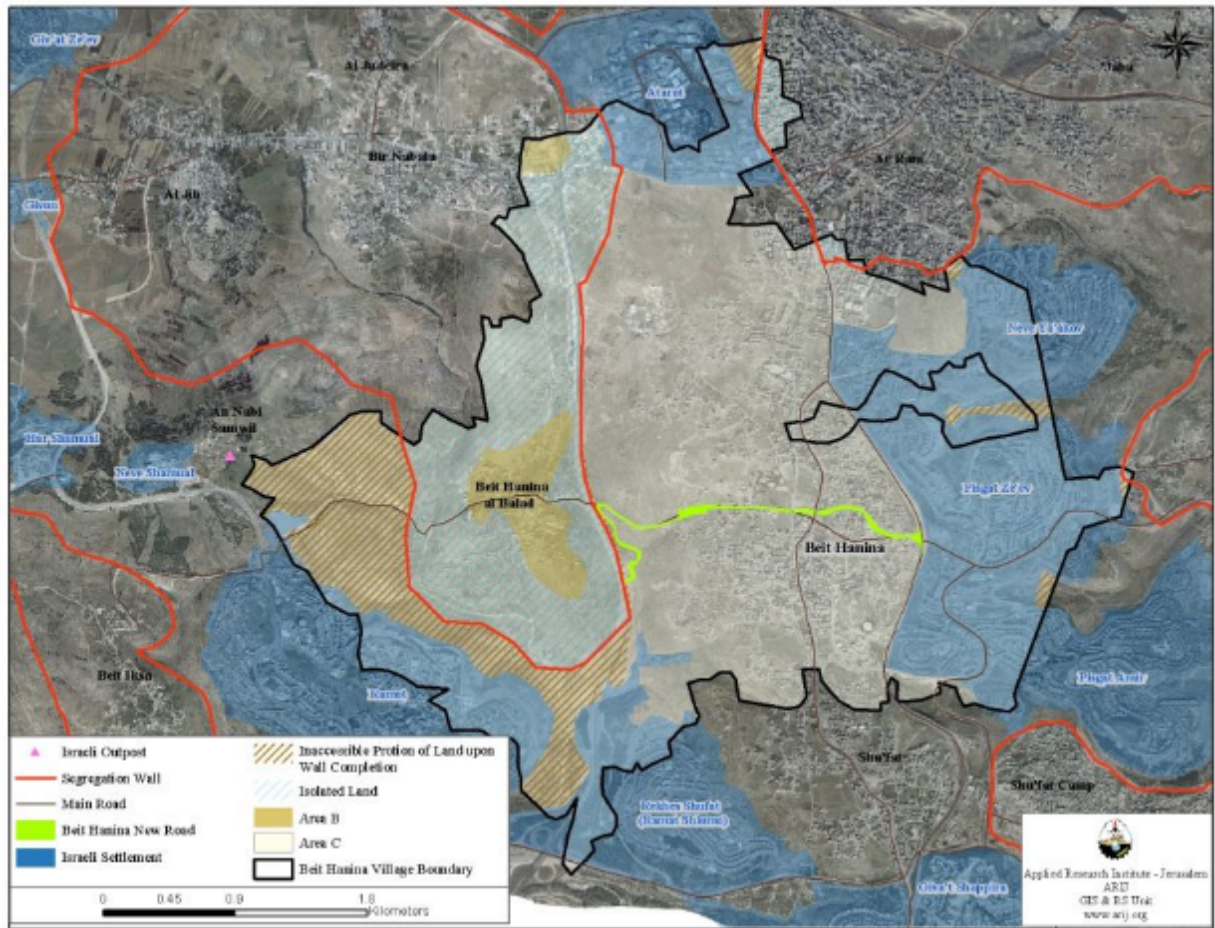


Figure 77 Separation wall around Beit Hanina (ARIJ).

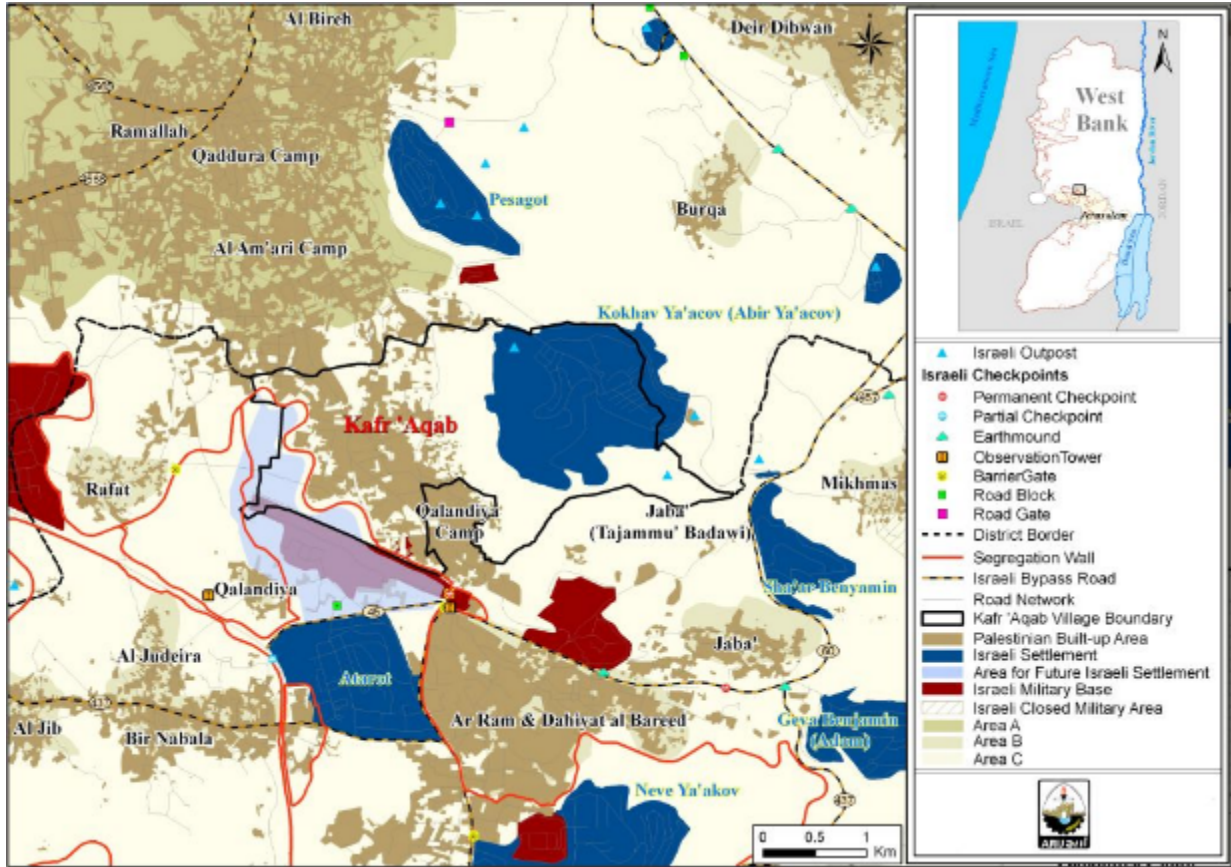


Figure 78 The complicated settlements areas between and on top of Palestinian built-up areas between Jerusalem and Ramallah (ARJ).



Figure 79 Nebi Samuel, depopulated Palestinian village ethnically cleansed after 1967 is now designated a “national park.” Older photo from 1910 (Shiff 2017) and newer one from the internet.

The three villages Imwas, Yalu and Beit Nuba were raised soon after the 1967 occupation of the West Bank to build the so called Canada Park and develop agricultural areas in the Latrun Valley (Bronstein 2014; Munding 2017; Broadhead 2020; Shaked 2022; Fig. 73).

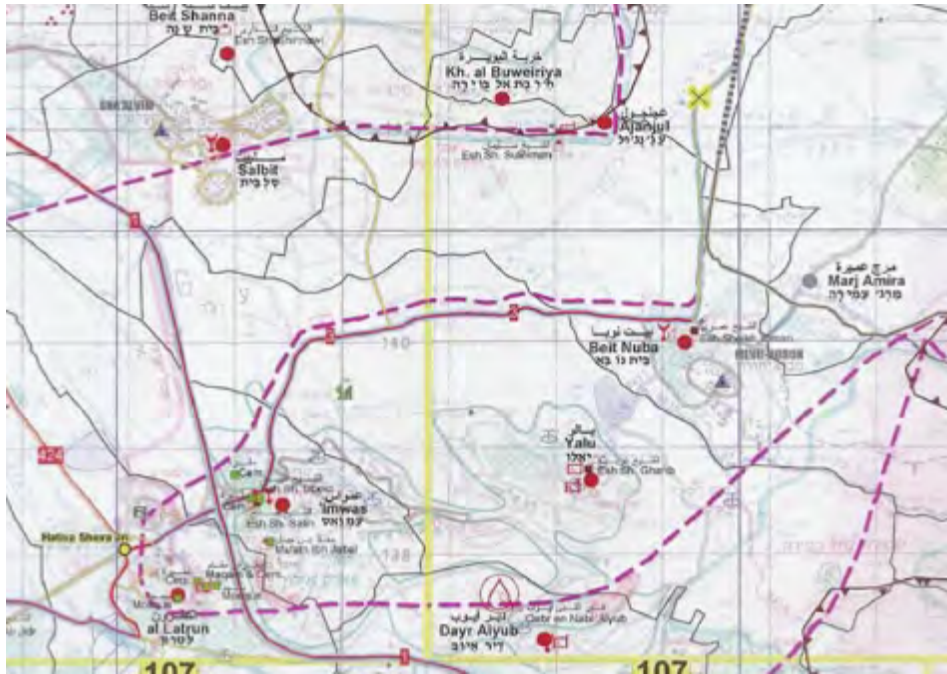


Figure 80 The three villages destroyed and sign for “Canada Park” (Bronstein 2014).

The three villages (together with the Moghrabiu Quarter in Jerusalem) were ethnically cleansed immediately after the occupation of 1967.

The three villages are not in the **no-man's land**, the 49 sq km disputed areas at the temporary ceasefire line between the West Bank and what became Israel. For that area, Israel stopped considering it as West Bank (Judea and Samaria) administered territory and essentially de facto included in Israeli territories. Most of these actions were taken because of the desire to expand the Jerusalem envelop in line with the Allon plan and plans that follow for hegemony on the wWB (see Section 1 background). The expansion and Israelization of **Jerusalem** borders and its de facto annexation in 1967 followed by the Knesset Jerusalem law of 1980 ensured annexation of large swaths of Palestinian territory (against the Geneva Conventions)

The wall devastated Palestinians in East Jerusalem, changing their socioeconomic status for example in Al-Eizariya area (Dhaher 2016) and in Beit Anan (Ajarma et al. 2016) and in Kubsia junction (Mansour and Samman 2022) creating dead-end situation to try to empty Palestinians from the Greater Jerusalem area

Waste is used as a weapon in driving Palestinians out of Jerusalem (Baumann & Massalha 2022). The industrial settlement Binyamin also dumps toxic waste on the area of Mikhmas (POICA 2014)

Land and crops are continuously under attack for authority and settler agendas. In 2021, 300 dunums of land and crops have been bulldozed, soaked with sewage water, vandalized, and attacked by arson, and there have been a recorded 24881 trees which have been destroyed between 2012 and 2021 (LRC, 2022). Furthermore, Israel designates parks including archeological parks and “nature parks” in Jerusalem for ideological reasons and the Palestinians in those illegally occupied areas for decades have no say in this (Braverman 2021B). National parks in Jerusalem violate Palestinian Human Rights (B'tselem http://www.btselem.org/download/gan_czavim/en.html and there is no more blatant example of this than the control of areas in Silwan for the settler managed (authority given by INPA) City of David Park (Braverman 2021a,b). Yet “the City of David National Park is part of a much broader and more ambitious Master Plan for green corridors in and around Jerusalem, newly referred to as the Jerusalem Park.

The Jerusalem Park is the largest national park in Israel and encompasses 15,000 dunam, or 15 square kilometers. The reason that these areas were not simply declared green zones within Jerusalem's municipal plans but were instead designated as national parks under the National Parks Law” (Braverman 2021b). Recent efforts to isolate Jerusalem through the development of settlements have amplified in recent years, with occupation authorities and settlers confiscating 3230 dunums of land for settler roads and residences and for other settler use in 2021 (LRC, 2022).

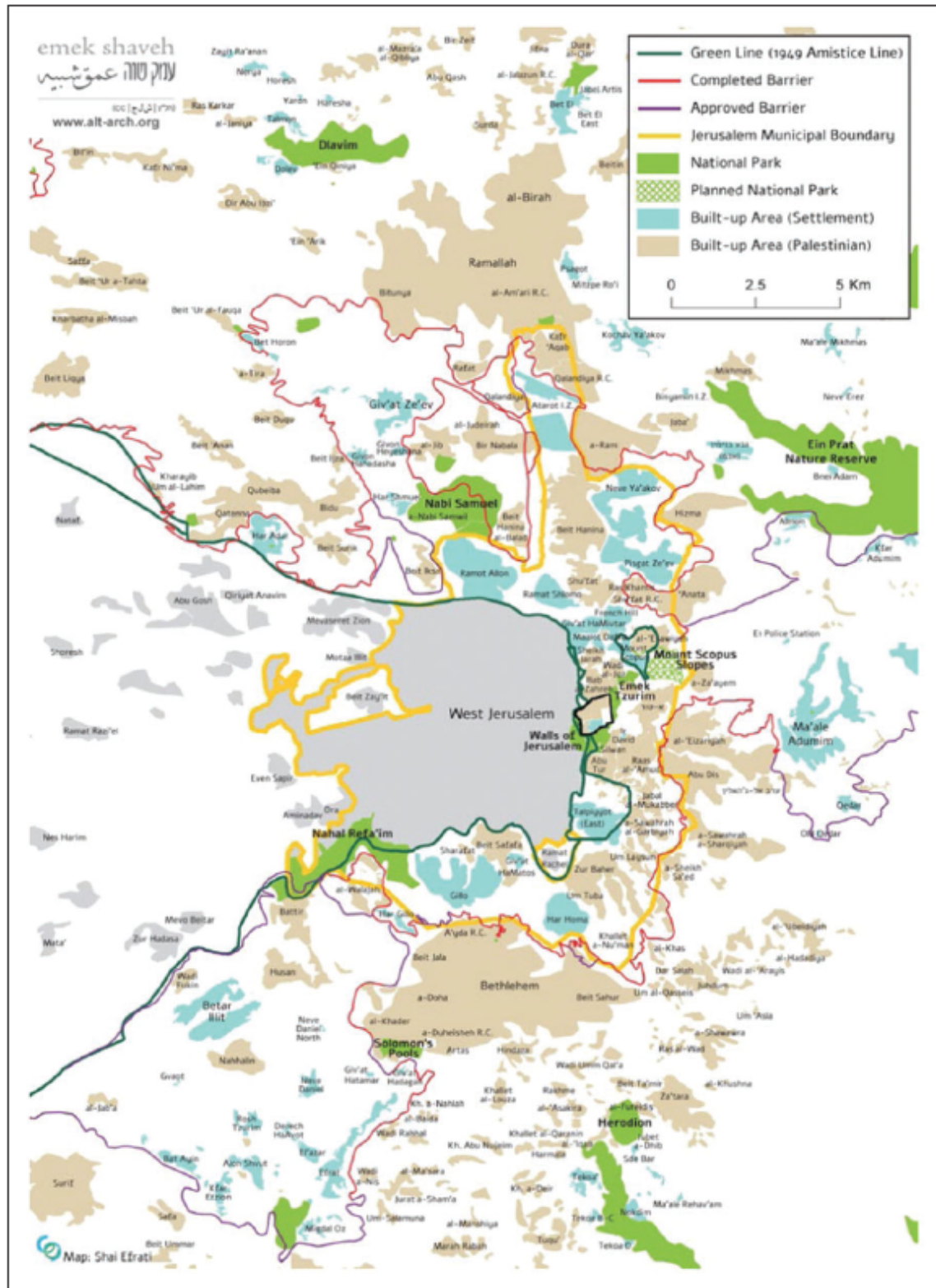


Figure 81 Israel “parks in Occupied Jerusalem and vicinity (Braverman 2021b).

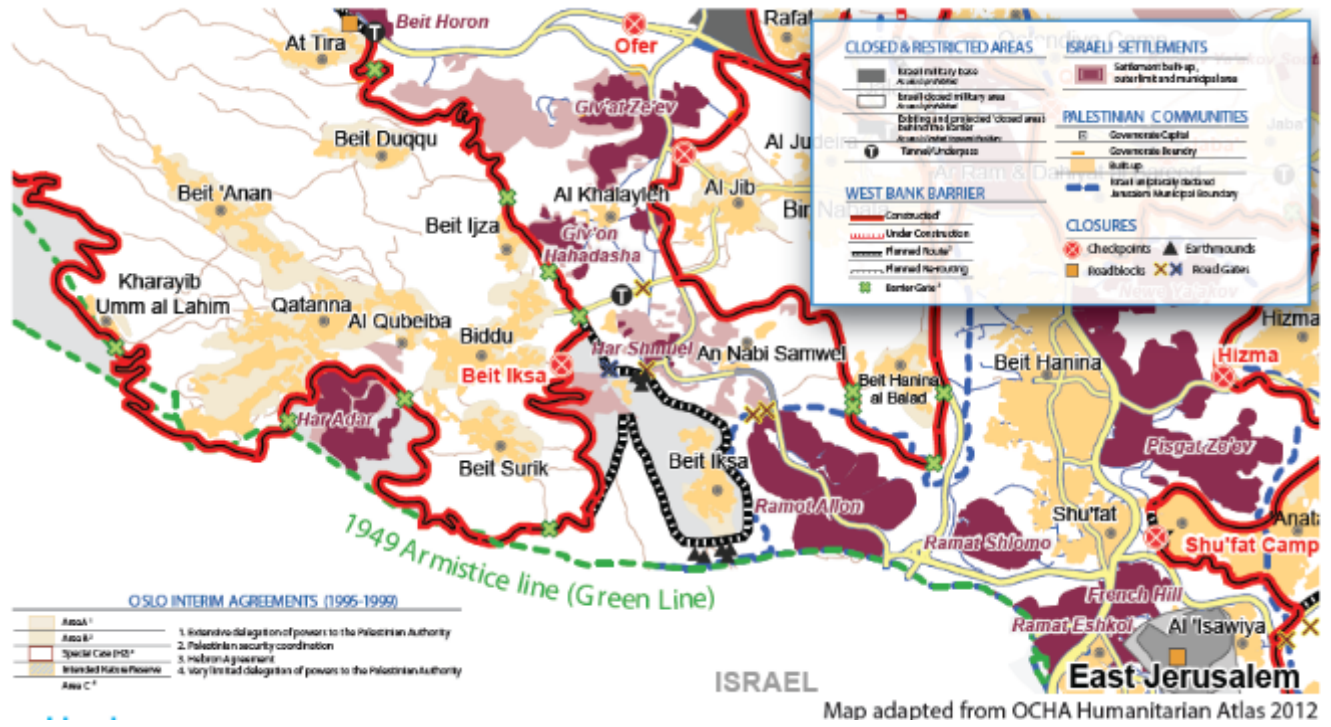


Figure 82 Biddu enclave: apartheid ghettos in sprawling Jerusalem colonies (UNRWA 2013).

Table 14 Israel changed the local names of many areas in Jerusalem (ARIJ 2014a).

1	Ma'ale Ir David	Wadi Hilwa
2	Gai Ben-Hinnom	Wadi Juhannam
3	Derech Ophel	Ath Thuhoor
4	Ir David" (David City)	Silwan
5	Ma'ale HaShalom " (Ascent of Peace)	'Ein al Louza
6	Giv'at HaTahmoshet " (Ammunition Hill)	Al Mudawara
7	Har Habayit " (The Temple Mount)	Al Aqsa Mosque
8	Shimon Ha Tzadik	Ash Sheikh Jarrah
9	The Jewish Quarter	Ash Sharaf neighborhood

Table 15 Israeli occupation practices in Jerusalem 2001-2011 (ARIJ 2014a).

Date	Confiscated Lands (Dunums)	Threatened Palestinian Land (Dunums)	Uprooted, Razed, Burnt or Confiscated Trees	Demolished Houses	Houses Threatened of Demolition
2001	153	1,542	50	51	264
2002	957	2,364	345	63	469
2003	18,122	27,108	24,275	94	820
2004	3,648	3,005	1,745	80	472
2005	8,169	1,195	825	78	406
2006	2,576	2,147	0	44	191
2007	1,900	1,185	0	59	389
2008	2,157	1,816	337	83	431
2009	152,902	45	30	88	934
2010	713	0	450	44	119
2011	3,028	729	500	63	259
2012	20,957	8,046	17,128	410	736
Total	215,282	49,182	45,685	1,157	5,490

Source: ARIJ Urbanization Monitoring Department. 2011

The rights of Palestinians to build their own infrastructure is also violated by Israel building (with foreign company support) of infrastructure in east Jerusalem such as the light rail system (Nolte 2016; de Goede & Westermeier 2022; Shlomo 2017; <https://whoprofits.org/updates/developments-in-the-expansion-of-the-jlr-network-the-j-net-project/>)

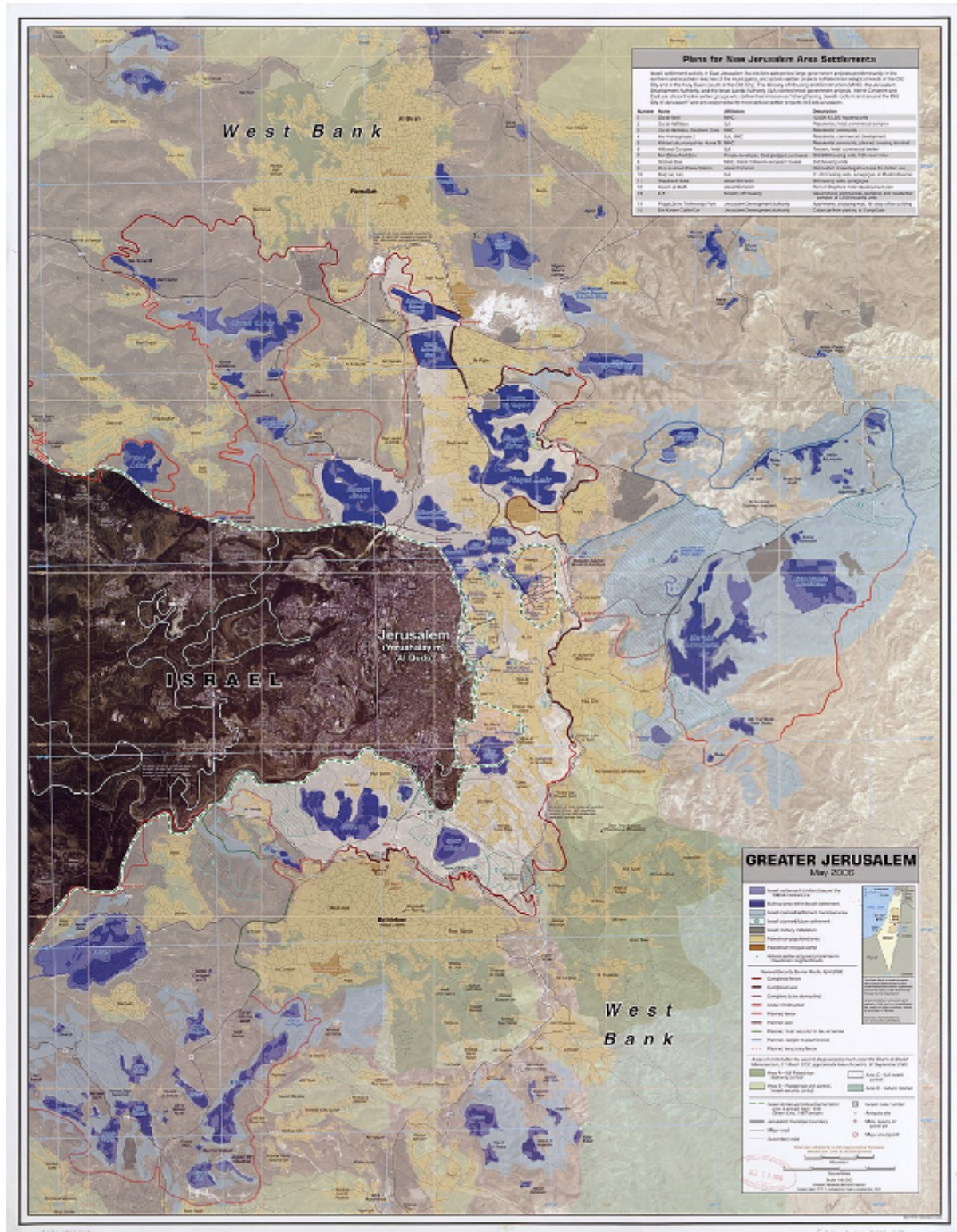


Figure 83 "Greater Jerusalem".

<http://www.cityofdauid.org.il>

see also Settlement Under the Guise of Tourism: The Elad Settler Organization in Silwan

3.10 Bethlehem

The Governorate is named after the canaanitic town Beit Laham (house of the Canaanitic god Laham or lakham). This town is believed to be a place where King David (of the kingdom of Israel) resided and also where Jesus was born (now the Church of Nativity). The Bethlehem Governorate is surrounded by three clusters of colonial settlements: Gush Ezion (SW), El-David/Tequa (SE), and Har Homa and Har Hamatos (North). By far the most damaging, devastating settlement development was that between Bethlehem and Jerusalem. Bethlehem is essentially a suburb of Jerusalem (less than 6 km distance center to center) and this has been recognized historically as interconnected. Bethlehem is essentially a suburb of Jerusalem and you can imagine if you cut off suburbs of Paris or London from their city center. Its proximity to Jerusalem has led to significant efforts by the occupation authorities to separate access between the two areas, with 2118 dunums of land confiscated, mostly due to construction of colonial roads and settlements as well as confiscating for their 'right to disposal' (LRC, 2022). Of the governorate land of Bethlehem 68% are placed in area C and 19% are designated "reserves" by the Israeli authorities and thus only 13% is area that the population of the area can actually use (ARIJ 2014b).

Very detailed work on the governorate as a profile including environmental issues and occupation challenges is provided in ARIJ (2014b). Here we summarize some things and provide more updated information but much more work is needed.

Bethlehem district (Fig. 77) was divided and includes 68% allocated to area C, 19% to so called nature reserves, and only 13% areas A & B (ARIJ village profile). In 2010 the total Palestinian population in Bethlehem Governorate was some 178,000 and Israeli settler population 105,000. Between 1994-2010 66,000 dunums were confiscated, 172 homes demolished, and 51,000 trees were uprooted. From 2012 to 2021, over 30,000 trees were destroyed by Israeli occupation authorities and settlers (LRC, 2022). From 2008 to 2021, 34 cisterns, pools, reservoirs, artesian wells, and springs were demolished or confiscated by settlers and authorities in Bethlehem governorate (LRC, 2022).

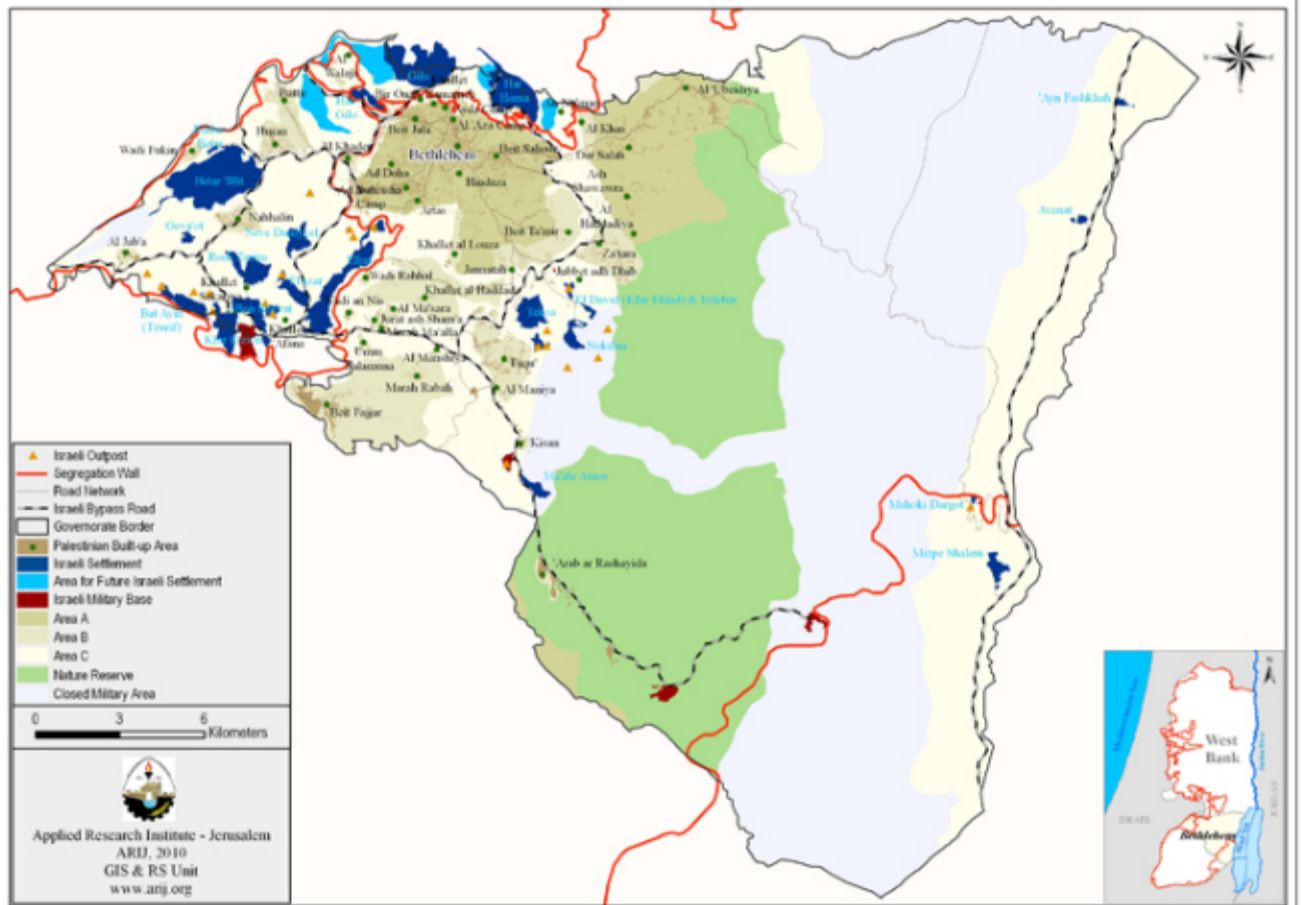


Figure 84 Geopolitical structure of the Bethlehem Governorate (ARIJ 2010).

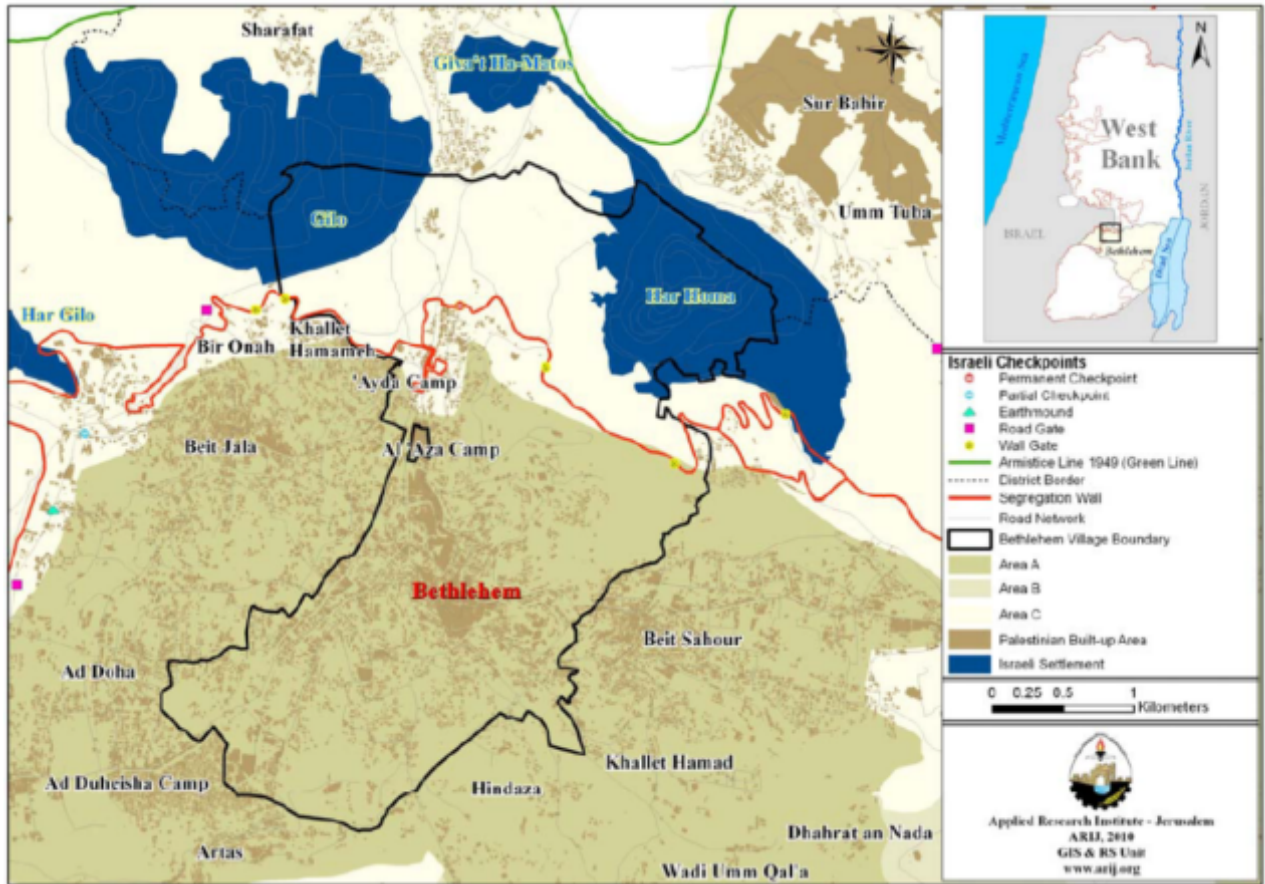


Figure 85 ARIJ map showing Bethlehem city land lost to wall and settlements (ARIJ 2010).

In the Bethlehem governorate, there are a number of chokepoints (i.e. checkpoints established deep in the area that isolate Palestinians). These include terminals in the tunnel road area, Mazmura, Rachel's Tomb area (Gilo 300), Jabaa, Al-Walaja, Um Salamuna, and AlKhader. These are built on confiscated Palestinian lands and prevent Palestinians from accessing Jerusalem as well as lands of Bethlehem district isolated behind the checkpoints and walls. Bethlehem built up area (inclusive of towns of Beit Sahour and Beit Jala and associated villages) can and occasionally does get closed up to become an open air prison similar to Gaza.

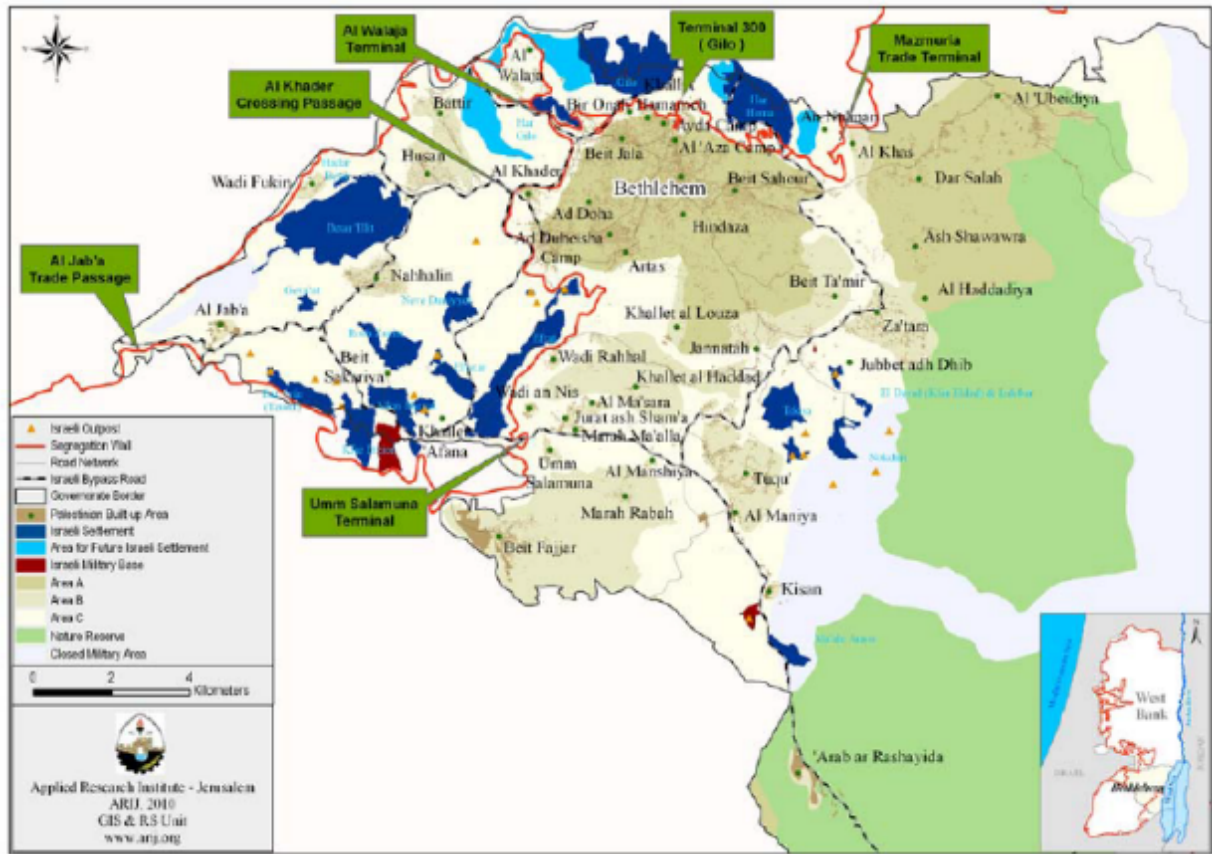


Figure 86 Checkpoints in Bethlehem Governorate (ARIJ 2010).

There is a decline in biodiversity in the district resulting from population pressure, settlements, walls, and habitat destruction (see Qumsiyeh et al. 2014)

Lack of proper treatment of most of the liquid waste (sewage) produced in the district from both settlers and Palestinians. This waste flows mostly into the Wadi Nar (Qidron Valley) all the way to Mar Saba and to the Dead Sea area There is poor infrastructure and environmental management in potentially critical areas for tourism like Artas and Battir (UNESCO world heritage site)

http://www.ochaopt.org/documents/opt_arij_profile_bethlehemcity.pdf

Palestinian lives and livelihoods are affected by many checkpoints, roadblocks (via mounds or gates), preventing Palestinians from Bethlehem from entering Jerusalem, and forcing them to take long roads (Like Wadi Nar) to get to other places in the West Bank



Figure 87 Pollution in Wadi Nar/Kidron.

Notes on selected areas in the Bethlehem Governorate:

-Beit Sahour there is the Shepherds' fields (plural because different christian denominations have different sites). USH Ghrab hill near Beit Sahour is an area that housed a Jordanian army post on top of the hill but Israel took most of the hill for a military base of some 1200 dunums. Local resistance with ebb and flow and building in the down hill area managed to restrict the military camp area to a small area (which is still needed by the local people since the settlement of Har Homa (Jabal Abughneim) took some 15% of the municipalities land. Settlers led by "women in green" have been pushing to establish a new settlement at the military base to be called 'Shdema'. For more on this area, see White (2010).

-Beit Jala: The tunnel road (near Jerusalem extension of Route 60) and the wall around it took much of the land of Beit Jala (see section 7).

-**Artas:** Derived from Latin Hortus Conclusus (closed garden) in allusion to its spring and fertile lands. In the Artas area (between Artas and Al-Khader) is Suleiman's pools. These are three large pools built by the Ottoman Sultan Suleiman. At one point they supplied Jerusalem with water through an incredibly built stone canal. The Zionist social engineer project helped disconnect people from their lands and damaged their cultural heritage (Mourad Hanna et al. 2021).

-**Al-Khader:** Al-Khader is the Arabic name for St. George (who is reputed to have slain the dragon) and he is the patron saint of Palestinian Christians (especially Greek Orthodox denomination).

-**Battir** The area around Battir including lands of Al-Walaja and Husan is a UNESCO emergency approved World Heritage site and later to a protected area which is under significant threat. Agricultural lands were ravaged by the Israeli army (LRC 2019) (Qumsiyeh n.d. and see section 7.1)

-**Nahhalin:** Ajarma et al (2016) showed the negative impact of the wall on people and agriculture in the village; Agricultural lands were flooded with wastewater by colonists from 'Betar Illit' (LRC 2019)

-**Wadi Fukin:** Water and resources are significantly affected by the Israeli occupation (Negotiation Affairs Department, PLO. 2006)

- **Jerusalem wilderness areas: Nebi Musa** is an important site that people visited during a particular time of the year (Nebi Musa Festival where people would gather in Jerusalem from throughout Palestine and walk to Nebi Musa. This tradition was killed by the occupation walls and checkpoints. There are St. Saba and St Theodosius monasteries in the Jerusalem wilderness, some of the oldest sites of monastic life globally. Israel also used Palestinian tourist destinations and developed those and collects money from admission fees in areas like Ain Fashkha and Mshogi Darkot.

-**Tequa & Jabal Al-Furdeis/Herodium** was constructed by the Aramean king (mother is Idumean) Herod, a Roman vassal king appointed to rule the Roman province called Yehuda (distorted to Judea) which is the name given the area by Canaanites before Israelites/Hebrews. Another Canaanitic name for the area is Efrat.

-**Al-Walaja:** See separate section 7.1

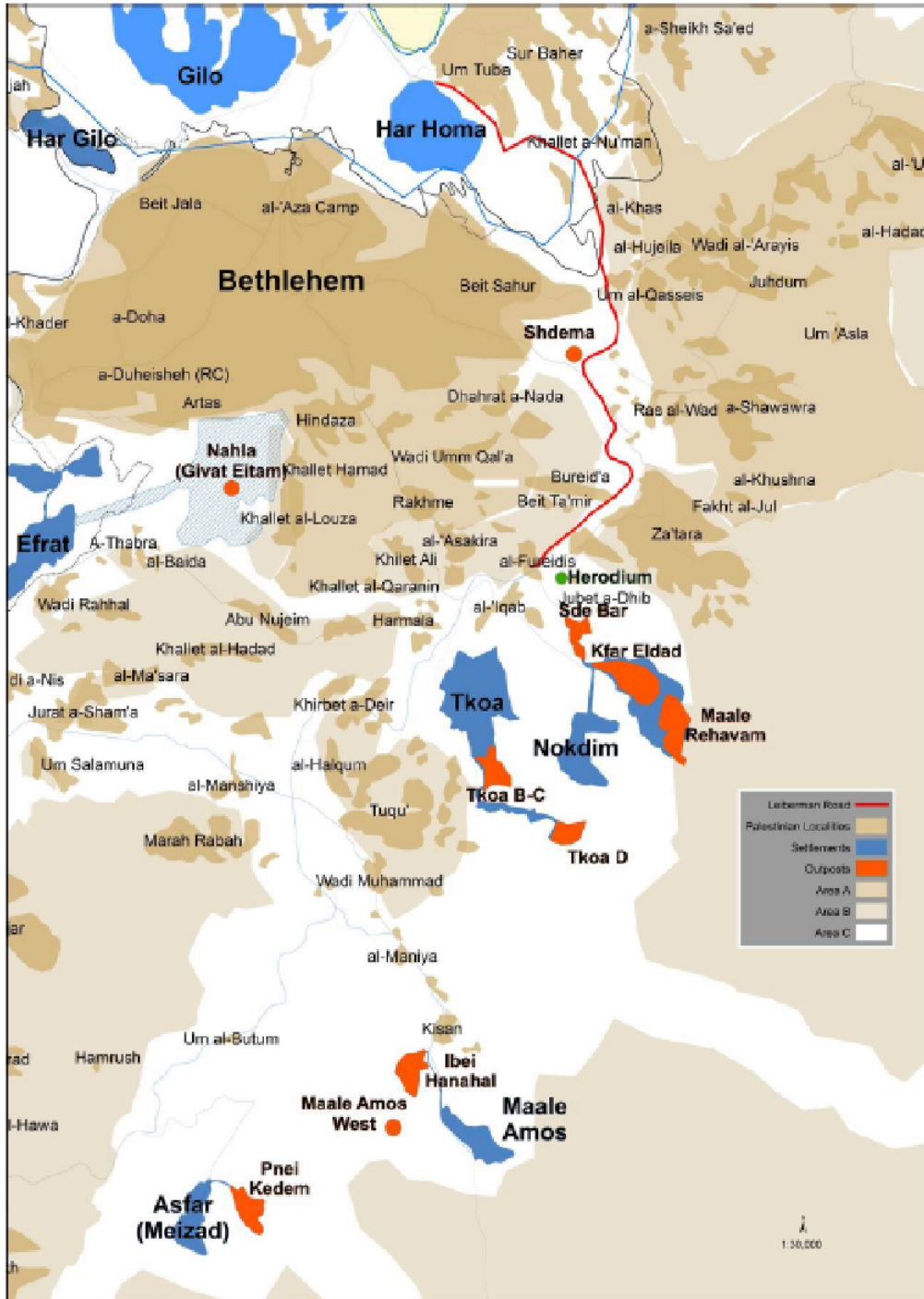


Figure 88 The Lieberman bypass road cuts through Palestinian areas to connect the south cluster of settlements to Har Homa and Jerusalem areas (Peace Now 2015).

Jabal Abu Ghneim is an area between Bethlehem and Jerusalem which the Israeli authorities explored as a potential colonial settlement early on and initiated plans in 1991

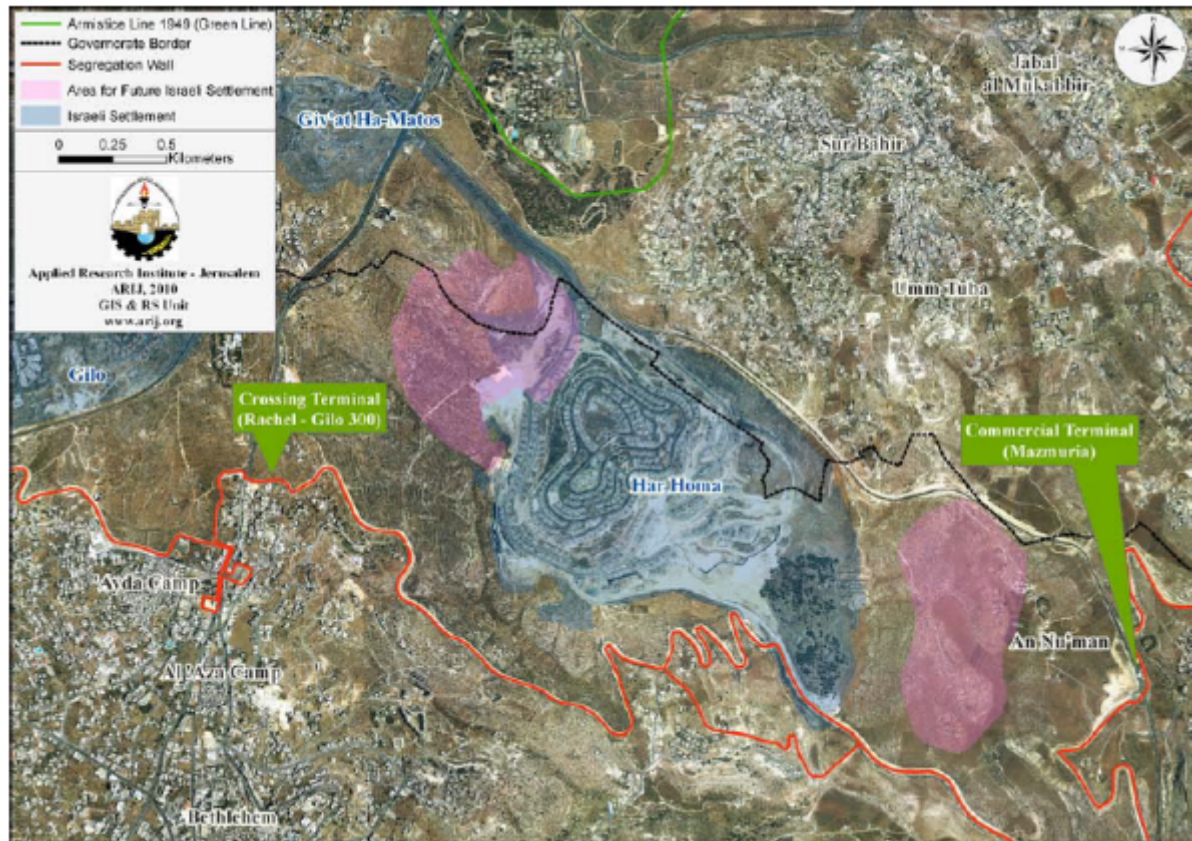


Figure 89 Har Homa area.

3.11 Hebron

Hebron or Al-Khalil in Arabic was already inhabited by Canaanites when according to Biblical tradition was settled by Abraham who was called the friend (Khalil in Arabic or Hever in aramaic) of God. Al-Haram al-Ibrahim or Al-Haram Al-sharif is thought to be burial grounds for Abraham's family.

Very detailed work on the governorate as a profile including environmental issues and occupation challenges is provided in ARIJ (2014g). There are 28 Israeli settlements and 44 outposts housing some 20,000 settlers. Here we summarize some things and provide more updated information but much more work is needed.

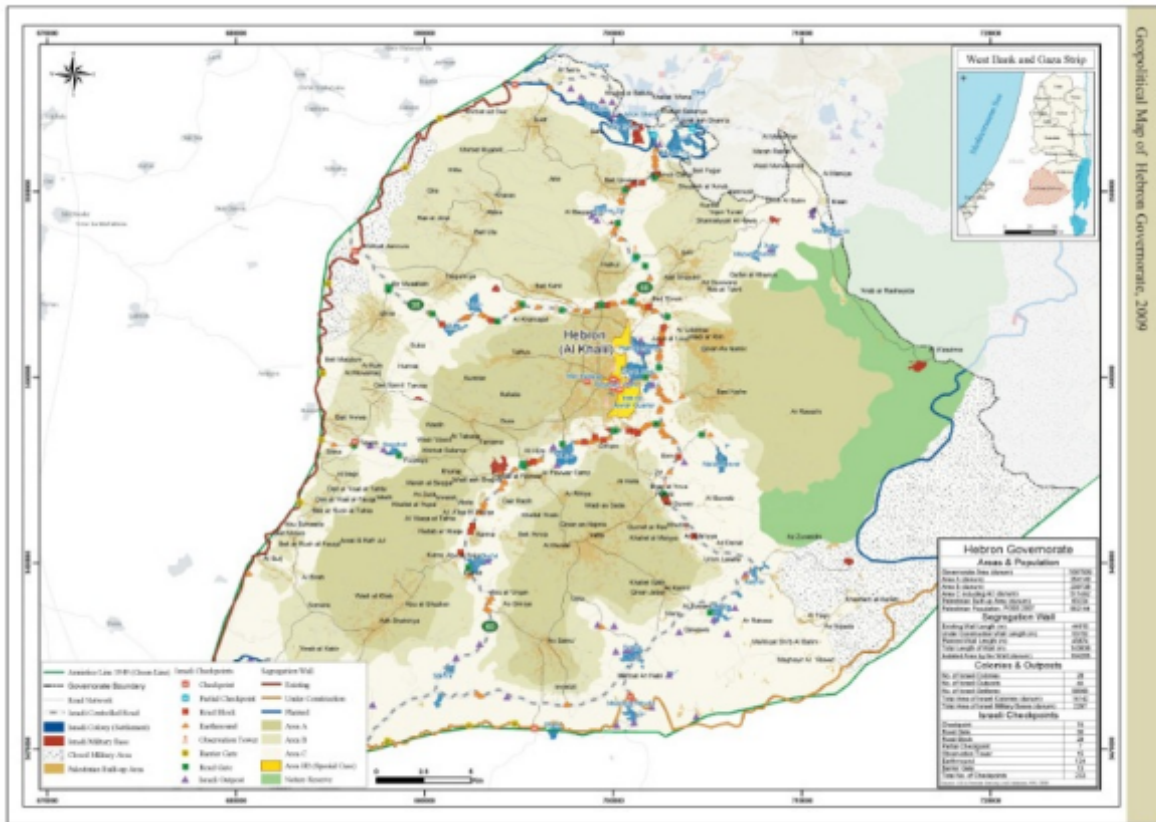


Figure 90 Hebron district (ARIJ 2014g).

Table 16 Land confiscation and trees uprooted in Hebron governorate 2001 to June 2009 (ARIJ 2014g).

Year	Land Confiscated (Dunums)	Uprooted Trees
2001	4,188	1,705
2002	3,618	105
2003	1,302	8,350
2004	11,729	7,245
2005	9,178	63,383
2006	1,860	13,543
2007	267	5,355
2008	1,339	1,360
Jun-09	4,069	660
Total	37,549	101,706

ARIJ Monthly Reports Database – June 2009

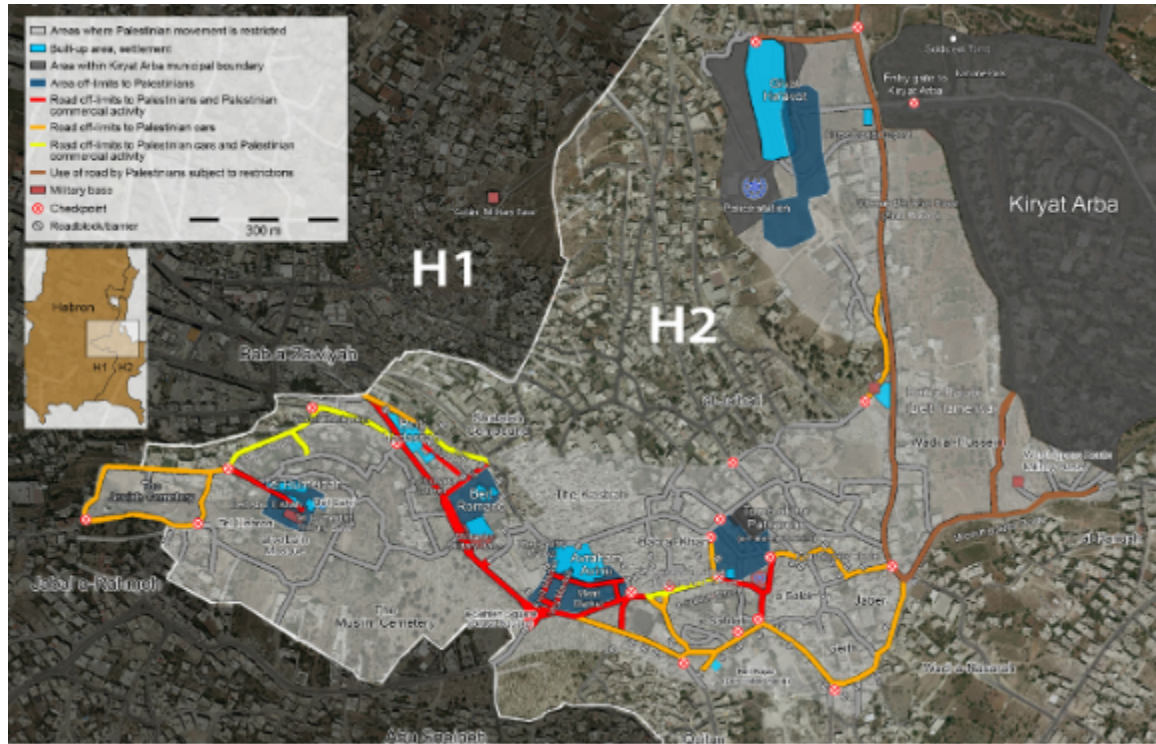


Figure 91 The division of the city of Hebron with H2 area being under Israeli civil and military control (Whye river memorandum).



Figure 92 Shuhada street near the Ibrahim mosque - closed shops.

There is the Medan Roads and Quarry “on the lands of the Palestinian villages of Dura and ad-Dhahiriyy [327-dunam that] produces 2.2 million tons of quarried materials annually, of which 1.76 million tons are marketed within the Green Line and the rest are marketed in Area C of the occupied West Bank. A 100-dunam expansion of the quarry, containing an estimated 12 million tons of aggregate reserves, has been approved.” (<https://www.whoprofits.org/company/medan-roads-and-quarries/>).

Contrary to international conventions, transfer of Israeli electronic waste across the Green line and from illegal Israeli settlements into Idhna town, Beit Awwa, Al Kum and Beit Maqdam. This particularly impacts Idhna the largest recipient of which received 500-650 tons of e-waste and metal scrap every day (ARIJ, 2016a).

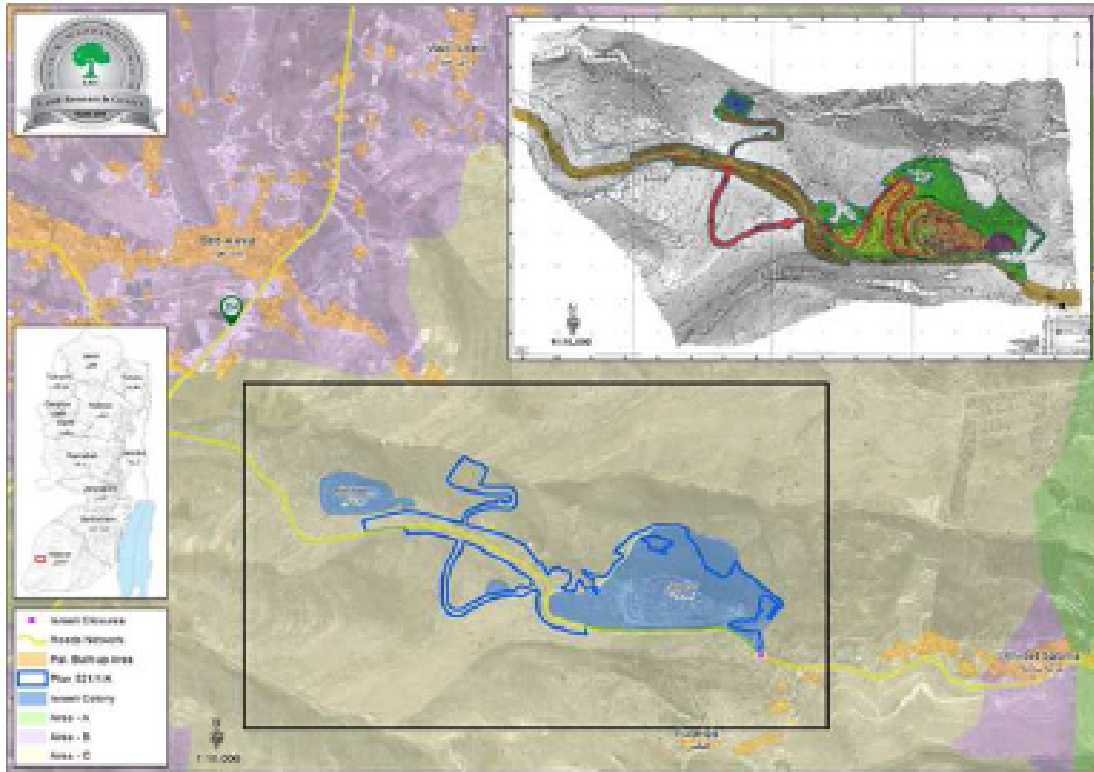


Figure 93 Expansion of Negohot colony announced in 2018 at the expense of 291 dunums of land of Dura (LRC 2021).

The water in Wadi Qelt is also being being polluted via flow from settlement near Mikhmas and from Al-Bireh/Ramallah area (Daghray 2009). The three springs in the valley (Fawwar, Fara, Qelt) are in danger.

While it is estimated that the average individual's needs for household, agricultural, and industrial needs is estimated to be 48.22 mcm per year in 2035, future renewable water resources are projected to be scant, sitting at 86.10 mcm per year (Odeh, 2016). Furthermore, much of this scarcity is attributable to the occupation and the lack of management over water. 15 percent of the city area in Hebron is not covered by a proper wastewater collection system; this leads to untreated wastewater to be released into Wadi Al Samen (Odeh, 2016). In other villages such as in Yatta, wastewater from the settlements have streamed downhill, and has surrounded the olive trees and contaminated the soil, an area which was once known as an incredibly fertile area of the West Bank (Aidy et al., 2017). Consequently, over 200 farmers became unable to harvest their crops for subsistence and their livelihoods, due to sewage water that runs 14 km along their land. The increased toxicity of the water and stream of wastewater into Palestinian villages have been attributed to the illegal settlements of Karmaeil and Sousia (Aidy et al., 2017). In addition to the increased toxicity of settler waste and operations on Palestinian land, land confiscation remains a central issues; in 2021, 572 dunums of land was confiscated, with 336 planned settler units and 338 of dunums for colonial roads and residences by military order (LRC, 2022). Among all governorates, Hebron faced one of the highest incidences of tree demolition, with a reported figure of 36887 trees destroyed from 2012 to 2021 (LRC, 2022).

Other issues that pervade the Hebron Governorate region is an issue of waste and water management and its relationship to human and environmental health. In 2021 alone, 39 cisterns, pools, and artesian wells were threatened with demolition (LRC, 2022). On the issue of waste, Idhna receives approximately 200-500 tonnes of electronic waste a day, much of which includes the release of heavy metal contamination, in particular copper, lead, nickel, and zinc (Al-Sharabaty, 2021). These metals were found to be heavily entrenched in the soil, damaging both the soils and the quality of air, and the health of Idhna residents. Not only does this have detrimental impacts on soil degradation, but the release of toxic chemicals pose significant damage to individual health and DNA damage in three communities: Idhna, Deir Samit, and Beit Awwa producing pronounced health effects (Green Land Society, 2016b). Khlaif and Qumsiyeh (2018) have explored the genotoxicity of recycled electronic waste in Idhna, who examined blood samples of individuals who were employed or resided in Idhna, and discovered high aberrations in DNA chromosomes (Khlaif and Qumsiyeh, 2018).

Dimona nuclear plant where is known that Israel manufactured nuclear weapons is close to Hebron beyond the green line and there are suspicions of increased cancer rates in the area due to drift in polluting material (Sleiman 2010)

“Kiryat Arba wastewater flows into the Hebron stream; Elkana wastewater flows into the tributaries; Some of the Ariel tributaries flow into the tributaries of Nahal Shilo; Kochav Ya'akov and Psagot effluents flow into Nahal Makmash; Hasmonean effluents are removed to the adjacent slope; for the settlement, Talamon effluents flow into the tributary of Wadi Jeb Nazir; Excess sewage from Gush Etzion flows into Nahal Tzufit.” (SI 2017)

4. Conclusion on damages

“Wars of extermination were precisely biopolitical wars, in which the weaponization of the environment was a critical element of the conflict.” Amitav Ghosh, *The Nutmeg's Curse*

“Even when conservation action has involved resistance to imperial, utilitarian views of nature, it has rarely been sensitive to local human needs and a diversity of world views. It has often been imposed like a version of the imperial endeavor itself: alien and arbitrary, barring people from their lands and denying their understanding of non-human nature.” (Adams and Mulligan 2003, p.9)

Israeli colonial settlements in the West Bank now number 161 locations which house **852,193 Jewish settlers** of which 361,700 are in East Jerusalem (Yaniv et al 2022 & <https://www.jewishvirtuallibrary.org/israeli-settlements-population-in-the-west-bank>). They and their government and army control and manage every aspect of Palestinian lives in the WB (Makdisi 2008). The review above focused on environmental damage which is just one aspect of the violations. The situation is expected to get worse. In its 29 January 2012 session the Israeli government designated priority areas for development

including in the Galilee, Negev (where 1948 Palestinians are found) as well as areas in “Judea and Samaria” that include 89 settlements (ARIJ 2014c). Priority areas get government subsidies and significant incentives for “development”. When I embarked on summarizing the damages of settlement and military activities, we thought it was going to be large but we did not think its this large. We only scratched the surface in the review in sections 2 and 3 of potential data to be gathered. If we were to estimate the potential impact in financial terms since 1967 it would be in the hundreds of billions of dollars. But environmental damage is irreversible in most cases discussed above. Israel is literally trashing Palestine (Beyer 1998; Tal 2002; and the data presented above with >400 references cited below in section 9). Yet Israel has the chutzpah to declare itself a green country and having “made the desert bloom”- myths to greenwash its colonization and environmental nakba (Scandrett 2011; Shalit 2011; Boast 2012; Doissette 2016; Sharif 2016; Pappé 2017; Hughes et al. 2022)

It is estimated that the monetary cost in one year of occupation is roughly \$7 billion and include 663 million for restrictions on water access, \$918 million for restrictions on extractions of potash, magnesium, and bromine, \$3.4 billion for restriction of access to area C, (Arafah et al. 2015). ARIJ (2015b) estimates the number close to 1.2 billion annually. But this number excludes value of pillage of tourism, agriculture, and many other areas.

“The politically fragile situation continues with impacts of restricted movement on people and goods affecting the environment negatively since there are limited options for expansion of built-up areas and other livelihood opportunities. This has led to unsustainable practices with diminishing quality of the environment and natural resource-based livelihood opportunities for communities’ World Bank (2019)

In 2022, while demolition of Palestinian property and homes increased dramatically in the WB, the expansion of settlements increased with 158 plans for expansion involving 78 settlements and over 13,000 housing units distributed over all Palestinian WB governorates (POIC 31 Dec 2022 report <https://bit.ly/3Rw1JMK>).

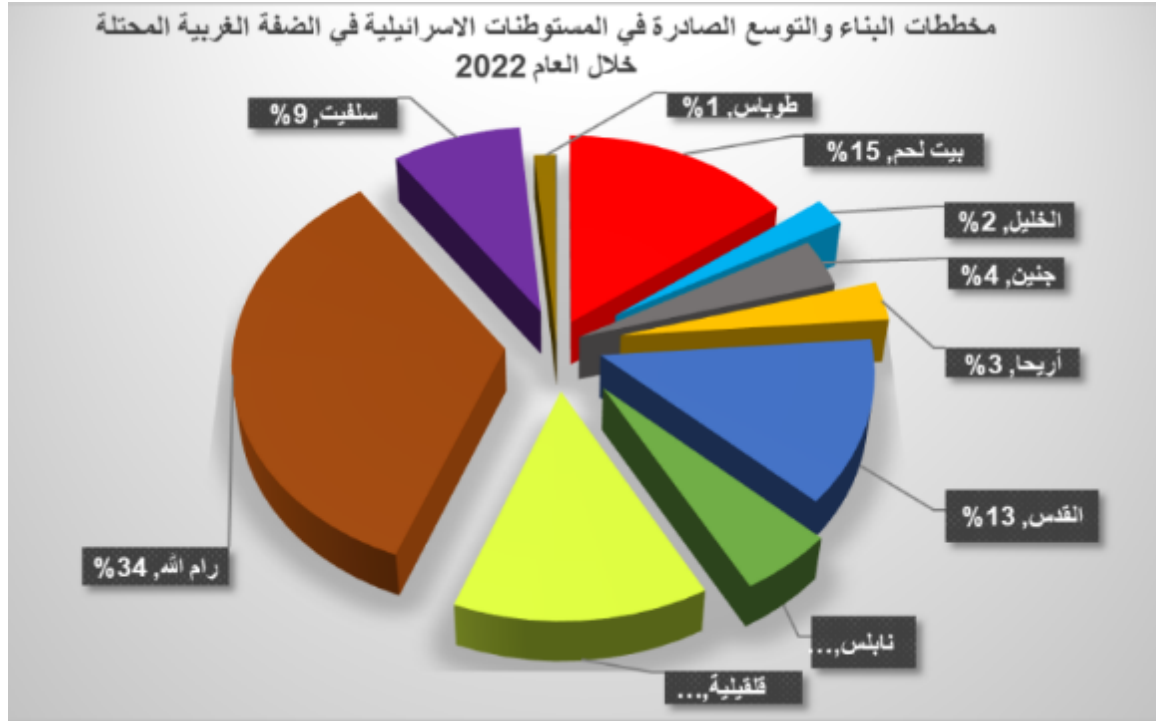


Figure 94 Expansion of settlements summarized by governorate (POICA).

5. Legal issues and power dynamics

International and local laws can help address some of the environmental injustice issues. The below is not intended to be a legal briefing and legal experts should be consulted. Here we just review existing published and available material on three areas: Global conventions, local jurisdiction and legal issues, and regional examples of potential use legally.

5.1 International Law and Conventions

In the 20th century, a number of conventions were established relating to injustice committed on foreign soil. For example, the **Fourth Geneva Convention (UN 1949)** on protected persons asserts the protection and rights of people who live under occupation and the force of an authoritative power of which they are not nationals (ICRC, 1949). Breaches these are considered war crimes and crimes against humanity ((UNGA 1998). International Humanitarian Law including the articles in several conventions relating to occupation (which is by definition temporary) and numerous UN resolutions including UNC 242 and 338 reiterate illegality of acquiring territory by force and this includes extending sovereign and laws of the belligerent occupiers on the land occupied. This remains true despite the Israeli protracted occupation (now in its sixth decade) which is unusual (see Degarmo & Isaac 2016; Azarova 2017).

IHL is rather clear for example Rule 51 on Public and Private Property in Occupied Territory

- (a) movable public property that can be used for military operations may be confiscated;
 - (b) immovable public property must be administered according to the rule of usufruct; and
 - (c) private property must be respected and may not be confiscated; except where destruction or seizure of such property is required by imperative military necessity
- (see <https://ihl-databases.icrc.org/en/customary-ihl/v1/rule51>)

Israel has tried to legitimize and to create convoluted justifications for its breaches of IHL (not to mention basic ethical and humanitarian considerations). For example, it contends that because no legitimate sovereign control existed in these areas before, the lands are thus “contested” rather than “occupied” (El-Hindi, 1990). It also used the provision found in IHL relating to imperative military necessity to be a nice loophole as just about all activities were deemed possible to justify based on this. For example the Israeli High Court ruled on *Ayyub et al v Minister of Defense et al*, 33(2), PD, 113 (1979), (Isr.) that Israeli colonies can be deemed of national security importance and justify taking Palestinian lands (Shalev 2012; Badil 2013, 2019). Yet in another case, the High Court found that land was seized without a military need (but to serve religious and political purposes) [*HCIJ*, 390/79, *Izzat Muhammad Mustafa Duweikat et al v Government of Israel et al*, (1980) 34, P.D. 1(1); Badil 2019]. But even if one accepts the argument that seizure of land is legal by an occupying state (it isn't), the allocation of land to a settler

population while denying it to the locals is clearly a gross injustice and is a crime against humanity (Peace Now 2018).

Israeli authors recognized the convoluted and deceptive fabrications and theft in broad day light with a veneer of quasi-legality barel providing the needed fig-leaf cver of theft (Yiftachel 2006; Tal 2002, 2008a,b; Shalev 2012; Leshem 2013; Braverman 2023). Advisory opinions from the ICJ on the legality of the wall are contested, yet the legal arguments are compelling (Broude, 2005; Green 2005). Israel claims that while it does not recognize the obligation to comply, in practice, it actually de facto respects the rights of the residents of the territories it occupies. Despite this argument, the data and environmental injustices reflected in the above sections depict a contradictory narrative. A good legal analysis of obligations to protect the environment under international law in times of conflict is found in UNEP (2009), Badil (2019), Quigley (2005), and Al-Haq (2015b, 2017). And when giver opportunitie to rule on the subject, the ICJ articulated cogent legal arguments for example why the wall and settlements are illegal (ICJ 2004). Here we provide some key highlights.

Despite Israel's continued presence and breach of international law, a key principle of international humanitarian law is that military occupation is temporary and that the occupying belligerent state must safeguard the lives, livelihoods, and natural resources, among others, that belong to the people of the area occupied. The occupying state has authority to administer the territory and its assets, but must do so in the interest and consideration of the people over whom they have control. Furthermore, the occupying force does not have the power or the right to exploit their natural resources (Arai, 2009; Clagett and Johnson, 1978; Dinstein 2019; El-Hindi, 1989; Roberts, 1990; Scobbie, 2010). One of the ways that Israel garners increasing lands and resources in the West Bank is to declare Palestinian spaces as "State Land"; this creates a logic where the Israeli state and its illegal settlers rationalize their belief to access and exploit these lands and resources (Al-Haq, 2012). As Al-Haq (2012) wrote, "the potential for economic development of the Dead Sea area is substantial. The sizeable source of income represented by the wealth of its basin could greatly boost the Palestinian economy. Yet, it is being routinely appropriated by Israel that manifestly pursues the promotion of its economic, social and strategic interests.

The development of the state of Israel and its further occupation of the 1967 areas came with a greater emphasis on military security, territorial security and demographic security, but it did nto come with environmental security (Tal, 2002; Newman, 2009; Efrat, 2006). In 1990, the settler population in the West Bank and Gaza stood at over 200,000 (120,000 Israelis in illegally annexed areas of East Jerusalem). The Declaration of Principles and Oslo agreements between Israel and the PLO did not prohibit settlement expansion or Israeli colonisation efforts in the occupied areas. Between 1993 and 2000, the population of settlers in the occupied areas doubled to over 450,000 and today stands at 750,000 (ARIJ, 2015). This occurred despite the fact that international law is very clear about the illegality of these settlements. Furthermore, Article 49 of the Fourth Geneva Convention (to which Israel is a signatory) clearly states that the "the Occupying Power shall not deport or transfer parts of its own civilian population into the territory it occupies." UN Security Council Resolution 465 of 1980 reads in part that:

..all measures taken by Israel to change the physical character, demographic composition, institutional structure or status of the Palestinian and other Arab territories occupied since 1967, including Jerusalem, or any part thereof, have no legal validity and that Israel's policy and practices of settling parts of its population and new immigrants in those territories constitute a flagrant violation of the Fourth Geneva Convention relative to the Protection of Civilian Persons in Time of War and also constitute a serious obstruction to achieving a comprehensive, just and lasting peace in the Middle East.

Upon admittance of Palestine as a non-state member of the UN general assembly, SP has signed onto many international conventions: the Fourth Geneva Convention of 1949 and the First Additional Protocol; the International Convention on the Suppression and Punishment of the Crime of Apartheid; the International Covenant on Civil and Political Rights; the International Covenant on Economic, Social and Cultural Rights; the Convention on the Rights of the Child and the Optional Protocol to the Convention on the Rights of the Child (on the involvement of children in armed conflict); the Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment; the Convention on the Prevention and Punishment of the Crime of Genocide; the UN Convention against Corruption; the Vienna Convention on Diplomatic Relations; the Vienna Convention on Consular Relations; the Convention on the Elimination of All Forms of Discrimination against Women; the Hague Convention (IV) respecting the Laws and Customs of War on Land and its annex: Regulations Concerning the Laws and Customs of War on Land; the Convention on the Rights of Persons with Disabilities; the Vienna Convention on the Law of Treaties; and the International Convention on the Elimination of All Forms of Racial Discrimination (Pontin et al., 2015).

The ramifications of such signatures carry significant opportunities, such as their applicability to protect Palestinian rights, and challenges, such as the importance of meeting obligations and applying pressure for their enforcement while the SP is under occupation (Jaradat et al., 2015). For example, Convention on Biological Diversity recognizes that in case of harm "to biological diversity within the area under jurisdiction of other States or in areas beyond the limits of national jurisdiction" the State must immediately "notify the affected State of such danger and damage, as well as initiate action to prevent or minimize such danger or damage" (1992 Article 14(1)(d))

And in another example, there is ample evidence on the Israeli violations of the convention on Apartheid including environmental issues (IMEU, 2022). Recognition of Israel as an **apartheid state** by a number of human right organizations including B'Tselem (https://www.btselem.org/publications/fulltext/202101_this_is_apartheid), Amnesty International (<https://www.amnesty.org/en/latest/campaigns/2022/02/israels-system-of-apartheid/>), and Human Rights Watch (<https://www.hrw.org/report/2021/04/27/threshold-crossed/israeli-authorities-and-crimes-apartheid-and-persecution>)

The [Rio De Janeiro global conference](#) held in 1992 and signed on to by most countries on earth concluded that integrating and balancing economic, social and environmental concerns in meeting our needs is vital for sustaining human life on the planet and that such an integrated approach is possible. Work in Palestine along those lines also concludes that we can indeed have sustainable societies and natural communities if we are freed from the Israeli occupation (ARIJ, 2001b). TO challenge Israeli actions to achieve freedom is a significant undertaking on all fronts including the environment (see Qumsiyeh 2004, 2012 and section 6). One of those areas of challenge is the legal front which this section deals with.

But legal matters are never simple. For example, litigating issues over the protection of **economic rights**, such as the rights to water under prolonged occupation is challenging because both the Hague and the Geneva Conventions are relatively silent on issues of economic rights of the protected population. El-Hindi (1990: 1423) has aptly noted, “though currently accepted conventions regarding the laws of belligerent occupation only address the issue of shared water resources tangentially, they do imply certain standards which Israel apparently fails to meet regarding the West Bank aquifer. At the very least, Israel has violated the spirit of the conventions which serve to protect occupied inhabitants from undue interference by the occupying power.” The most detailed review of relevant international laws was written by Abouali (1998), who has argued for reparations for Palestinians whose rights to regional resources for livelihood, personal, and agricultural use have been jeopardized due to Israeli violation of international law. There needs to be an updated study building upon this work to provide data-driven evidence such as those mentioned in section 2.1 to bear. Article 43 of the Hague regulations stipulates that the occupying force ensures public and civil order and normalcy, yet Abouali’s report (1998) has demonstrated the multiple times that Israel has violated Palestinian private property rights which are under the protection of international humanitarian law noted in section 4A3, where he discusses the interferences with water access and quality. To exemplify, article IV of the Helsinki Rules states that “each basin state is entitled, within its territory, to a reasonable and equitable share in the beneficial uses of the waters on an international drainage basin.”

Furthermore, as Amnesty International (2013) pointed out the vast majority of countries accept the issue of **Universal Jurisdiction** in principle and that they are bound by these conventions. Most of them have signed relevant conventions for human rights and environmental issues, including Israel. However, in practice, many countries including Israel, ignore them and there are essentially limited enforcement mechanisms outside of an agreement at the UN Security Council without a veto from any of the five permanent members of the UNSC. In other agreements, the EU-Israel joint action programs lack clear language of reference to International law and to the rights of the Palestinians based on international laws and conventions and thus gives Israel a green light supported by EU “favoured non-EU trading partnerships (Al-Haq 2011). Thus, despite the enshrinement of international laws which are purported to protect occupied and colonized people worldwide, the accountability of such laws remain low and many of the global western powers have overlooked and enabled Israel’s aggression and theft of Palestinian land.

Even the United States, an ardent ally of Israel, wrote in a Memorandum of Understanding, that it considered the regime a belligerent occupation on land and sea of occupied areas and that “ran occupant’s rights under international law do not include the right to develop a new oil field, to use the oil resources of occupied territory for the general benefit of the home economy or to grant oil concessions” (‘United States: Department of State Memorandum of Law on Israel’s Right to Develop New Oil Fields in Sinai and the Gulf of Suez’ 16 International). The [Universal Declaration of Human rights](#) was signed by Israel and yet it violates most of its provisions in its belligerent occupation of the West Bank and Gaza. It states in Article 17 that “Everyone has the right to own property alone as well as in association with others. No one shall be arbitrarily deprived of his property.” While the examples above in sections 2 and 3 are examples relating only to the environment, the prolonged character of belligerent occupation reinforces the need to apply IHL across all facets of the Palestinian struggle (Koutroulis, 2012.).

Al-Haq (2015a) has further asserted that the prevented access of Palestinians to their natural resources, in conjunction with Israeli policies to meddle with Palestinian attempts to develop the Gaza Marine, border and oil fields at Rantis has been an active measure to prevent development and Palestinian empowerment. These direct interventions are a clear violation of Article 28 of the Universal Declaration on Human Rights, which recognize “collective and individual human rights within a social and international order” (Al-Haq, 2015b). Moreover, the first article common to the [Covenant on Civil and Political Rights](#) and the [Covenant on Economic, Social and Cultural Rights](#) state, “All peoples may, for their own ends, freely dispose of their natural wealth and resources. . . In no case may a people be deprived of its own means of subsistence.” This fundamental principle of international law has been violated for the past 55 years of the Israeli occupation of the West Bank, as shown in the data summarized in sections 2 and 3 above.

The **NBSAPP** of 1999 coincided with publication of the environmental law for Palestine (http://environment.pna.ps/ar/files/Law_No_7_For_The_Year_1999_Concerning_The_Environment.pdf). Yet even as early as 2005, the EQA started to address the gaps in the law and especially areas to comply with newly signed international conventions (most signed from 2005 onward). That is why a decision was made in 2020 to review all international treaties (signed ones for obligations and unsigned ones for benefit and responsibility if they are signed) and also review local laws and regulations to ensure concordance and smooth aspects of implementation relating to environment in general including biodiversity. This includes harmonization of local laws with signed agreements as well as considering signing additional conventions.

The 6th National report to CBD (EQA 2021) highlighted the limitations faced as well as achievements related to regulatory and legal elements. Besides CBD, the state of Palestine signed a number of International Conventions that relate to biodiversity and that become essentially local laws (obligations are being fulfilled):

- Convention Concerning the Protection of the World Cultural and Natural Heritage
- Cartagena Protocol on Biosafety to the Convention on Biological Diversity
- Paris Agreement Under the UN Framework Convention on Climate Change

- United Nations Framework Convention on The Climate Change
- United Nations Convention on the Law of the Sea
- United Nations Convention to Combat Desertification
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal
- Stockholm Convention on Persistent Organic Pollutants (Stockholm Convention)
- Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides International Trade (Rotterdam).

While technically as a non-state member of the UN, Palestine cannot bring a case unilaterally to the International Court of Justice (ICJ), Palestine can do so in one of two ways: 1) if both Palestine and Israel agree to go before ICJ or 2) if both Palestine and Israel signed an international convention (Pontin et al., 2015). The latter possibility is intriguing since the two states both did sign environmental conventions like the Convention on Biological Diversity and UNFCCC. Pontin et al. (2015) have noted that “during belligerent occupation international humanitarian law operates as *lex specialis* - with human rights law bridging existing gaps in rights protection. The International Court of Justice has repeatedly held that international human rights law is applicable in situations of armed conflict. Similarly, the UN Human Rights Committee, the UN Committee on Economic, Social and Cultural Rights and the Israeli High Court of Justice have applied the International Covenant on Civil and Political Rights (ICCPR), the International Covenant on Economic, Social and Cultural Rights (ICESCR), the Convention on the Rights of the Child (CRC) and the African Charter on Human and Peoples Rights respectively to armed conflict.”

BADIL published detailed working papers on nine structural policies regarding Palestinian transfer to serve Zionist interests (available at <http://www.badil.org/en/publication/research/working-papers.html>):

- *Working Paper No.15: Forced Population Transfer: The Case of Palestine- Introduction*, March 2014;
- *Working Paper No.16: Forced Population Transfer: The Case of Palestine- Denial of Residency*, April 2014
- *Working Paper No.17: Forced Population Transfer: The case of Palestine - Discriminatory Zoning and Planning*, December 2014
- *Working Paper No.18: Forced Population Transfer: Installment of a Permit Regime*, December 2015
- *Working Paper No.19: Forced Population Transfer: Suppression of Resistance*, December 2016
- *Working Paper No.20: Forced Population Transfer: Denial of Access to Natural Resources and Services*, September 2017
- *Working Paper No.21: Forced Population Transfer: Land Confiscation and Denial of Use*, October 2017
- *Working Paper No.22: Forced Population Transfer: Denial of Reparations*, October 2018

5.2 Occupiers “laws” and judiciaries

Occupation is defined as ““a transitional period following invasion and preceding the cessation of hostilities” which “imposes more onerous duties on an Occupying Power than on a party to an international armed conflict” (Prosecutor v. Naletilic and Martinovic, Case No. IT-98-34-T, Trial Chamber I, (31 Mar 2003). Para. 214. Cited in Badil 2019).

As indicated before the Israeli military rule in the WB not only included de facto and de jure annexation of large areas in and around Jerusalem but also used convoluted ways to take over the lands in all WB desired by the Allon Plan and its modifications (see section 1). For example to get around the fourth Geneva Convention, the plans put together since 1967 and implemented on the ground claimed Palestinians are protected (even though hemmed and not allowed to develop or use their lands) while claiming all or the vast majority of open lands state lands which Israel says can be developed for settlements because they are “disputed”. Israel started mapping those state lands and in 1999 put together a “Blue Line Team” that had wide authority to take lands and designate them and even allocate them to the “custodian of absentee properties” (see Etkes 2016 for one of the few exposes of the shady and secretive dealings of this team). Skirting International law while developing quasi-legal convoluted systems justifying theft of land developed to high levels (Ben-Naftali 2011).

Military orders that were instituted shortly after the 1967 occupation ensured control of natural resources including water and land. As discussed in section 2.1 for example many orders stifled Palestinian water development and water access and the occupying power gave itself “rights” (illegal under international law) to also develop these resources for occupiers usage. The Oslo accords were supposed to be interim accords and did give the Palestinian some abilities but only in areas A and B while most resources are located in area C (see Al-Haq 2022). Oslo II basically also relinquished Internationally recognized rights to the occupiers for the interim transitional period by giving the occupiers veto power. The interim 5-year period has been now carried over for three decades! Further “Oslo II water regime [unfair as it is] merely applies to the portions of the Mountain Aquifer that underlies the West Bank, not to the Jordan River, Coastal Aquifer, nor Israeli parts of the Mountain Aquifer. During these agreements, Palestinians were not empowered to either regulate or limit Israeli extractions from the Mountain Aquifer on the Israeli side of the Green Line. To this day, these water extractions provide corporate actors, such as Mekorot, with water quantities to be resold to Palestinians in the West Bank” (Al-Haq 2022). **The latter report is a must read on issues of legality and illegality regarding water and how Israel destroys Palestinian access to water.**

Environmental injustice is embedded in the Israeli legal framework, so even in such clear cut cases of environmental injustice and its effects on human health, it is difficult to seek reparations through the courts. An Al Haq study found, for example, that the decision to shut down the Geshuri factory on the days when the winds blew the toxic emissions into Israeli areas wasn’t just the decision of one person or board of directors: “By the terms of the Israeli court injunction, the relocated enterprises were not allowed to operate at times when the wind blew in the Israeli direction of the green line” (Al-Haq 2015b). The legal

system itself perpetuated this environmental injustice in extremely clear terms. In industrial settlements, Israel permits companies to construct and operate factories with far fewer environmental restrictions than they would allow to the West of the Apartheid Wall: “The legislative disparities in the regulation of polluting plants (including waste treatment plants) on either side of the Green Line result in two major differences, both of which give plants operating in the West Bank an advantage over their competitors inside Israel: The first difference relates to air pollution. [...] The second difference pertains to the reporting obligations of treatment facilities (B’Tselem 2017 p. 14-15). With regards to air pollution, while the 2008 Clean Air Law applies very rigorous standards to Israeli companies operating in Israel, the 1961 Abatement of Environmental Nuisances Law holds Israeli factories in the West Bank to almost no standards at all (B’Tselem 2017 p. 14). In fact, this report makes clear that the passage of the Clean Air Law in Israel actually made it harder to enforce any sort of regulations in the West Bank, because the Clean Air Law was explicitly not incorporated into the military orders that govern the West Bank. The second difference noted above between factories operating in Israel versus the West Bank was the lack of oversight in the latter.

An Israeli “Camel Law” (Sun Sentinel, May 23, 2018) enforces on both sides of the green line is highly damaging to Bedouin lives and livelihoods (see also Gutkowski 2021). Braverman (2023) details of proceedings of a legal case *The State of Israel v. Salman Sadan* in 2017 for his grazing his camels in the supposed nature reserve in the Negev. It is almost as a Greek tragedy but it illustrated how Israel uses eco- or biopolitical warfare on people who lived off the land for thousands of years before 1948 and the Zionist control of the land. The case was lost and in 2018 and 2019, seventy-six fines were imposed on Bedouin camel owners. These amounted to US\$160,000—a hefty sum for most camel owners. There are many losses in Israeli courts. When there is a small triumph it is because both protagonists are Zionists. This happened for example when the court ruled against the Jewish National Fund for its environmentally damaging tree planting and reclamation activities, setting a precedent for environmental planning in Israel (see Braverman 2023 p 304 on *Bagatz 288/00, Adam Teva v’din and Others v. the Ministry of Interior and Others*, August 29, 2001). Sometimes Zionists themselves realize after decades their own damaging policies as when they realized olive trees and even the black goat are not so bad after all (Braverman 2023).

An ARIJ report (2005) has noted that in the **Oslo II interim agreement** annex III, Protocol Concerning Civil Affairs, [article IV](#) – Special Provisions concerning Area C, several articles specifically dealt with the transfer of powers and responsibility from the Israeli military government and its Civil Administration to the Palestinian Council in the spheres of nature reserves (Article 25), parks (Article 26), Archeology (Article 2), Forests (Article 14) and environmental protection (Article 12).” As pointed out by Al-Haq (2015a), Palestine for the purposes of environmental injustice issues can be considered a state under International Law (UNGA A/67/L.28, UNGA 11317; Akanfde 2012) and Palestine as a state member of UNESCO has given them legal power under the so-called “Vienna Formula” (Pontin et al. 2015). Al-Haq (2016) also reviewed how we may finally

get rid of the suffocating **Paris agreement** that was supposed to end in 1999 anyway but was kept running by the hegemonic powers.

For Palestinians to go to Israeli courts including the High Court of Justice, it is fraught with difficulties not only due to the ethical issues of legitimizing occupation but the fact that the Oslo accords (e.g. Annex 4) were less than clear about jurisdictions and rights and responsibilities (Al-Haq, 2015a). Yet in order to achieve environmental or social justice, it requires clear and robust access to the administrative and legal system; this would enable for the legal application of existing laws and frameworks on public health and the environment and for the protection of people's rights (Ebbeson, 2002). Article 43 of the Hague Convention states "the authority of the legitimate power having in fact passed into the hands of the occupant, the latter shall take all the measures in his power to restore, and ensure, as far as possible, public order and safety, while respecting, unless absolutely prevented, the laws in force in the country. Meanwhile, article 55 states: "The occupying State shall be regarded only as administrator and usufructuary of public buildings, real estate, forests, and agricultural estates belonging to the hostile State, and situated in the occupied country. It must safeguard the capital of these properties, and administer them in accordance with the rules of usufruct." The latter article recognizes that the occupying force must ensure the protection and maintenance of the occupied State and to return it in its state after hostilities end without altercations. The intention and clarity of law is that the belligerent occupation is temporary; yet, Israel has been occupying the country long term and the ramification of this is an issue of concern under the International Court of Justice to rule on the legal consequences of long term occupation (UNGA A/RES/77/247, 2022).

In 1983, the Israeli High Court of Justice ruled that the Hague Regulations prohibit the exploitation of resources of occupied territory for the economic needs of the occupying country: "the military commander may not weigh national, economic, or social interests of his country insofar as they have no ramifications on his security interest in the area, or on the interest of the local population. Even military needs are his [i.e., the military commander's] needs and not national security needs in their broad sense. Territory held in belligerent occupation is not an open field for economic or other kind of exploitation" (B'Tselem, 2011). Despite this ruling, Israel continues to exploit copious natural resources including gas and oil fields off of Gaza, and exploring oil fields near Rantis in the West Bank (known as Meged-5) in violation of Article 55 of the Hague Regulations (Pontin et al., 2015; Cummings, 1974). In Legal Materials 733, 735; A Gerson, 'Off-shore Oil Exploration by a Belligerent Occupying Power: The Gulf of Suez Dispute', (1977) reported in the American Journal of International Law 725, 730-2 (Al-Haq, 2015b), the need for international law and its enforcement from Israel's stone mines in the WB, to its exploitation and profit from natural parks management (like Ain Fashkha) and tourist sites, and to exploitation of Dead Sea Minerals that belong to Palestine, among many others.

Violations of the Geneva Convention of 1948 and its additional protocols are grave and numerous (Isaac et al., 2016). Other cases have included the Beit Sourik Village Council (n 379); HCJ 11344/03, Mayor of Jayyus et al. v. Commander of the Armed Forces in the

West Bank et al; Mara'abe et al. v The Prime Minister of Israel et al, H.C.J 7957/04; HCJ 8414/05, Ahmed Issa Abdallah Yassin, Bil'in Village Council Chairman v The Government of Israel, among others. The Israel high court has repeatedly supported the violations of international law, for example in cases of waging economic warfare in [Al-Bassiouni v. The Prime Minister](#). On 8 December 2003, the General Assembly referred to the question of the legality of Israel's Annexation Wall in the West Bank to the International Court of Justice for wider consequences on the legal consequences of the wall's construction in the oPT. The opinion handed down by IJC in July 2014 was unequivocal and recalled relevant United Nations resolutions affirming that actions taken by Israel including building walls and settlements inside the occupied territories (including Jerusalem) are deemed illegal by international law. Other significant violations include Israel's theft of water resources and sanitation breaches, which has been well documented by a [Joint Parallel Report](#) submitted by the Emergency Water, Sanitation and Hygiene group (EWASH) and Al-Haq to the Committee on Economic, Social and Cultural Rights on the consideration of the Third Periodic Report of Israel Israel's violations of the International Covenant on Economic, Social and Cultural Rights with regard to the human right to water and sanitation in the Occupied Palestinian Territory published in September 2011.

As noted in Article 55 of the Hague Convention and the 4th Geneva Convention on Protection of civilians and civilian resources, the occupying power may not use natural resources in the manner described in section 2, such as quarrying or using dead sea resources or benefiting from tourism. Yet Israel has not agreed to the applicability of these laws even though the UN, including the security council, recognizes their applicability and the importance of such laws to be upheld. For example in 2011, Israel's High Court rejected a petition by Yesh Din against Israel and 10 Israeli companies operating quarries in the West Bank by exercising excuses that they do not affect natural resources of the West Bank and provide employment to Palestinians (B'Tselem, 2012). The petition claimed that the quarrying activities were illegal under the international law because it exploited the natural resources of the occupied territory for the benefit of the occupying power noting that the "West Bank is executed through brutal economic exploitation of occupied territory for the needs of the state of Israel, the occupying power". Yet, the court ultimately ruled that existing Israeli quarries are allowed to operate, but no new quarries are allowed to open.

Jus cogens is a peremptory international legal norm. Palestinians do not have a right to negotiate a settlement that allows perpetrators of genocide to benefit in any way from genocide. The 1969 and 1986 Vienna Conventions on the Law of Treaties stipulate that a treaty is void if it conflicts with jus cogens (Art. 53 and 64). The same is true for unilateral declarations, following the guiding principles adopted by the International Law Commission in 2006 (Principle 8). According to the Articles on Responsibility finalized by the same commission in 2001 and 2011, states as well as international organizations shall cooperate to bring to an end any serious breach of jus cogens, and shall not recognize as lawful a situation created by such a breach, nor render aid or assistance in maintaining such situation (Art. 41/2001 and 42/2011). Moreover, if states or international organizations are to violate jus cogens, they cannot invoke any circumstance precluding the wrongfulness of their conduct, such as necessity or force majeure (Art.

26). Finally, countermeasures shall not affect jus cogens obligations (Art. 50/2001 and 53/2011).

According to the Universal Declaration of Human Rights (1948) all people are entitled to the recognition of inherent dignity and certain inalienable rights, which are the “foundations of freedom and justice in the world.” Freedom of movement is part of the “liberty of man” (Jagerskiold, yr) thus making it one of the most basic human rights. Article 13 of the Universal Declaration of Human Rights stipulates that everyone has the right to freedom of movement and residence within the borders of each State, yet the occupation is an exemplary model of how this human right is not only violated but actively These universal laws and rights need to be understood in the context of the environmental struggle and resistance in Palestine. The basic regulation on the Joint Service Councils of year 1996, and its updates, last in 2006:

- Local government Law No. 1 of 1997: Describes the roles and responsibilities of the local authorities within their jurisdiction, the law clearly shows that solid waste management is the responsibility of these local authorities.
- The Investment Promotion Law No.1/1998 and Palestinian Reform and Development Plan of 2008-2010 to regulate investments
- Environmental law of 1999: The law establishes the general legal framework for solid waste management in Palestine. Reduction of the negative effects resulted from the Solid Waste and providing the legislation related to Sanitary landfills, forbidding waste burning and encouraging reusing and recycling of solid wastes.
- The Palestinian Environmental Impact Assessment Policy of 2000 defines the activities subject to an Environmental Impact Assessment (EIA) which includes all solid waste projects. Palestinian Law (2003) identifies the right to a clean and a balanced environment as a basic right of every Palestinian and that preservation of the Palestinian environment for the sake of both present and future generations is a national duty (article 33).
- Public health law No. 20 of 2004: Describes the regulations concerning solid waste management, roles of hazardous waste management and ensuring health conditions.
- The Medical Waste Management Bylaw 2012
- The National Strategy for Solid Waste Management (NSSWM)(2010 – 2014): aims at setting the development path for the Palestinian solid waste management (SWM) until 2014.

5.3 Regional and other case studies of value

The legal and regulatory framework for climate change in Palestine is based on law number 7 of the 1999 environmental law which while not specific on issues of environmental justice does provide a starting framework (EQA, 2017c). Litigating cases across borders can carry some risk of asserting power of the offending state (Blanco and

Pontin, 2017). We have seen Israeli political figures neglect such borders, with Ariel Sharon encouraging that “everybody has to move, run and grab as many hilltops as they can to enlarge the settlements because everything we take now will stay ours ...everything we don’t grab will go to them” (Agence France Presse, 1998). Furthermore, there is some debate about whether some nations are able to advance their regulatory and enforcement standards to protect their environment in an increasingly globalized system (Vogel, 1997). Developing countries are disadvantaged due to few economic resources; there is a direct correlation between the GDP of a country and level of environmental interest (Mills and Waite, 2009). The GDP of Palestinians is 1/8th of Israel’s, although these figures heavily fluctuate during cyclical uprisings against the occupation (Hever, 2010).

Al-Haq (2015b) reviewed three cases that could be of use in litigation on environmental justice issues

- 1) Kuwait-Iraq litigation: UK Courts accepted adjudication for UK harmed entities even if the harm was done extraterritorially
- 2) Shell-Nigeria Insurance case: Again it allowed UK courts based on international law to adjudicate a case where both the harming entity and the harmed were extraterritorially based
- 3) Applying article 6 of the European Convention on Human Rights: The European Commission of Human Rights also supported possibilities of invoking the article for extraterritorial litigation.

There are many other issues where the occupation can affect sustainable development and protection of the environment (MOPAD, 2014; UNIFTFPA, 2012). For example, a main problem facing the tourism sector, including ecotourism, is the policies of the state of Israel to destroy means of livelihood of the local population (Shay, 2016; Isaac, 2018, 20221; Isaac et al., 2016). Another example is that as Israel tries to change the bounds of the semi-arid regions to make them arable lands, which has been further pushing the Bedouins to the south. As climate changes, desertification increases and the semi-Nomadic Bedouins are caught in the middle (Weizman et al., 2015). The International Court of Justice ruled in 2004 that the segregation wall measures taken by the occupying authorities to change things in the occupied areas violates International law

(<http://www.icjci.org/docket/index.php?pr=71&code=mwp&p1=3&p2=4&p3=6&case=131&k=5a>) Moreover, Israeli high court rulings are not necessarily helpful in addressing environmental injustice and thus these cases must be brought to a higher jurisdiction, such as the ICJ should be involved (Esq, 2014). Israel has also found ways of circumventing compliance mechanisms (see State of Israel, 2011), such as their compliance with CESC.

Mekorot, the Zionist water company established in 1937, remains an exclusive monopoly and the Israeli water law was approved in 1957. These should be reviewed by legal experts to determine possible venues of legal action related to water of the West Bank. Other laws must also be reviewed to better understand discrepancies between Palestinian laws that delegate the responsibilities over natural resource management and access with Israeli laws and how they align against international legal systems. The summary above

of local, Israel, national, and global laws and conventions are rather clear with their strengths and limitations. Al-Haq (2015b) asserts that there are responsibilities emanating from these issues, such as Israel's responsibility as an occupying power, corporate responsibility, third state responsibility, and individual criminal responsibility.

However, we are faced by **power dynamics** at different levels that basically resulted in the occupying power acting with impunity to damage Palestinian lives and livelihoods. Globally, the five great powers hold veto power on any actions related to imposing UN majority rule. The US in particular exercised its threat of veto or actual veto to scuttle any resolutions that would hold Israel accountable or to give back rights to native people. Palestinians do not even access to satellite images that are critical for GIS and Remote Sensing work to help plan for our environment (<https://al-shabaka.org/memos/the-us-law-restricting-satellite-imagery-of-palestine-israel/>)

On the local level, Israeli power seemed to go on unchecked except for Palestinian Resistance (Qumsiyeh 2012). Power dynamics in such a colonial and anti-colonial struggle related to the environment focus on issues of lack of sovereignty and continuous encroachment which are unsustainably unless power dynamics change (Alatout, 2006; Zeitoun 2012; Qumsiyeh and Alnardeiya 2022). While there has been attempts to “cooperate” between Israelis and Palestinians in environmental issues, these suffer from the unbalanced power dynamic and certainly can be considered normalisation (Reynolds 2017; Cascão and Zeitoun 2010).

6. Challenging Environmental Injustice

“Since the goats are not just goats but also stand-ins for natives, and the pine is not just a tree but also a soldier of the state, the goat story can be read as a triumph of the natives and their animals—and of their *sumud* and perseverance—over the settler colonial project that sought to change the native’s landscape into something foreign and alien in the shape of cow and pine deserts” Braverman 2023 p 150-151

Through history Imperialism and its different forms like colonialism and Capitalism are all forms had been used by colonial countries to dominate natural resources of other lands interfering the relationship between humans and the environment, “colonial ecological violence” is a term that been used to describe the damage the colonial forces is causing to the nature, emphasizing the critical damage colonialism causing to nature, from the first european settlers in north America, the conflict with the indigenous people was related directly to the damage caused by the settlers to the nature, a speech of one of an indigenous leaders in north America Miami Tribe, told the following to US settlers in a speech: “You said we could not stay here. We would perish. But what will perish [?] But what will destroy us [?] It is yourselves destroying us. . . You trampled on our soil, and drove it away. Before you came, the game was plenty, but you drove it away. . . You point to a country for us in the west, where there is game . . . but the Great Spirit has made and put men there who have a right to that game and it is not ours” (Miller 2016).

Trade and commerce was also one of the colonial ways to disrupt the environment, The role of commerce in colonialism was primarily to convert raw materials into profitable products which would enrich the colonial power whilst at the same time helping to secure new territories. For hundreds of years a wide range of commodities were transported from the colonies to Europe where they became consumer goods and in many cases were shipped back again to satisfy growing demand on the periphery. The list includes spices, sugar, tobacco, cotton, tea, wool, coffee, furs, feathers, timber, gold, diamonds and rubber. Perhaps the most important process which linked commerce, environment and colonialism was the commodification of nature, something that was often unfamiliar to indigenous people (Murphy, J., 2009).

For example It was the rise of the motor car and mass production which ensured that Malaysia became Britain's most valuable tropical colony (Beinart & Hughes, 2007). Tyres for cars and bicycles vastly increased demand in Europe and North America. In Malaysia in 1905 20,000 ha was under rubber but by 1922 this had increased to over one million (nearly 40% grown on small holdings) (Murphy, J., 2009).

Ecological/Environmental justice is central to peace (Awad 2019) and as noted above in details in sections 2 and 3 is key to sustainability. Environmental justice is a wide field with various elements that need to be considered including environmental equity, environmental classism, environmental racism and in the context of Palestine can include (Salem 2019):

1. Affirming of sacredness of Mother Earth, ecological unity, and interdependence of all species, and the right to be free from ecological destruction.
2. Demanding that public policy is based on mutual respect and justice for all peoples, free from any form of discrimination or bias.
3. Mandating the right to ethical, balanced, and responsible uses of land and renewable resources in the interest of a sustainable planet for humans, animals, and plants.
4. Calling for universal prevention of the use of nuclear, chemical, and biological weapons in any dispute among all the peoples of the world.
5. Calling for protection from nuclear testing, extraction, production, and disposal of toxic and hazardous wastes and poisons, and nuclear testing that threatens the fundamental right to clean air, clean soil, clean water, and healthy food.
6. Affirming the fundamental right to political, economic, cultural, and environmental selfdetermination of all peoples.
7. Demanding the cessation of the production of all toxins, hazardous wastes, and radioactive materials, and that all past and current producers be held strictly accountable to the people for detoxification and the containment at the point of production.
8. Demanding the right to participate, as equal partners, at every level of decision-making, including assessment, planning, implementation, enforcement, and evaluation.
9. Affirming the right of all workers to a safe and healthy work environment, without being forced to choose between unemployment and unsafe livelihood.

10. Affirming the right of those who work at home to be free from environmental hazards.
11. Protecting the right of victims of environmental injustice to receive full compensation and reparations for damages, as well as quality health care.
12. Considering governmental acts of environmental injustice a violation of international law, the Universal Declaration of Human Rights,
- 13 and the United Nations (UN) Convention on Genocide and Racism.
13. Recognizing a special legal and natural relationship of the native (indigenous) peoples to governments, through treaties, agreements, compacts, and covenants to affirm sovereignty and selfdetermination.
14. Affirming the need for urban and rural ecological policies to build new cities and to improve rural areas in balance with nature and honoring the cultural integrity of all communities.
15. Providing fair access for all to the full range of natural resources.
16. Calling for the strict enforcement of principles of informed consent and a halt to the testing of experimental reproductive and medical procedures and vaccinations on peoples and animals [as well as plants].
17. Opposing the destructive operations of multinational corporations.
18. Opposing military occupation, repression, and exploitation of lands, peoples and their cultures, and other forms of life.
19. Calling for the education of present and future generations, with emphasis on social and environmental issues, based on people's experience and diverse cultural perspectives.
20. Requiring that states and peoples, as individuals and communities, make their choices to consume as little as possible of the natural resources available; to produce as little waste as possible; and to make conscious decisions to challenge and reprioritize lifestyles, to insure the health of the natural world for present and future generations

The first way to challenge Environmental Injustice is to research and document it and simply reject its hegemony (Badil 2013; Barakat 2018). Knowledge is power Monitoring Israeli Colonizing activities in the Palestinian West Bank and Gaza (dubbed POICA <http://poica.org/about-the-project/>) is a joint project between the Applied Research Institute in Jerusalem (ARIJ) and the Land Research Center (LRC). Both institutes have a long history of gathering data and documents and producing local maps (a very important aspect of telling our own story and reflecting reality not the Zionists wishful thinking or propaganda efforts, see Bier 2014). Daily, weekly, quarterly, and yearly reports have been compiled that document destruction. For example see this latest report <http://poica.org/wp-content/uploads/2023/01/Fourth-Quarterly-Report-October-2022-December-2022.pdf>). Other groups like Peasce Now monitor settlement activities and land seizure.

The PLO proceeded to establish ministries and systems of governance analogous to most states in a state building mode in 1994 following the signing of the Oslo Accords. The accords were supposed to be temporary to 1999 to then result in resolving issues like refugees, Jerusalem, statehood, water, and fate of Israeli settlements. Yet, clearly there was no intention on behalf of the Israeli governments to resolve the issues based

on international law and UN resolutions (like UNGA 181, 194 or UNSC resolutions 242 and 338). The situation actually worsened because Israel increased the number of settlers in the west Bank from 150,000 in 1994 to 850,000 today. This protracted conflict (really from 1948 but exacerbated after the occupation of the WB in 1967) begs the question of whether the SP and its people can resist the horrific and widespread abuses described in sections 2 and 3.

The internal disagreement among Palestinians about the direction of economic development highlights two competing visions for the future. One vision, proposed by the PA and international development actors, involves building up industry, increasing international investment in modernizing the Palestinian economy, and, generally, approaching the idea of a “green economy” from an angle of technological advancements and job creation. The other vision, articulated primarily by the Palestinian farmers who still make up the majority of workers in the oPt, is one of going back, literally, to one’s roots: to small scale farming, with an eye towards biodiversity and ancestral farming practices, with cooperation and self-sufficiency as the overarching ideals. The first is a vision of accommodation; the second is one of restoring what has been lost or destroyed by occupation, colonization, and capitalism.

This is not to say that new technologies and small scale industry do not have a role to play in the second vision; just that, if we are looking for environmental justice that goes beyond equitable distribution of harms and goods, we can find such a framework articulated by those who are seeking to change our very relationship with the environment, to return to interdependence and move away from a transactional, fragmented view of what the environment is. Take water, for example. Much of the literature on environmental injustice will frame water as a resource and a right, an object that should be equitably distributed among people, not hoarded or contaminated by one group or another. But in the battles of the people of Standing Rock against the Dakota Access Pipeline, another slogan was revived: “Water is Life.” Not water as a right or resource, but water as life itself, a living thing and life sustaining, a *part* of the environment, just as human beings are.

In Palestine, the land matters. Not just as a resource, but as inextricably linked with the people who make their lives through it. This is why, when the Israeli military pushes Bedouins off of land because they claim their settlement there is not permanent,

The conflict in this country since the start of the Zionist idea to create a Jewish state in Palestine has dominated the news in the past few decades. It is a conflict that impacts all facets of life in this land including the environment and environmental conservation. In this sense it becomes clear that there is an organic connection between peace and environmental issues. The idea of conflict resolution including those related to environmental issues is to seek to reconcile competing interests but to do it in a way that

leads to equality (Malik, 2008). Conflict over land and natural resources are difficult but can be tackled in a methodological way usually if the two parties are somewhat balanced (it is more difficult in very uneven conflicts such as colonialism). In terms of managing natural resources and the environment, the idea is to arrive at sustainable development and state building through the process of ending the conflict and post conflict management (UNIFTfPA, 2012).

Some actions locally on managing our environment are possible (Bishara et al. 2021; Dajani & Isma'il. 2014; Görlach et al 2011). International aid agencies (e.g. GIZ 2011, 2014; Saadeh et al. 2019) as do SP government agencies (EQA 2016a,b,c,2017a,b,c, 2020a,b,c; MOLG 2016; MOLG & JICA 2015; MOPAD 2014; PWA 2016; SP 2021) do research and put together good plans and strategies to deal with environmental threats dealing with things ranging from climate change to environmental local regulations. Palestinians do engage in environmental and agricultural work for example via cooperatives (Abdulmajeed 2018; Krieger 2018) and women empowerment (Peteet 1992; Hasso 2001,2005; Kuttab 2018; Al-Khateeb et al., 2017). Challenging injustice is done by a number of NGOs for example Land and Water Institute, the Palestinian Hydrology Group, the Palestinian Agricultural Relief Committees, the Applied Research Institute/Jerusalem, and the Agricultural Engineers Association. Some things can also be learned from other experiences (Ebbesson 2002). Campaigns are important for example on water (EWASH 2012, 2016; Ashqar 2012; CESVI 2019) or via agriculture (Perrier 2021)



But the challenge is mainly hegemony and power imbalance with colonizers basically getting away with dictating their agendas (ee Qumsiyeh and Albaradeiya 2022). Yet, this environmental Nakba is possible to reverse with diligent resistance work and thinking outside the box (Qumsiyeh 2004,2012, 2021; Qumsiyeh and AbuSarhan 2021,2022; Qumsiyeh et al. 2017)

There is also now the concept of integrating environment in peace building efforts versus normalization efforts. This is not a conflict between two parties but a colonial anti-colonial struggle. Trying to equate the oppressor with the oppressed (e.g. in areas like perpetuating the conflict or violence) does a disservice to understanding and dealing with reality. The cost of occupation even without counting natural resources is

in the billions (ARIJ 2015b; Arafah et al. 2015). The disparity between settlers and natives in land control, economy, and access is also compounded by disparity in use of other natural resources especially water. The issue of water is the most significant and will be even more going forward (Gasteyer *et al.*, 2012; Al-Haq 2013). Cooperation with long-term occupiers/colonizers in waste management should not lead to normalization and strengthening of the status quo of occupation by treating the waste from settlers in “joint facilities” (see e.g. Barak, 2012; Reynolds 2017).

A good example of this is <http://environmentalpeacebuilding.org/> as a positive approach instead of the negative one of normalization. Normalization activities (also in environment) involve cooperation between the occupiers and occupied with assumptions of normalcy of the situation. For example the |Arava institute is dubbed as a peacebuilding institute (Alleson & Schoenfeld 2007). However, real peacebuilding requires facing hard realities and for the occupiers who wish to work with the oppressed to challenge the system and genuinely join in the struggle of the oppressed including on environmental justice issues in an area that is the cradle of civilization and key to peace and justice in other parts of the world.

The Palestinian environment is suffering from loss of natural resources, neglect of the environment, environmental pollution, low water quality, depletion of water sources, and other human impacts leading to habitat loss and decline in biodiversity. The Israeli occupation made addressing these issues more difficult and added more challenges to the Palestinian environment. Addressing these and global challenges like climate change requires a grassroot effort and not a top-down approach (Beck, 2015). This is precisely what PMNH/PIBS tries to do even under the difficult situation of conflict. Working and adapting to changing landscapes is based on diversity whether in natural world (Darwinian evolution) or in human societies (cultural evolution). This is a key to survival but the reverse is also true: most isolationist ideologies that refused to accept concepts of diversity are extinct or almost extinct.

The defeat of Arab regimes in 1967 forced remaining Palestinians both in the areas occupied in 1948 and those occupied in 1967 to develop self-reliance mechanisms to cope with Israeli occupation (Qumsiyeh and Isaac, 2012). Those self-reliance mechanisms were gravely diminished by the Oslo Accords. In the wake of these upheavals – and particularly since the Oslo Accords, NGOs proliferated in the region. Initially there were few NGOs dealing with environment or sustainability issues in the OPT. Those that were established had good agendas but the Palestinian political developments caused the situation of volunteerism and the spirit of giving to diminish. Many NGOs became, like Palestinian Authority ministries, more concerned with salaries than with achieving their mission (Qumsiyeh, 2012; Majdalani Azzeh 2012).

There were environmental justice movements in Palestine. A Palestinian Environmental NGO network was formed. Stop the wall campaigns, International Solidarit movements, academics, and other worked on these issues and still do today. In January 2022 a friend wrote the Sierra Club asking them to reconsider a planned trip to our country which normalizes “Israel” and makes it look as a green destination. This is what people dub

greenwashing occupation, colonization, and apartheid (see for example https://www.cjpme.org/fs_210 and <https://decolonizepalestine.com/rainbow-washing/greenwashing/> . Their response “We recognize the gravity of the situation and we agree that the occupation of Palestine is unjust and inhumane. However, it is our position not to restrict trips due to the politics of the countries we visit. Outings are one of the best ways to educate citizens and turn passive people into activists. If the Sierra Club were to cancel Israel trips, we would lose a very valuable tool that educates participants about a country’s social and environmental conflicts. This is vitally important on issues such as the Chinese occupation of Tibet, the aerial hunting of wolves in Alaska, and the protection of marine mammals to name just a few.” I then immediately wrote to them to explain that this is disingenuous since their tour does not show any other side and is guided and controlled not to show any environmental injustice issues. The response I got was short “I greatly appreciate your engagement on this issue. While the focus of the trip this spring is to give participants an environmental and cultural experience that reflects the diversity of the region, I hear your concerns. I have shared your perspectives with longtime members of the Sierra Club Board of Directors as well as senior staff across multiple departments, and we will take your feedback under consideration for the future.” A month later, the trip was cancelled but then was quickly reinstated after pressure from the Zionist lobby. Many members of the Sierra Club are now writing them and are reconsidering membership if such biased trips are carried. This story is a reminder of issues of environmental activism that has tried to face the environmental colonization here.

There is a very useful toolkit for managing conflicts like ours on issues like natural resources (UNIFTFPA 2012). Palestinians should also maximally utilize UN Procedures for environmental justice issues. For example the UN Human Rights Council sets up special rapporteurs on human rights (see this insightful new book by three previous holders of the position: Dugard et al. 2023). The current Rapporteur is Francesca Albanese and items can be submitted also via link <https://spsubmission.ohchr.org/> .

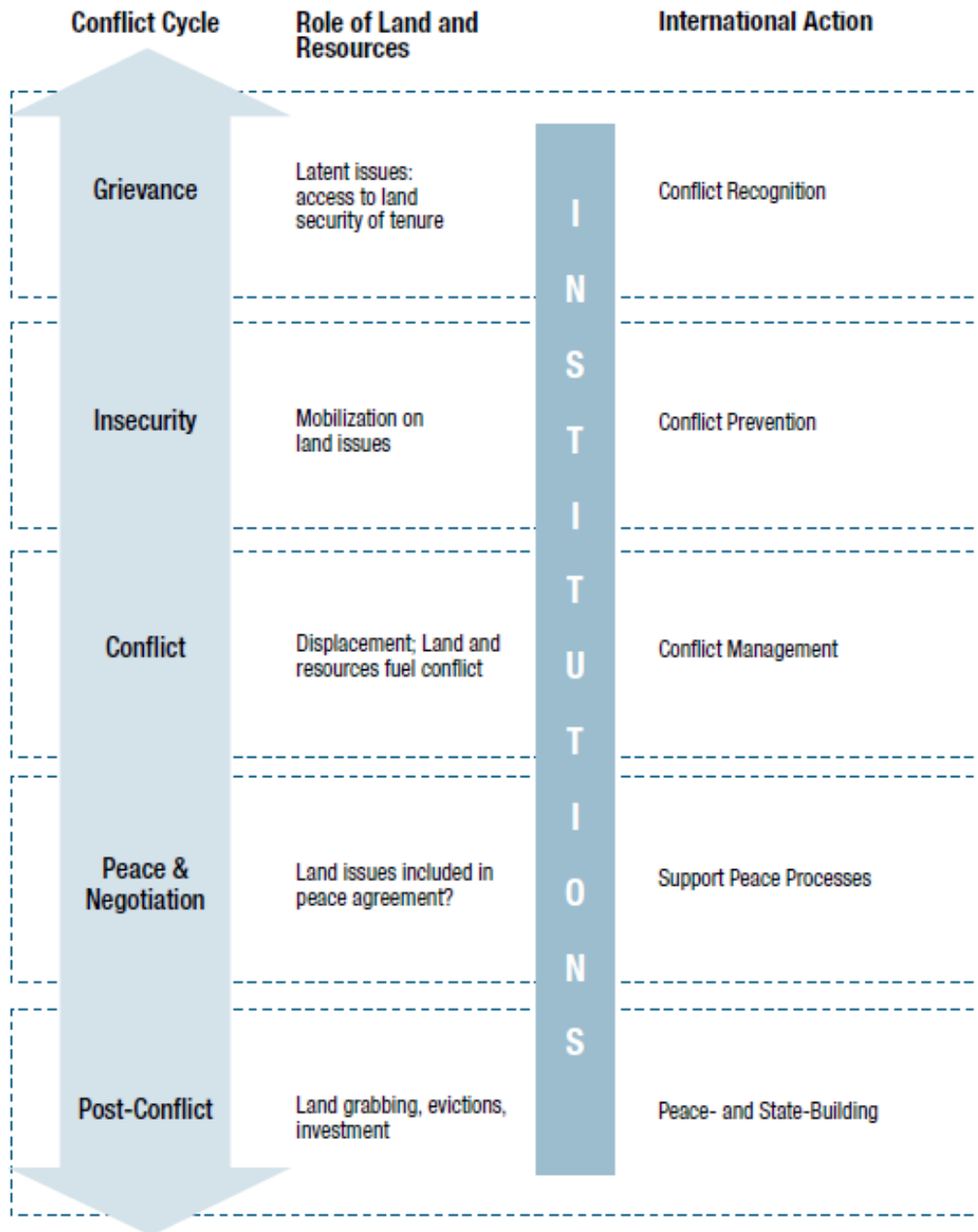


Figure 95 Role of international community in relation to conflict and natural resource issues.

Some EU initiatives helped Palestinians in area C only to be attacked for it and some projects destroyed.

- <https://www.ngo-monitor.org/reports/dutch-funded-palestinian-control-area-c/>
- <https://www.rijksoverheid.nl/binaries/rijksoverheid/documenten/brieven/2020/06/18/brief-uklfi-18-juni-2020/brief-ukfli-dd-18-juni-2020.pdf>
- <https://uawc-pal.org/news.php?n=3624&lang=2>

Palestinians also resisted colonization attempts to erase their local food production by forming seed banks such as at UAWC thus enhancing food sovereignty (Meneley 2021; Fullilove 2022) and other farming activities (Abdelnour et al. 2012; Golzar Anderson and Phan 2022). If Palestinians were allowed to continue living on their land using traditional methods of sustenance like stone terracing, they would have been able to be food sufficient (Abu Hammad 2004).

For more on initiatives to resist environmental injustice see Al-Butmeh et al. 2019; and Qumsiyeh et al. 2017.(Al-Butmeh et al., 2019; Qumsiyeh., 2021; Qumsiyeh and Abusarhan 2020; Qumsiyeh and AlBardeya, 2022).

Palestinians resisted encroachment and dispossession at every stage and in every sphere of their lives. Even when they were being shot for trying to return to their homes and lands 1948-1950, tens of thousands managed to do so which added to the so-called demographic challenge. As land confiscation after 1948 and after 1967 continued, farmers continued to resist evictions. Planting trees, returning to the land, and reconnecting with a rich agricultural heritage became manifestation of *sumud* (resilience, persistence). In the West Bank and Gaza, actions of resistance by planting and harvesting are very common. Farmers in Gaza and the West Bank risk being shot on sight as they planted near the wall. Farmers lose crops to settler and soldier attacks. The updated MOA (2020) Strategic goals for agriculture sector by the Ministry of Agriculture includes:

- 1) Increased resilience and steadfastness of Palestinian farmers on their land
- 2) Self-sustenance in food production and disengagement from the Israeli food supply system
- 3) Natural and agricultural resources managed in sustainable ways including adaptation to climate change.
- 4) Enhance production, productivity, and competitiveness of the agricultural sector.
- 5) Farmers have access to support services that meet their needs in quality, quantity, time, and cost.
- 6) Having a legal environment for the sector that is efficient and effective.

Some Palestinians started permaculture farms as a form of resistance (Anabtawi 2016). Also maintaining traditional rain fed agriculture is considered a form of resistance and for food sovereignty in the face of Israeli onslaught (Teddell et al. 2019, 2020; Kohlbry 2022)

While discussions around environmental justice are relatively new in the mainstream consciousness, Palestinians have been resisting land theft and ecological destruction at the hands of the Israelis for decades. Land reclamation and mass mobilization to plant olive trees, grape vines, and other seeds were often practiced in response to the creation and expansion of settlements in the West Bank (Kohlbry, 2022). Claiming land use over neglected lands or repurposing crops and trees that are no longer productive with more fruitful ones are some of the ways in which Palestinians have been vouching for the necessity of keeping their land and asserting its use. Today, with the burgeoning fears of climate change impacts, and with the exacerbated impacts of the occupation, Palestinians

have been furthering environmental justice actions to address the intersection between the two connected issues.

Palestinians have also exercised other measures of resistance by targeting the Israeli industries and sectors that have imposed direct harm on the environment. The Israeli tourism industry, which has blocked and deterred Palestinians from access, managing, and safeguarding land while further contributing to waste accumulation and resource deprivation, have been resisted by Palestinians who have created alternative forms of tourism. Seen as a way to divert Israeli agenda to use tourism initiatives as a political tool for obscuring the occupation to tourism, and to further control over Palestinian land, the Alternative Tourism Group of Palestine (ATG) was created to build an alternative tourism industry that exposes the reality of life under occupation, to dispel the misconceptions that exist around Palestine, and to link the relationship between the settler-colonial regime and the unsustainable impacts of Israeli tourism (Higgins-Desbiolles, Whyte, and Tedmanson, 2013). Efforts like these exist to not only provide more sustainable ways of introducing tourists to Palestinian heritage and culture, but to also provide alternative forms of touristic endeavors that do not further deteriorate local waters, waste, and land under Israeli operators.

Much of the focus on restoring environmental injustices in Palestine has focused on the interventions implemented by international NGOs, and has subsequently neglected much of the organizing of local communities in Palestine. Critics in particular have noted the neoliberal agenda of international NGOs, who have focused on short-term and industrial solutions to degraded landscapes and have implemented initiatives that run counter to many villagers' water priorities in the region (Braverman, 2021; Mendeley, 2021). Yet, there has been increasingly scholarly and public attention to the ways in which local community power has mobilized to resist environmental injustice and colonialism. While there are many examples of resistance that Palestinians have exercised to increase biodiversity and practice agro activism through olive and community farming, there are still challenges due to the restrictions imposed by the Israeli border control on the movement and regulation of crops, plants, and seeds. To exemplify, since the 1970s, Israeli forces have discarded za'atar plants at checkpoints under the pretence of preserving the natural habitat and health of wild za'atar. Palestinians have also been prevented from picking wild thyme as it has been culturally practiced, due to an Israeli classification of wild thyme as a 'protected plant' (Abdelnour et al. 2012). Increasingly however, Palestinians are mobilizing to find solutions to agricultural production that is locally managed and exists without the cooperation or entanglement with Israeli or donor agendas.

Ecological decolonization (term used by Braverman 2021a) can take many forms. Planting seeds at risk of extinction and reconnecting with our cultural heritage is one such activity, where the act of planting, harvesting, and foraging soil, seeds, and plants through sustained historical practices and local knowledge help to retain Palestinian connection to the land and regenerate the land (Mendeley 2021). Urban gardening in efforts for restoration has shown promise in the capabilities to connect Palestinians to their land (Qumsiyeh et al. 2022). **Seed** sharing and archiving through seed libraries is one way in

which Palestinians have been working towards maintaining plant diversity and expanding farmers' agricultural output and attachment to their heritage. The settler colonial occupation not only vies for the theft of land but also the erasure of Palestinian knowledge and traditions; sustaining seed diversity and Palestinian knowledge in nurturing and growing them is part of an environmental justice movement that ensures cultural longevity and existence (Mendeley, 2018).

Palestinians still plan and strategize and generate action plans and implement them and most of these have developed ways to challenge the destructive status quo and cover many areas:

- 1) Climate change The projections for Climate Change effects on our region are dire but mitigation and adaptation strategies will not work in light of ongoing Israeli occupation and denial of basic rights for the local people(UNDP 2010; EQA 2017b,c, 2020a,c).
- 2) Biodiversity (EQA 2022, 2023)
- 3) Spatial plans <https://info.wafa.ps/userfiles/image/plac-plaining.gif>
<https://www.mas.ps/files/server/20152906115717-2.pdf>
المخطط الوطني لحماية الموارد الطبيعية والمعالم التاريخية- دولة فلسطين 2014
<https://info.wafa.ps/userfiles/server/pdf/p.n.p.pdf>

There is a global environmental justice atlas <https://ejatlas.org/> and we in Palestine can add to it. Global working groups like <https://ceobs.org/> should be approached for support. Some organizations provide legal support such as <https://gisha.org/> (mostly focused on Gaza) and <https://www.saintyves.org/> (WB). Other organizations like FMEP organize talks and encourage working with politicians in their country to effect change (see <https://fmep.org/resource/2022-congressional-briefing-series-israel-palestine-hot-topics-in-congress/>)

For the two pilot cases discussed below we report at the end of each case how people resisted and potentially can resist the environmental injustice in those areas.

7. Potential Pilot Cases

We chose the following three cases in the Bethlehem district for initial potential litigation:

7.1 South Jerusalem Hills, Bethlehem Governorate

The South Jerusalem hills and valleys in the Occupied Palestinian Territories is in the government of Bethlehem and includes towns like Beit Jaa and Battir and villages like Al-Walaja, Al-Khader, Wadi Fukin, and Artas. In the partition resolution UNGA181 of 1947, much of the populated areas were to be included in a corpus separatum, as an international enclave separate from the Israeli and Palestinian state. It is an interesting area with much history, unique geography, and international interest (e.g. Birth Place of

Jesus). It is here that we may find the first Palestinian political awakening vis a vis their environment and natural resources in 1925 (Lemire 2011).

The cluster of communities is referred to as Al-Arqouq cluster. The area were evaluated by the Palestinian Ministry of Tourism and Antiquities (MOTA) and submitted for emergency consideration as a UNESCO World Heritage Site (WHS) (MOTA 2015). This was due to threatened rich ancient natural and cultural heritage, which includes early human habitation, Canaanitic agricultural terraces and watchtowers and historical heritage (Canaanitic, Roman, Byzantine, and Islamic sites). To designate it as such involved significant local and international efforts that mapped humans, land, and nature (Desclaux-Salachas 2020). The area endures numerous difficulties, including habitat loss, land fragmentation, and challenging economic and political circumstances (Amr et al., 2016; ARIJ, 2016; Husein & Qumsiyeh, 2022; IPCC, 2020; Qumsiyeh et al., 2014).

The core part of the proposed World Heritage Site comprises 2.6 km² of natural land interspersed with agricultural land with an equivalent buffer zone of an area of more than 5 km². These two valleys shown called Al-Makhrour and Wadi Husan (Fig. 1) form with a third valley (Wadi Ahmed/Cremisan valley) a unique ecosystem of Mediterranean forested and maquis habitat with water springs. It falls in the Mediterranean biogeographical zone and is an essential part of the hydrological system that replenishes the West Bank's western aquifer. It is one of thirteen Important Bird Areas in Palestine (Birdlife International, 2021), an Important Plant Area (Radford et al., 2011), and was designated a Key Biodiversity Area by the Palestine Environment Quality Authority (EQA). Much of the studied area is located in Area C of the occupied West Bank, which means it is under Israeli civil and military control. Battir is a village recognized for its amazing landscape (Abu Hammad 2016) which is one of the factors that led to a collective work to map not just Battir but the area around it and submit to UNESCO to recognize as a World Heritage Site (IPCC 2020; MOTA 2015). This work became important because of accelerated work that materialized in 2009-2011 to target the area by the occupation forces including the building of the wall around the built up areas of the new Al-Walaja (ARIJ 2012).

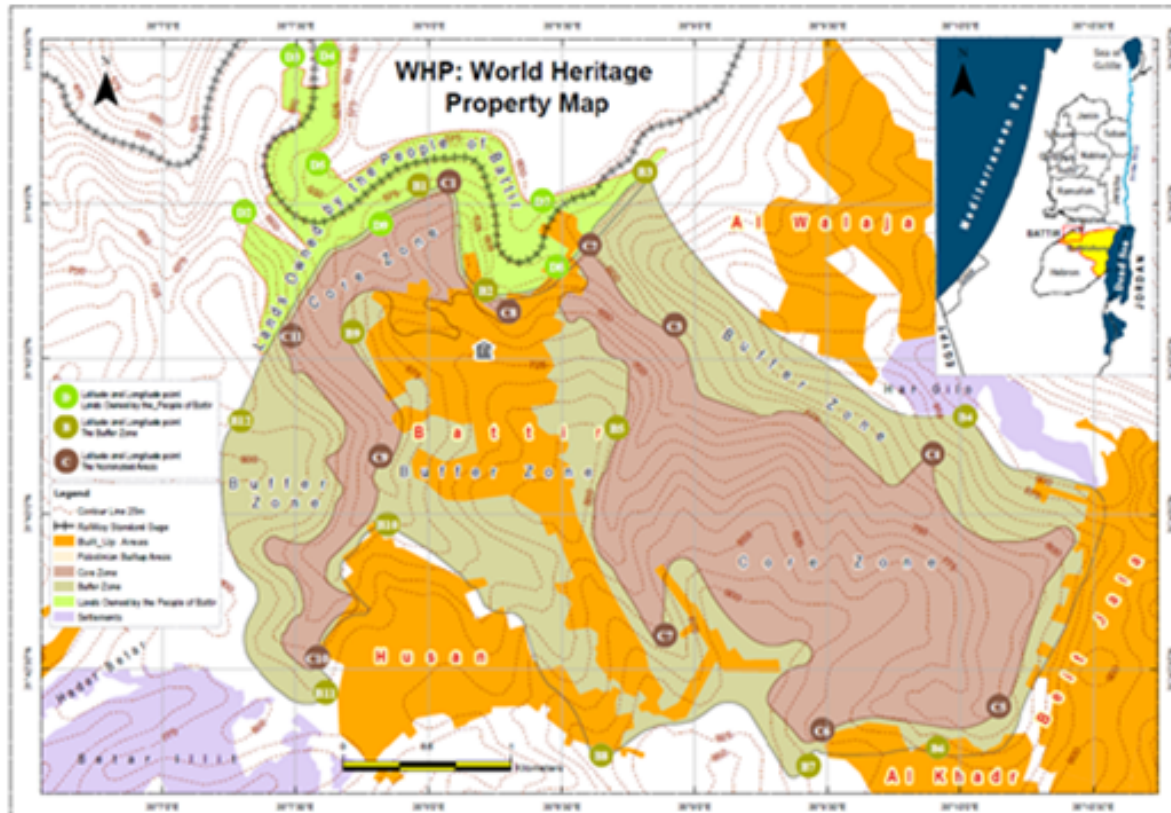


Figure 96 World heritage site area <https://whc.unesco.org/en/list/1492/>

PIBS (Qumsiyeh et al. n.d) documented more than 417 vascular plant, 15 mushroom (Thaler et al., 2020), 105 bird, 3 amphibian, 12 reptile, 31 mammal, and hundreds of invertebrate species (e.g. see report on Coccinellidae by Najajrah et al. 2019), and noted many rare plant species, such as *Carduus australis*, *Colichium hierosolymitanum*, *Herniaria glabra*, *Nonea philistaea*, *Onopordum carduiforme*, *Reseda alopecuross*, *Salvia Indica*, *Verbena supina*, *Viola occulta*, *Gypsophila Pilosa*, *Polygonum argyrocoleum*, *Portulaca oleracea*, *Populus euphratica*, *Rumex dentatus*, *Cephalaria syriaca*, *Lactuca undulata*, *Onosma gigantean*, and *Turgenia latifolia*. The work was later extended to two nearby valleys (Wadi Fukin to the southwest and Wadi Ahmed/Cremisan to the northeast) which added additional rare plant and animal species. For example, camera traps recorded wild cats, hyenas, porcupines, jackals, foxes, and gazelles. Comparison of animals and plants seen in 2018 and 2020 showed no change but that is likely due to short time difference of two years. Yes, the data can act as a baseline data for future monitoring. For the World heritage site, a management plan relating to environment (including threats) was adopted (<https://bit.ly/3kSySnN>) including targets (<https://bit.ly/3iKgKtE>). Information on Cremisan Valley and its threats are available <https://bit.ly/2V4B1C9>

There is already evidence of decline in biodiversity in this area due to both local (urbanization) and Israeli activities (Qumsiyeh et al 2014b; Qumsiyeh et al. n.d.).

Israeli colonial activities are centered on two clusters: the south Jerusalem block of settlements like Gilo and Har Gilo) and the Gush Etzion block (UNRWA 2015; Badil 2019). As discussed earlier under section 3.10, there is a significant impact of these colonial activities on lives and livelihoods of the local people. Israeli colonial activists excavated sites in and around Battir village (Dagan 2010). Archeology is used here as a method to stop Palestinian use of their land and to pillage our history (Rjoob 2009).

To further protect the area, it was just (2023) designated as a new protected area (see borders/map in Fig. 89 below) by the EQA after our intensive work.

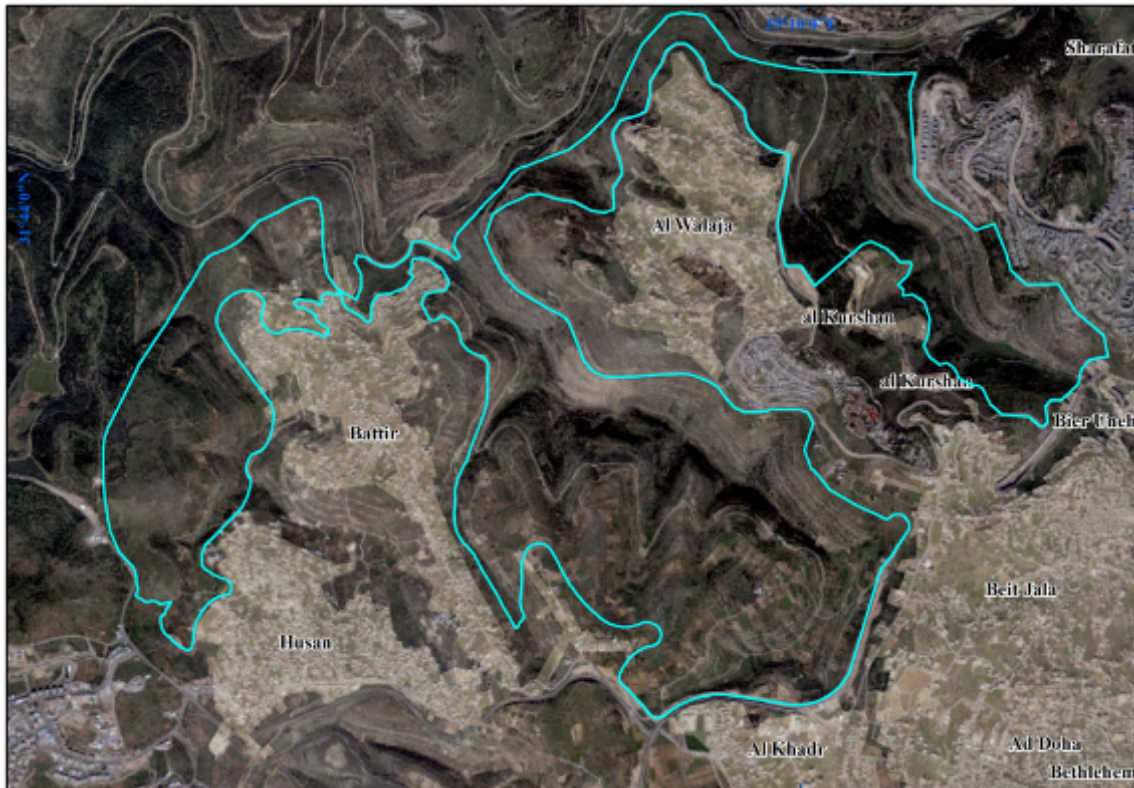


Figure 97 Adopted borders for the new protected area called 'Al-Arquob' that includes not merely the valleys and hills originally included in the World Heritage Site (Fig. 1) but also the Valley and hills between Beit Jala and Jerusalem.

According to ARIJ (2010):”In June 2004, private initiatives were made by the Israeli Municipality of Jerusalem (status unrecognized) to build a new Israeli settlement on 2000 dunums (according to Israeli sources) of agricultural lands that belong to Al Walaja, Battir and Beit Jala communities, west of the Bethlehem Governorate. However, the total land area threatened to be confiscated for the construction of this settlement project is 2976 dunums; of which, 1126 dunums are located within Al Walaja village lands, 1279 dunums are located within Battir village lands and 571 dunums within Beit Jala city lands. The new initiative intends to create an Israeli settlements chain between Jerusalem and Gush Etzion settlements Bloc (southwest of the Bethlehem Governorate) as part of the “Jerusalem Envelope” plan. This plan encompass as much land as possible and to increase the number of Jews within Jerusalem illegal boundaries in order to create facts on the ground to alter the demographic status of the city and influence the outcome of the future negotiations regarding Jerusalem. As Jerusalem Deputy Mayor Yehoshua Polak

said, ‘We want as many Jews as possible in Jerusalem to influence the demographic situation’ .The new Israeli settlement to be, which will hold the name of ‘‘Giv’at Yael,’’ is set to include some 20,000 housing units and accommodate more than 55,000 Jewish settlers. This settlement will physically complete the ring of settlements that separate Jerusalem and encircle Bethlehem starting at Har Homa, extending to Gilo and Har Gilo, linking with the planned Giv’at Yael and continuing towards ‘‘Gush Etzion’’ bloc in the southwest ‘‘





Figure 98 White barracks and greenhouses mark a settlement outpost starting in area between Battir and Al-Khader photo 20 Jan 2023. Lower right hand corner is property of Ramzi Qaisieh (0568740154 whose home and restaurant were demolished (excuse of lack of permit) with only the old house left.

Table 17 Land Status of Initial Gush Etzion colonies (Badil 2019).

	Name	Founded	Dunums	Established by ⁶⁸	Current land status ⁶⁹
1	Kfar Etzion	1967	993	Lands purchased before 1948; military seizure order 5/6/69 and military seizure order 13/79 (for colony purpose)	Declared state lands and registered state land (former JNF-lands)
2	Har Gilo	1968	414	Military seizure order t/30/77 (for military needs) and private church land	Military seizure (33.59 percent) and declared state lands
3	Rosh Tzurim	1969	893	Military seizure order (for colony purpose) and lands purchased before 1948	Declared state lands (former JNF lands)
4	Alon Shvut	1970	1,006	Military seizure order 5/6/69, and registered state lands	Declared state lands
5	Elazar	1975	536	Military seizure order 3/73 (for colony purpose), and private Palestinian land	Military seizure (86.9 percent) and declared state lands
6	Migdal Oz	1977	1,211	Military seizure order 13/76 (for colony purpose) and registered state land	Military seizure (89.6 percent), declared and registered state lands

The expansion of Route 60 in the same area is also creating environmental damage (Fig. 91).



Figure 99 Route 60 (Tunnel Road) being enlarged at the expense of lands of Beit Jala (photo by PIBS-Qumsiyeh) 20 Jan 2023

Al-Walaja is particularly impacted by Israeli policies (Joronen, 2019; Qumsiyeh n.d.). The new village's agricultural lands were designated as another of Jerusalem's national parks, including one of the last remaining springs (Ein Hanya) and its church area as an archeological park. In even the liberal Haaretz, they still called it first temple era Christian site (Shuster and Hasson, 2018). Braverman (2023) devoted pages 106 to 115 to deal with the appropriation of the ancient landscape in the Wallaja and Battir area as "Jewish landscape under the name "nof kdumim" (lit ancient landscape). For details on what is happening in this site, see <https://friendsofwalaja.wordpress.com/>



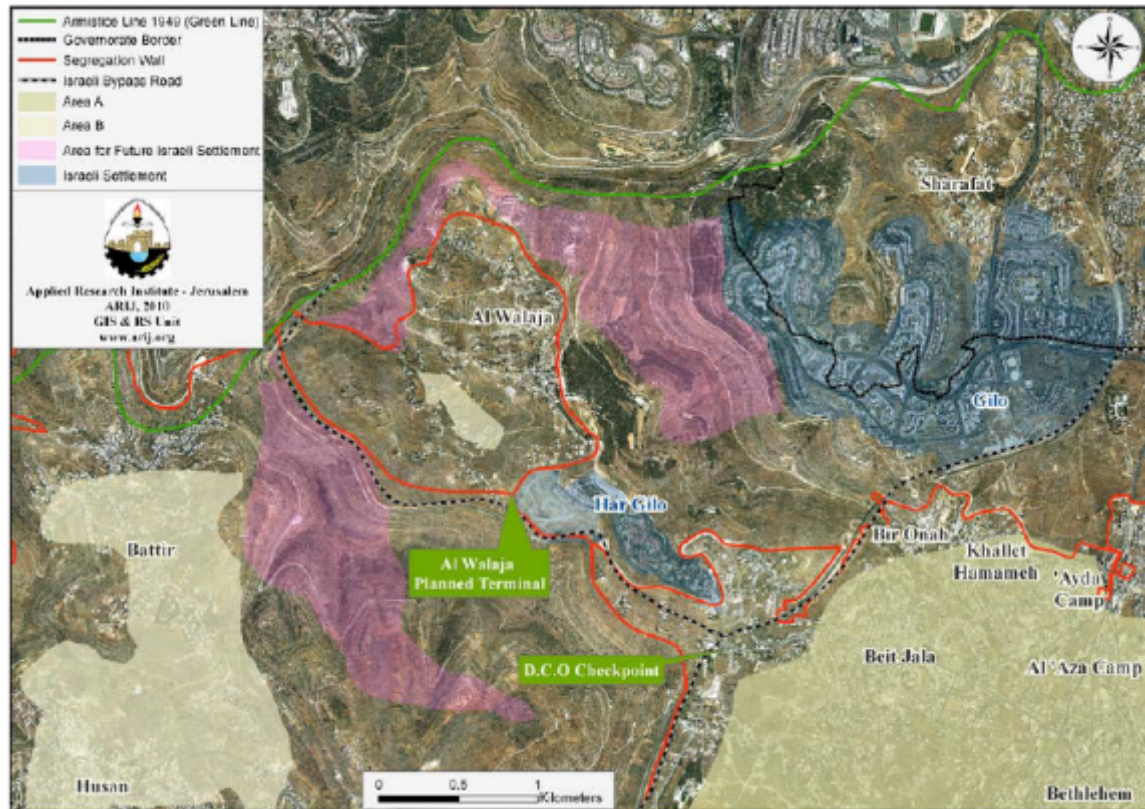
Figure 100 Photo from Al-Walaja village showing green line (near railroad track in valley), west Jerusalem on left and settlement of Gilo on right with segregation barrier in foreground.

There are private property now on the other side of the Wallaja wall that belongs to the people of Al-Walaja that are declared by Israel as part of the Judean Hills Park. This is clearly illegal by International law (Oppenheim 1952).



Figure 101 Wall being built to isolate the new village of Al-Walaja from the remainder of their lands. Photo taken from road on the green line that connects Har Gilo with Jerusalem (Photo by MB Qumsiyeh/PIBS)





Under International law relating to the Fourth Geneva Convention, the occupying power may not damage or decrease values of natural resources (being a world heritage site). Background should be researched with Al-Haq (see also their report 2015a,b) which include legal analysis. HCJ 6181/04 Ahmad Al-Dar'awi and 65 others v. The Minister for Defence et al; HCJ 1769/10 Beit Jala Municipality v The Commander of the IDF Forces in Judea and Samaria, March 16 2010; HCJ 5330/11 Walaja Village Council v. The Minister of Finance, September 27, 2011; HCJ 9516/10 Walaja Village Council v. The Commander of the IDF Forces in Judea and Samaria, August 22, 2011; HCJ 1960/07 Al Haq et al. v. The Prime Minister et al. (July 9, 2008).

Attempts at intervention and affect on Israeli behaviour in this area included

- 1) A number of demonstrations for example
- 2) The designation as a tentative World Heritage Site on an emergency basis seemed to have delayed if not our right prevented development of eh wall in the Battir Area (though not in Al-Walaja)
- 3) Our team after doing research in the area also approached UNESCO which actually responded (see <https://www.palestinature.org/conservation/Letter-from-UNESCO.pdf>).

7.2 South Hebron Hill

This case is a compelling story of injustice. Israel has pushed hard to remove the 1200 residents of the Soth Hebron Hills (also referred to as Masafer Yatta in southern part of the West Bank.

Israel has use restriction of access to water as one of the ways to drive people out (Scarpa et al 1998, 2001; Al-Haq 2013). This is contrary to article 49(1) of the fourth Geneva Convention which prohibits such transfer.

Ben-Naftali and Diamond (2022) analyzed the Israeli high court ruling which they called farcical. The declaration of firing zones in the WB was promulgated in 1980. Firing zone 918 was declared in the 1980s and then removed 700 residents in 1999 (B'Tselem 2012c). Residents petitioned the high court which allowed them to return pending final decisions explanations. The community which now number 1800 people are still threatened (ACRI 2017).

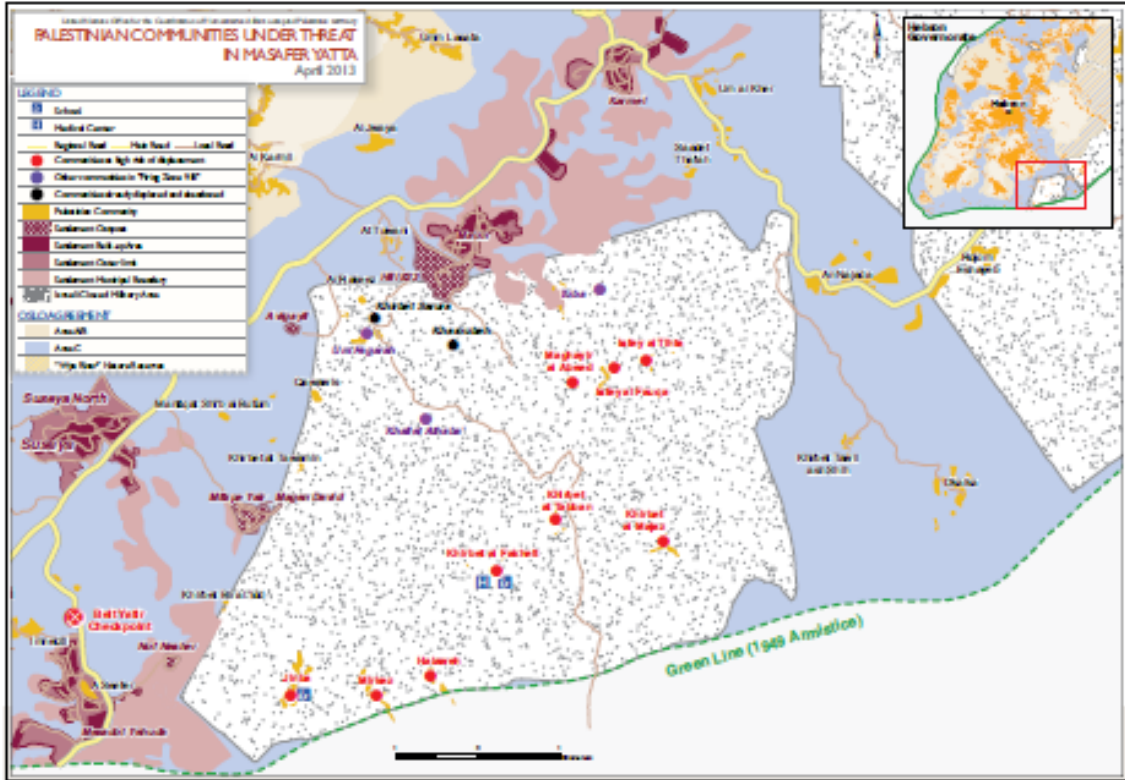


Figure 102 South Hebron Hills (Al-Haq 2019).



Figure 103 Sign to south Hebron Hills settlements (Al-Haq 2019).

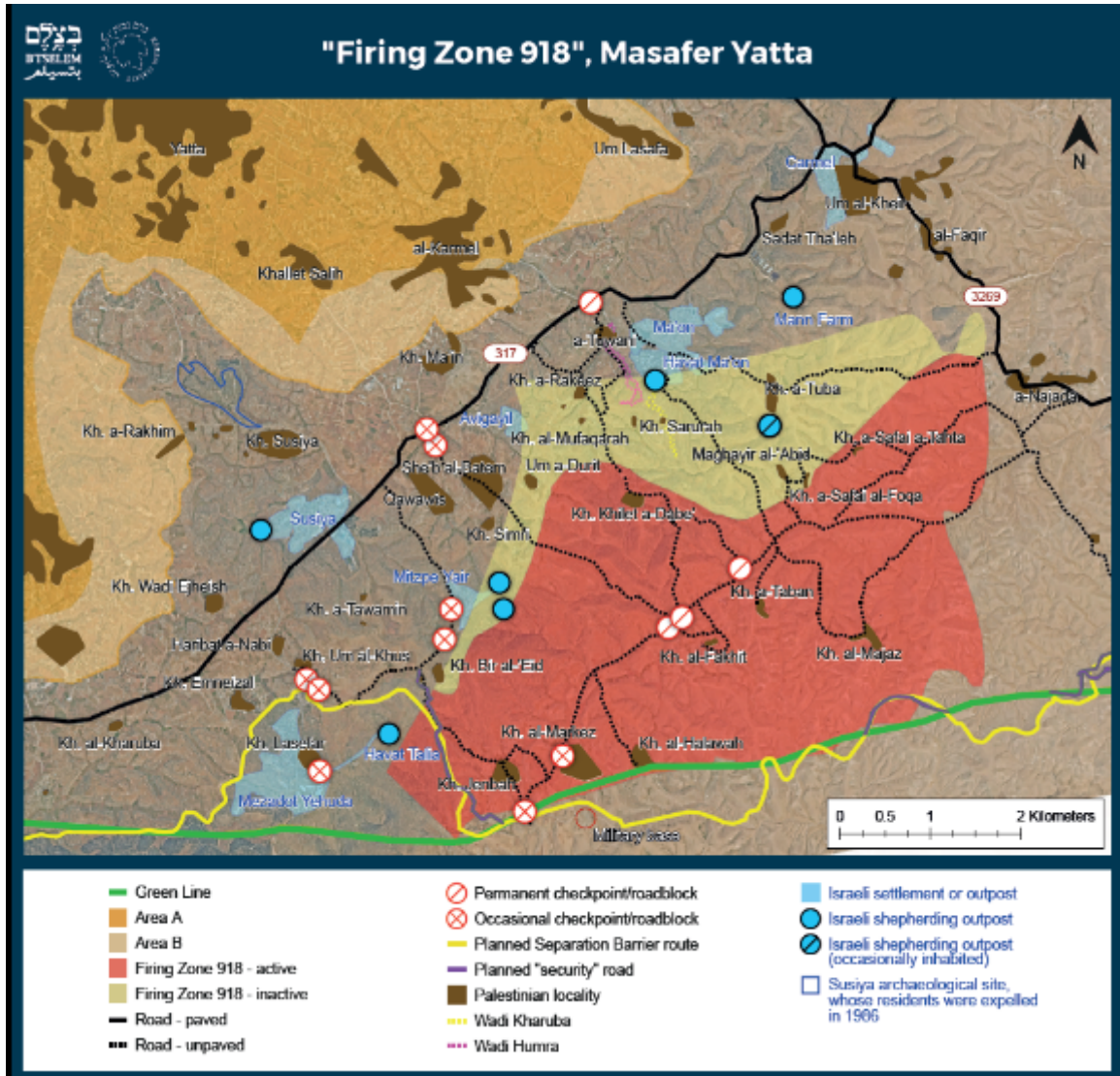


Figure 104 Firing zone 918 in Masafer Yatta (B'Tselem).

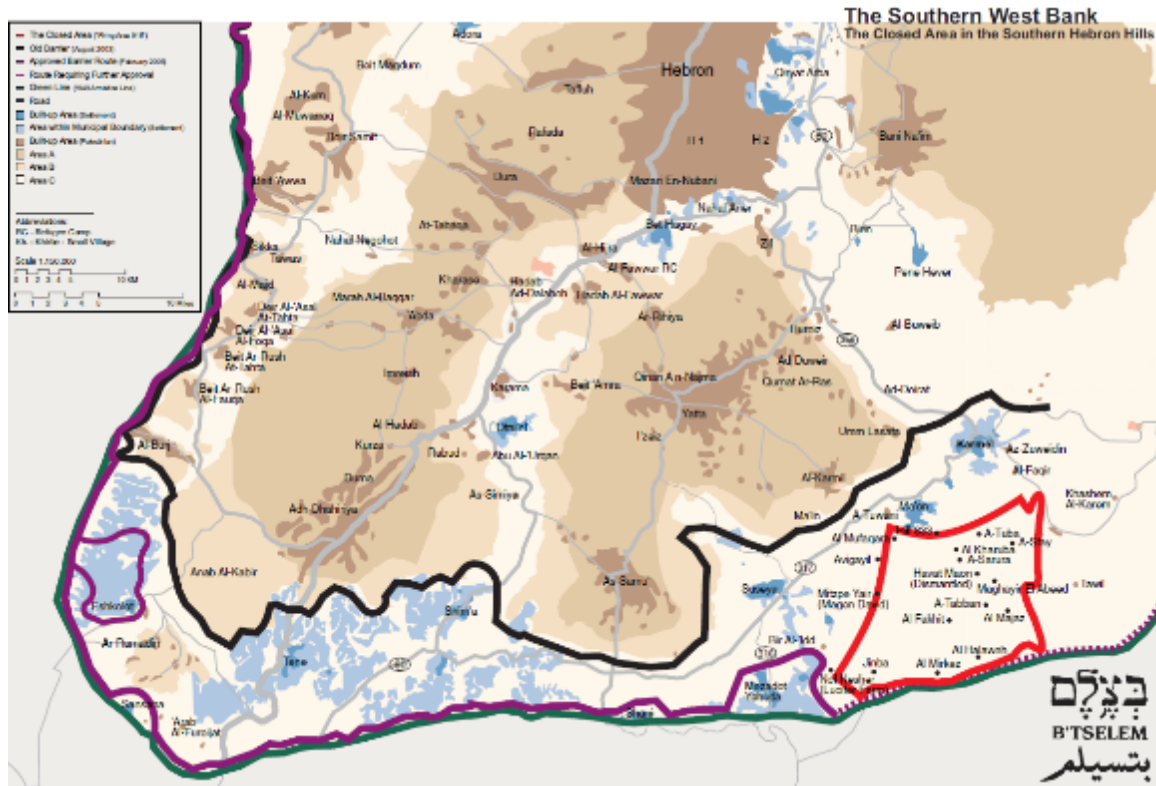


Figure 105 Active firing zone location and its associated villages (B'Tselem) maps:
https://www.btselem.org/south_hebron_hills/masafer_yatta
https://www.btselem.org/download/201301_south_hebron_hills_map_eng.pdf
https://www.btselem.org/sites/default/files/sites/default/files/map/southern_hebron_hills_map_eng.pdf

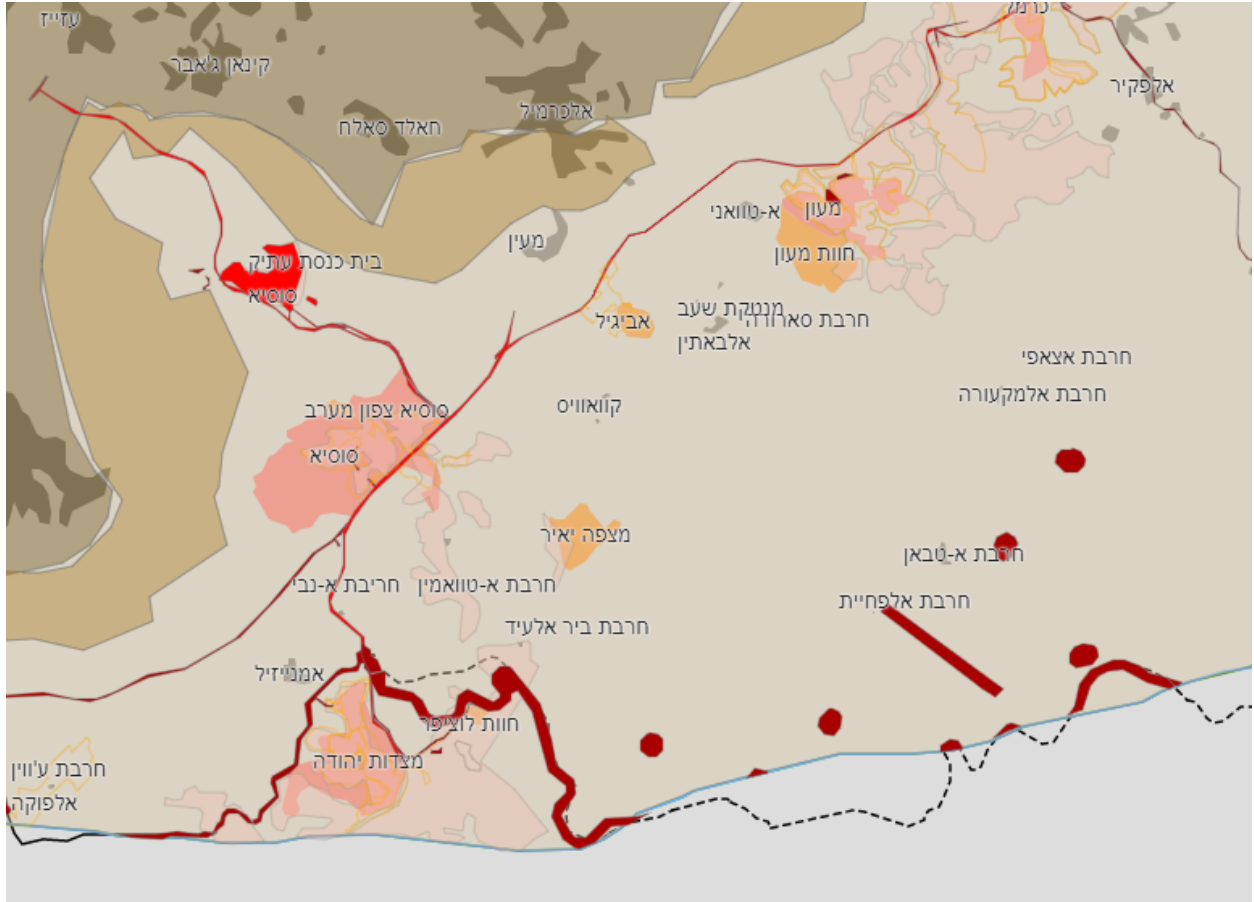


Figure 106 Seisure warrants from Israeli military shown in red in the S Hebron hills area (from Peace now interactive map <https://peacenow.org.il/maps/peacenow-desktop/index.html>).

Al Kuweiyis protected area is located within the borders of the governorates of Hebron and covers an area of 12.69 km². Transition zone between the Irano-Turanian and the Saharo-Arabian zones and has a very rich fauna and flora biodiversity. Community of shepherds who also engage in simple farming of wheat and barley and some olives and almonds at edges of wadis. Hiking path already marked by Masar Falastin and a nice scenic area that can be developed into a national park but now used by Israeli army for target practice and other activities..

Here is a discussion between journalist and human rights activist Basel Adraa joins FMEP's Sarah Anne Minkin explaining the acceleration of threats and violence from the Israeli army and settlers in Masafer Yatta, both inside of Firing Zone 918

<https://fmep.org/resource/threats-attacks-and-steadfastness-in-masafer-yatta/>

FMEP's Sarah Anne Minkin also spoke with Ali Awad (see also his article Awad 2022) about Masafer Yatta and particularly Firing Zone 918 and what has changed there since the Supreme Court handed down its decision in May [2022] authorizing the Israeli military to expel the Palestinian residents of the firing zone.

<https://fmep.org/resource/the-people-are-devastated-demolitions-harassment-and-live-fire-idf-training-in-masafer-yatta/>

There are many articles by Ali Awad from Tuba village in Masafer Yatta om 972 magazine that document settlers and soldiers violations of people, houses, and lands in Masafer Yatta that can be used for **legal cases** (see <https://www.972mag.com/writer/ali-awad/>). For example burning done in June 2021 by settlers of hay used to feed animals (Awad 2021). These and the detailed interviews with locals by FMEP (<https://fmep.org/resources/?rsearch=&rcat%5B%5D=671>) and other actions (e.g. destruction of solar panels Al-Haq 2021b) **provide ample resources for litigation**. Per the Oslo Accords, Israel must ensure the construction of infrastructure and provide for civil services in Area C of the West Bank [Peace Agreements & Related, Declaration of Principles on Interim Self-Government Arrangements (Oslo Agreement), 13 September 1993, <https://www.refworld.org/docid/3de5e96e4.html>; Peace Agreements & Related, Israeli-Palestinian Interim Agreement on the West Bank and the Gaza Strip (Oslo II), 28 September 1995, <https://www.refworld.org/docid/3de5ebbc0.html>]

Here is a discussion where FMEP’s Lara Friedman speaks to Francesca Albanese — international **legal** expert and the UN’s Special Rapporteur on the situation of human rights in the Palestinian Territory occupied since 1967 — on ongoing and escalating actions by Israel to forcibly eject more than 1200 Palestinians from their homes in the West Bank region known as Masafer Yatta, located in the South Hebron Hills. <https://fmep.org/resource/a-war-crime-in-the-making-the-uns-francesca-albanese-on-ethnic-cleansing-in-the-south-hebron-hills/>



Figure 107 Military exercises in Jenba.



Figure 108 Military left-overs in Jenba area.



Figure 109 In March 2021, several Palestinian children were arrested by heavily armed Israeli soldiers near their village in the southern Hebron hills after foraging the protected akkoub plant. Still image from video, courtesy of B'Tselem (from Braverman 2023).



Figure 110 Destroying tent in Wad Jheish.





Figure 111 Destroyed Isfi school in Masafer Yatta.

Khirbat Susiya case (from Badil 2013)

“Khirbat Susiya, South Hebron Hills, is a village of 45 families comprising around 400 people who subsist on shepherding and olive cultivation. Khirbat Susiya was declared a “national park” in 1986 by virtue of a nearby-located archaeological site which archaeologists have claimed is the remains of an ancient synagogue. Consequently, the Palestinian residents of the village were forcibly displaced to land a few hundred meters southeast of their original village. Of particular concern is the fact that an Israeli colony, ‘Susya’, was established near the original village, on Palestinian land declared ‘State Land’ some three years prior, despite the area’s forecasted designation as a “national park”. The ‘National Park’ was subsequently declared part of that Israeli colony. Furthermore, the displaced villagers were refused entry to this ‘National Park’ despite its location on their own lands. any construction. Following this, some villagers applied to the Israeli Civil Administration for building permits but all applications were rejected. In 2007, the Supreme Court rejected the villagers’ petition for building permits. In August 2010, Rabbis for Human Rights petitioned the Supreme Court on behalf of the villagers to overturn orders prohibiting access to their land. However, in 2011, during four separate waves of demolitions, 41 structures were targeted including 31 residential tents and two water cisterns displacing 37 people (including 20 children) and affecting another 70.264 On 12 June 2012, the Israeli Civil Administration served further demolition orders, which they claimed were renewals of orders from the 1990s, on the residents of Susiya allowing only a limited opportunity to a number of residents to appeal to the Civil Administration Supreme Planning Council within three days. An appeal was duly submitted, but the

Council still has not handed down a decision on the matter. Moreover, on 31 January 2013, the Israeli Supreme Court postponed hearing an appeal by the villagers against demolition orders upon their homes.”

B’Tseleme has a very detailed report (2021) that could be a basis for legal actions.



Figure 112 Settler violence around Ma'on affecting Palestinian communities (B'Tselem 2021).



Figure 113 Local Palestinian pointing out how Israelis restricted access to grazing areas (Al-Haq 2019).

People in the South Hebron hills with support from Internationals and Israels did resist the massive destructions of their environment, their lives and their livelihoods. For example FMEP’s Sarah Anne Minkin speaks with Sameeha Hureini, an activist and university student from A-Twani village in Masafer Yatta in the South Hebron Hills. Hear recording [here](https://fmep.org/resource/its-our-responsibility-to-turn-on-the-light-masafer-yatta-apartheid-and-youth-activism/) <https://fmep.org/resource/its-our-responsibility-to-turn-on-the-light-masafer-yatta-apartheid-and-youth-activism/>. Sameeha is one of the founders of Youth of Sumud and, together with her brother Sami, was recognized with the [2021 Front Line Defenders Award for Human Rights Defenders at Risk](#).

For their work FMEP has awarded a grant 2023 to +972 Magazine in support of its Masafer Yatta Media Fellowship Project and to a number of human rights organisations that deal with issues of environmental injustice (see <https://fmep.org/our-grantees/>). More on adaptation of the local people and their resilience can be found in Al-Haq (2019).

7.3 Beit Ummar/Wadi Shkheim

Beit Ummar s a town of about 15000 residents located on the main road connecting Jerusalem/Bethlehem with Hebron. Inhabited continuiusy since Canaanitic times, the twon as interesting historical and archeological sites (ARIJ 2009a). At least five colonial settlements (KarmeI Zur, Migdal Oz, Kfar Etzion, Efrat, and Alon Shevus (hou=sing 12000 settlers and a military base have taken up the land of Beit Ummar (Fig, xxxl LRC 2018)

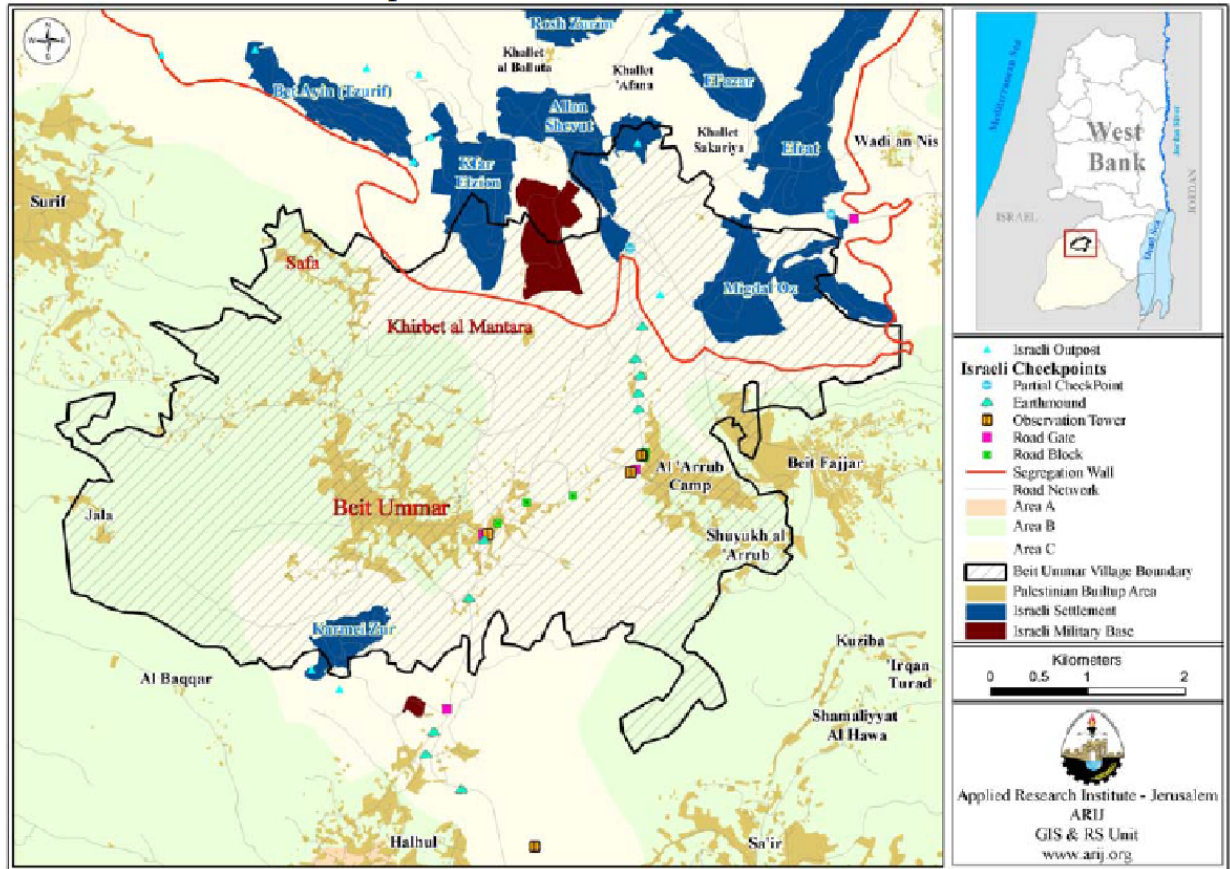


Fig. 1 Beit Ummar and surrounding settlements and military base built on the land of the town (ARIJ 2009a)

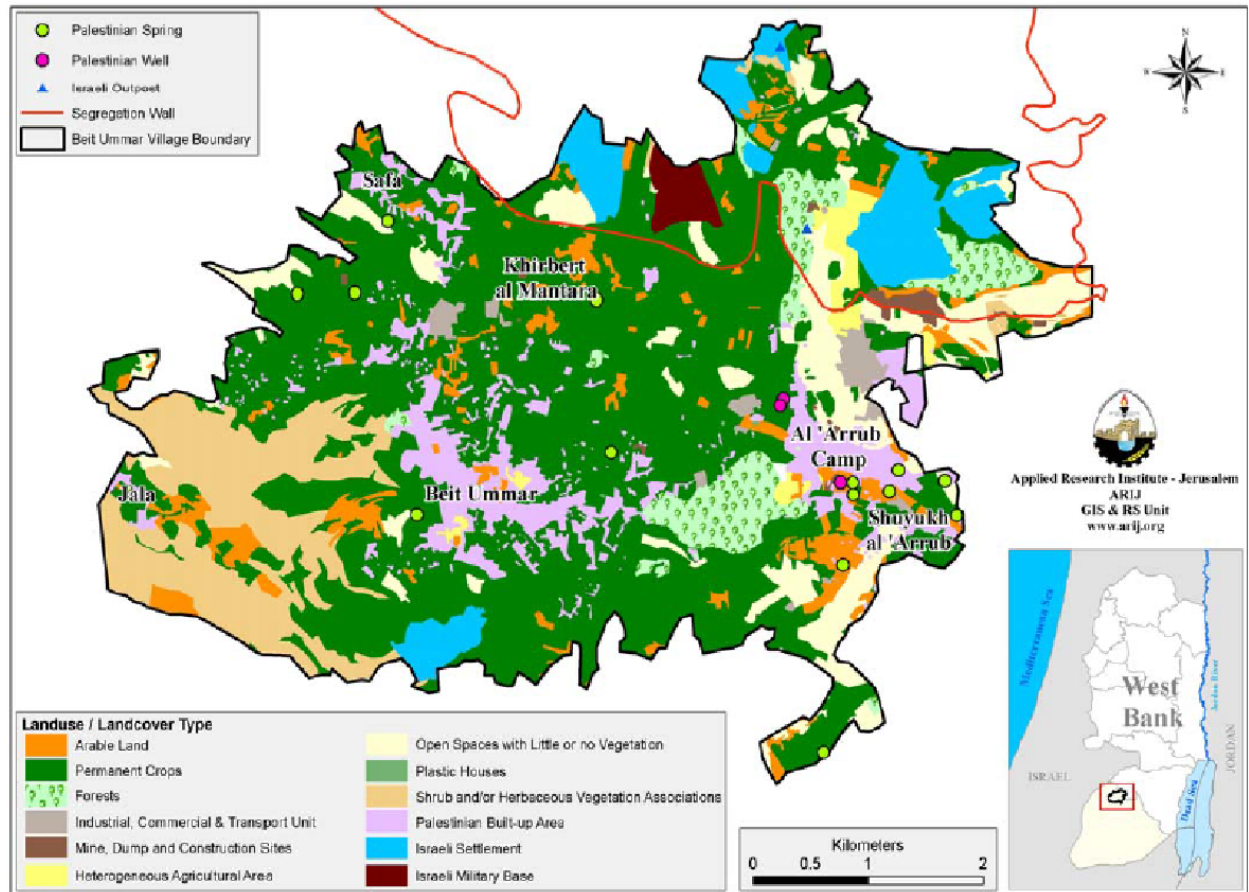


Fig. 2 Area of Bei Ummar sowing the wall and the military cam (ARIJ 2009a)

The wall and settlements and confiscation of lands for route 60 expansion has already resulted in loss of 4000 dunums of land in Beit Ummar and an estimated 18,000 pruned trees (ARIJ 2009a). The town is also blockaded via an iron gate on the northeast main entrance and a number of road blocks (cement blocks or earth mounds) created to ensure control of movement and frequent blockage hampering freedom of movement. The expansion of route 60 and transfer of ownership with shady deals of the 'Beit Al-Baraka' land near the road has further fragmented the tpown land and is now cutting into the Al-Qarn green area near Al-Aroub refugee camp. . The expansion of the settler road creates problems for the local people (Selwyn 2020) and already reduced a natural area significantly in Al-Qarn protected area (Fig. xxx)



Fig. 3 Protected area of Al-Qarn with bypass road in Beit Ummar

Fauna and Flora in the area: The protected area of Al-Qarn (Fig. 4) is covered with oak (*Quercus*), Atlantic pistachio, hawthorn, wild pear and some planted pines. It is habitat for wild animals such as foxes, jackals, hyenas, hedgehogs, rodents and over 45 species of birds (some migratory and some resident). The expansion and diversion of Route 60 as seen in Figure above already destroyed some 10% of the area of natural forests (including habitats for 7 vulnerable species of orchids and other species of plants). But there is also encroachment on the protected area by local Palestinians.

Sewage is regularly dumped (likely overflow from sewage treatment facility built on Palestinian confiscated land) from the cluster of Israeli settlements on the agricultural land of Beit Ummar (LRC 2010, 2018; Shreim 2012). In one incident in 2010, 70 dunums were damaged with a loss estimated at \$100,000 (LRC 2010)

Table 1 Damages sustained by seven members of the clan of Sabarneh in Wadi Shakheit on 22 April 2010 as an example of damages

No.	Name	Damage	Extent of Damage
1	Mohammad Saber Ismaeil Sabarneh	Increased the salinity of the soil + gradual spoilage of grape trees + the unsuitability of the product for human consumption.	Total
2	Khalil Saber Ismaeil Sabarneh		Total
3	Mustafa Saber Ismaeil Sabarneh		Total
4	Mohammad Oudeh Sabarneh		Partial
5	Ahmad Oudeh Sabarneh		Partial
6	Mahmoud Oudeh Sabarneh		Partial
7	Hamed Yousef Mahmoud Sabarneh		Partial

Settlers from Beit Ayin regularly enter Beit Ummar and destroy Palestinian crops and attack villagers (for example 28 May 2011 they destroyed 17 olive seedlings three olive trees and 20 grapevines (Munayyer 2012).

The military base in Karmeï Zur settlement which is built on the south side of Beit Ummar has no sewage system according to the State Comptroller of Israel report, causing pollution of the lands and soil (Mevakir, 2017)

Beit Ummar is known for its resistance to the occupation as farmers insist on cultivating their lands which is also a form of resistance (Burton, 2015).

Bypass roads are also creating problems for the local people (Selwyn 2020).

Beit Ummar is known for its resistance to the occupation as farmers insist on cultivating their lands which is also a form of resistance (Burton 2015).





Fig. 4 Two images from LRC of Beit Ummar wastewater ponds, settlement, and Beit Ummar farmlands



Fig. 5 Sewage from settlers on grapevines in Beit Ummer (Shreim 2012)

There is well documented studies of the damage from settler sewage in Wadi Shkheit in Beit Ummer with over 100 dunams flooded at any one time over various periods (ARIJ 2010b,c,d,e, 2011; LRC 2010,2012, 2018,a, b;, 2020). The destruction via sewage from settlements is particularly ironic since Israel charges the Palestinian authority (deducted from Palestinian owed VAT tax revenue) for sewage that is generated by both Palestinians and Israelis and that flows across the green line (see Fig. 6). Further Thabayneh and Arar (2015) showed damage to residents from air pollution.

The Sabarneh family of Beit Ummer had not worked their farmlands in recent years due to the high cost of agricultural work and other engagements. Following the economic hardships created by the coronavirus crisis, they decided to enhance the soil and plant grape vines, olive and almond trees, in the hope that the expected produce would help support the family's livelihood in the future.

The settlement of Carmei Tzur was established in 1984, about 250 meters from the family's farmlands, which stretch over 25 dunams [1 dunam = 1,000 sq. meters] south of Beit Ummer.

On Sunday morning, 19 April 2020, Ibrahim Sabarneh (52) arrived with his young sons at their plot with two tractors he had rented to plow the land.

Shortly after, four settlers arrived from the direction of Carmei Tzur. They yelled at the tractor drivers and demanded they stop working, claiming that the farmland did not belong to the Sabarneh family. Even though Ibrahim quickly explained that he owns the plot and has documents to prove it, the tractor drivers did not want to get in trouble and left the area.

Sabarneh and his sons stayed on their land. About an hour later, an Israeli DCO vehicle arrived, escorted by dozens of soldiers. The DCO officer ordered the family to leave and told Ibrahim to call another DCO officer to take care of the land ownership issue.

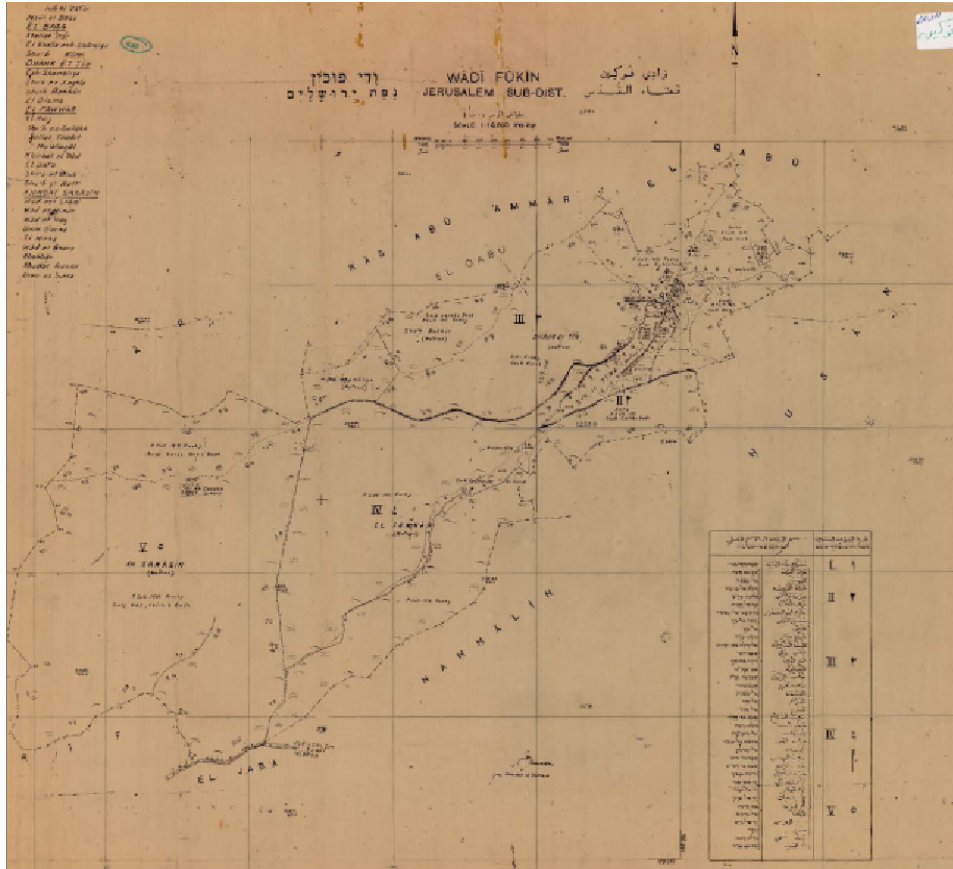
After repeated inquiries with the Israeli DCO, Sabarneh finally got an answer. The DCO informed him that he had to submit the ownership documents to the Palestinian DCO, and in the meanwhile, forbade him to access his land. From B'Tselem https://www.btselem.org/settler_violence_updates_list#212936

Beit Ummar Fact Sheet <http://vprofile.arij.org/hebron/pdfs/Beit%20Ummar%20Town.pdf>
Priorities and needs of development
http://vprofile.arij.org/hebron/pdfs/needsfordevelopment/Beit%20Ummar_tp_en.pdf

7.5 Wadi Fukin



Fig. 7 Wadi Fukin as seen from the Israeli settlement of Betar Eilit (De Donato 2018)
In the British mandate survey of 1945, the village population was 280 and the village lands were 9928 dunums (See Fig. xxx). Many of the local nearly 1500 residents (https://www.pcbs.gov.ps/statisticsIndicatorsTables.aspx?lang=en&table_id=704) returned to this portion of the village near the green line after 1967 but they do not have access to their lands beyond the 1948 ceasefire line (aka the Green Line).



MAP 2
 MAP OF WADI FUKIN IN 1936
 (BRITISH MANDATE)
 SOURCE: PALESTINIAN MINISTRY OF LAND

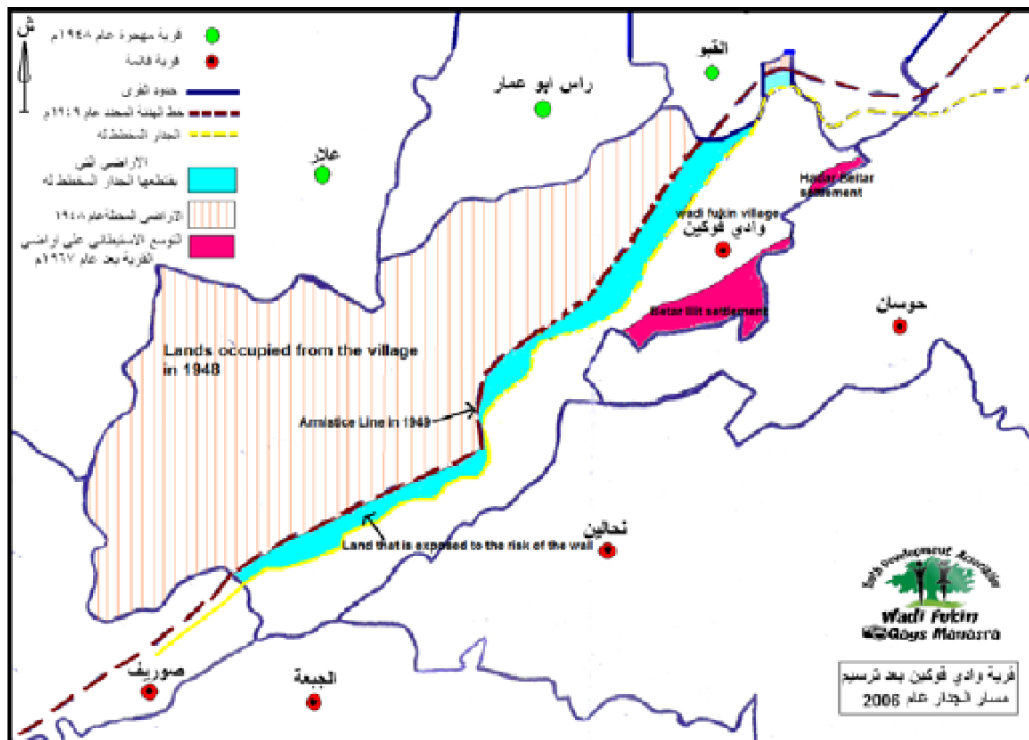


Fig. 8 Original lands of Wadi Fukin before 1948 (De Donato 2018)

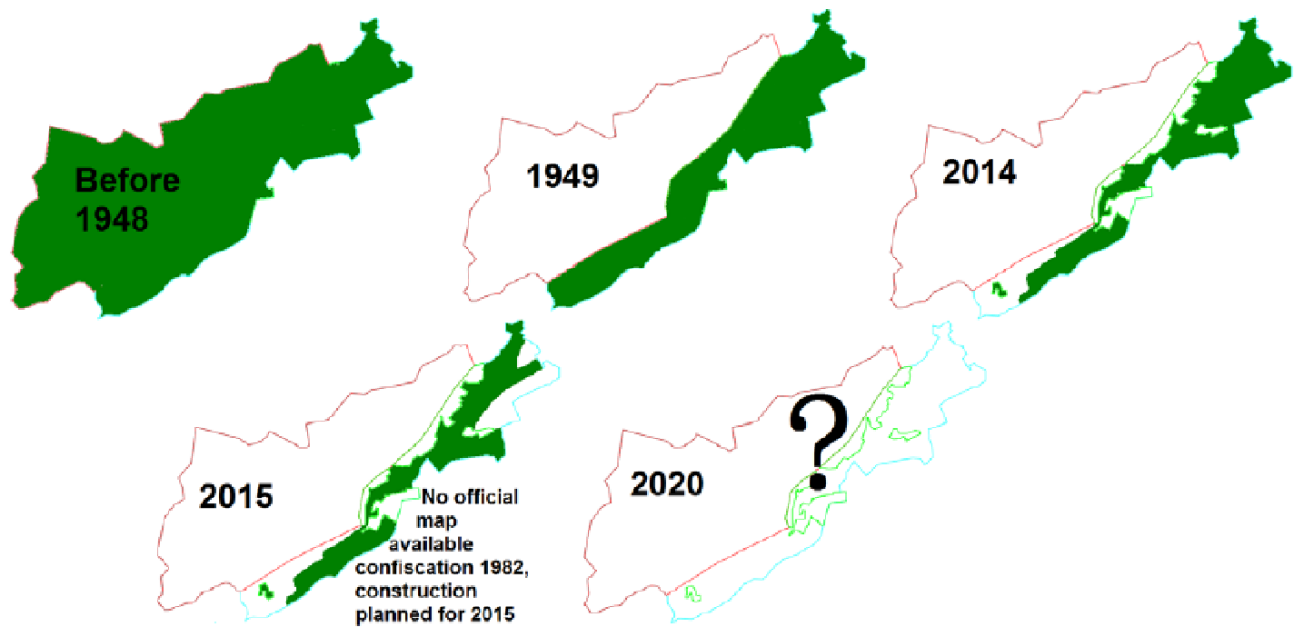


Fig. 9 Shrinking land of Wadi Fukin (ECCPAlestine 2015)



Figure 10 Wadi Fukin and nearby settlements (De Donato 2016)

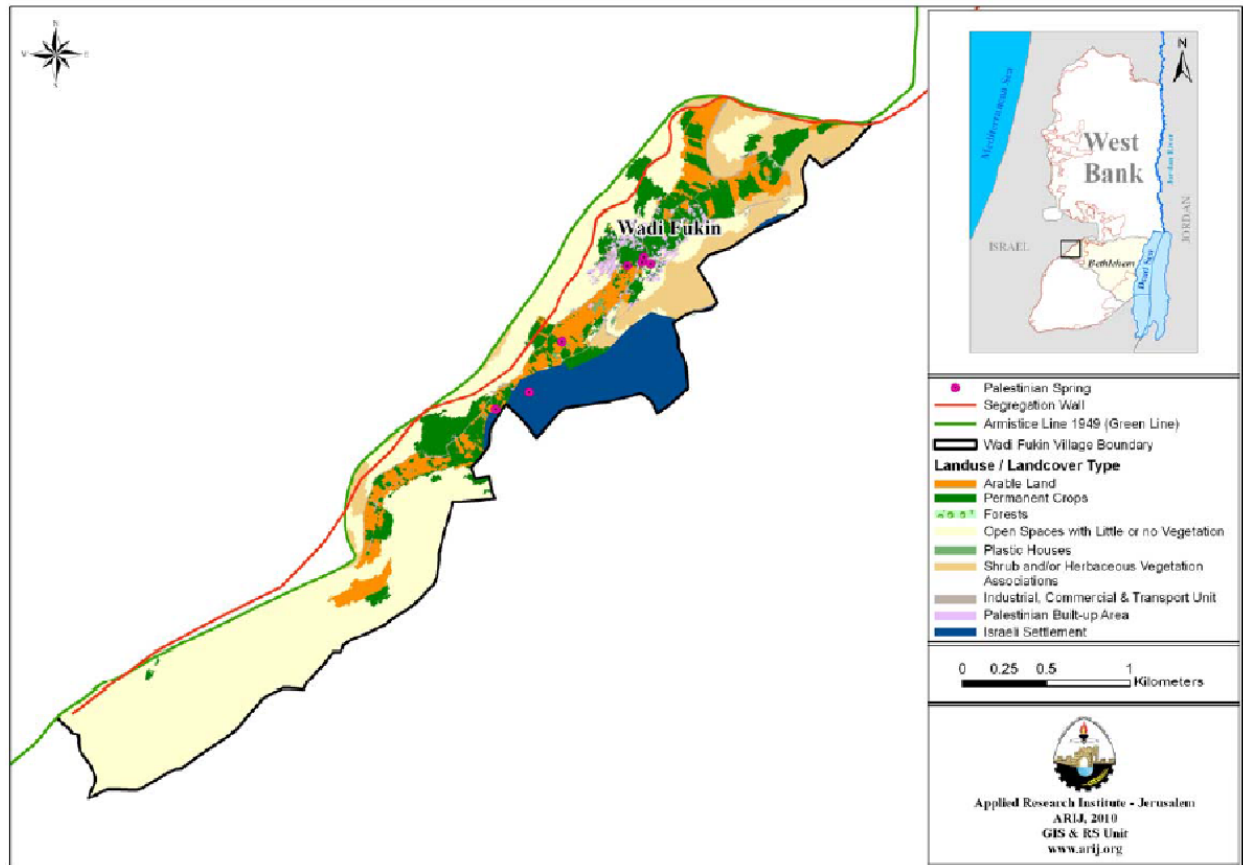


Fig. 11 Land use in Wadi Fukin (ARIJ 2009b)

Table 2 Land classification in Wadi Fukin (ARIJ 2009b)

Land Classification	Area (dunum)	% of the Total Area
Area A	0	0
Area B	277	7.3
Area C	3540	92.7
Total Area	3817	100

Table 3 Israeli settlements at the land of Wadi Fukin

Settlement	Year of establishment	Settlers (2008)	Total Area of the Settlement (dunum)
Hadar Betar	1978	30	7
Betar 'Illit	1985	34700	379
Total area		34730	386

There is also the settlement of Tzur Hadassa on the so called Israeli side of the Green Line which is expanding on the land of Wadi Fukin and already houses 35,000 settlers.



Fig. 12 Expanding Tzur Hadassa on land of Wadi Fukin (De Donato 2018)



Fig. 13 Settlement of Beitar Illit with Wadi Fukin in foreground (De Donato 2018)

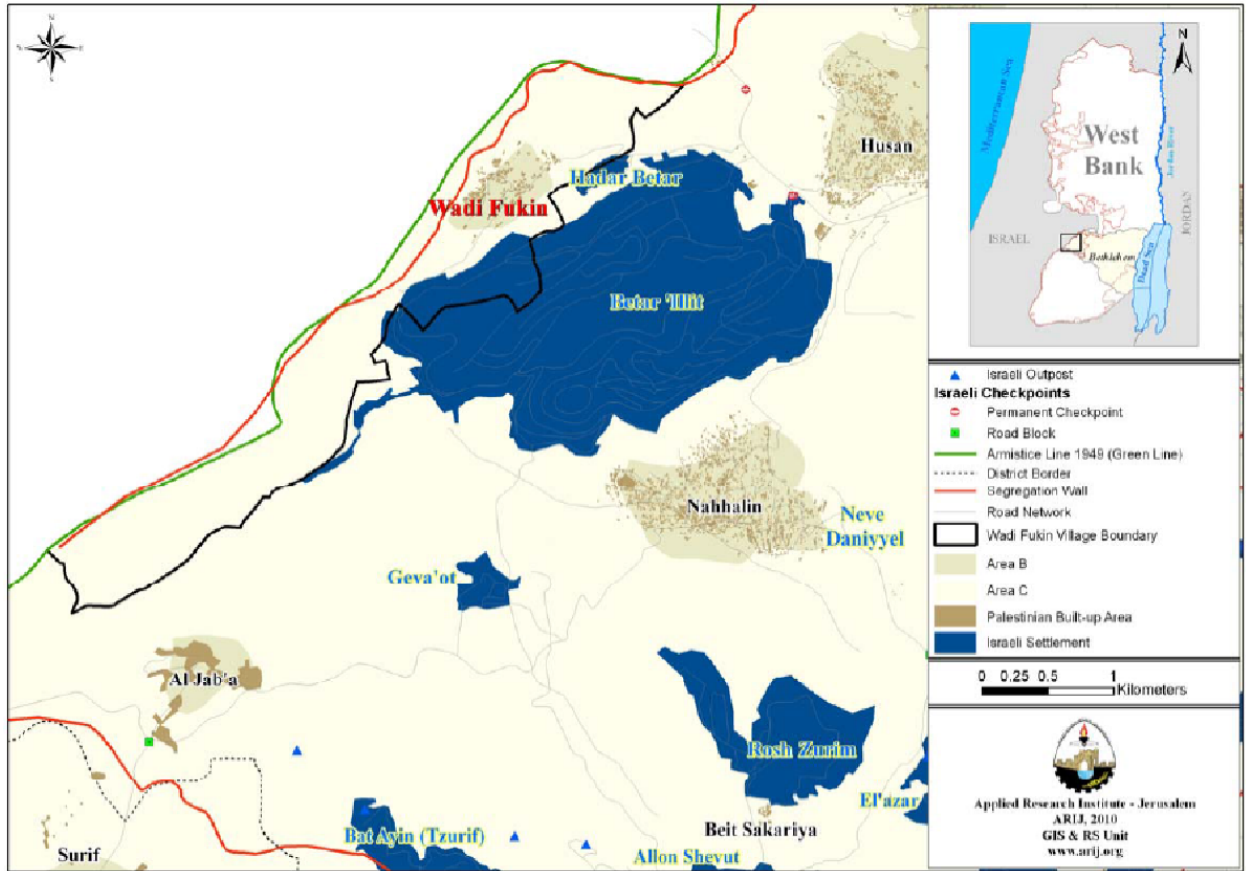


Fig. 14 Wadi Fukin situation (ARIJ 2009b)

Between 2000-2009, the occupation forces uprooted 250 olive trees and 100 other stone-fruit trees (ARIJ 2009b). The occupation also targeted lands of Wadi Fukin (LRC 2020b,2021a,b,c, 2022a,b) and dumped sewage regularly in the area of Wadi Fukin (LRC 2012,2018a). Not allowing Palestinians to develop wastewater treatment facilities and then allowing WB wastewater (of both settlers and Palestinians) to flow to the greenline and beyond to be treated at high expense deducted from Palestinian tax revenue (Trottier 2019). The studies by PIBS on amphibians (Salman et al. 2014) and snails (Handal et al. 2015) also showed impact on biodiversity of the closure and contamination of many previously free flowing springs.

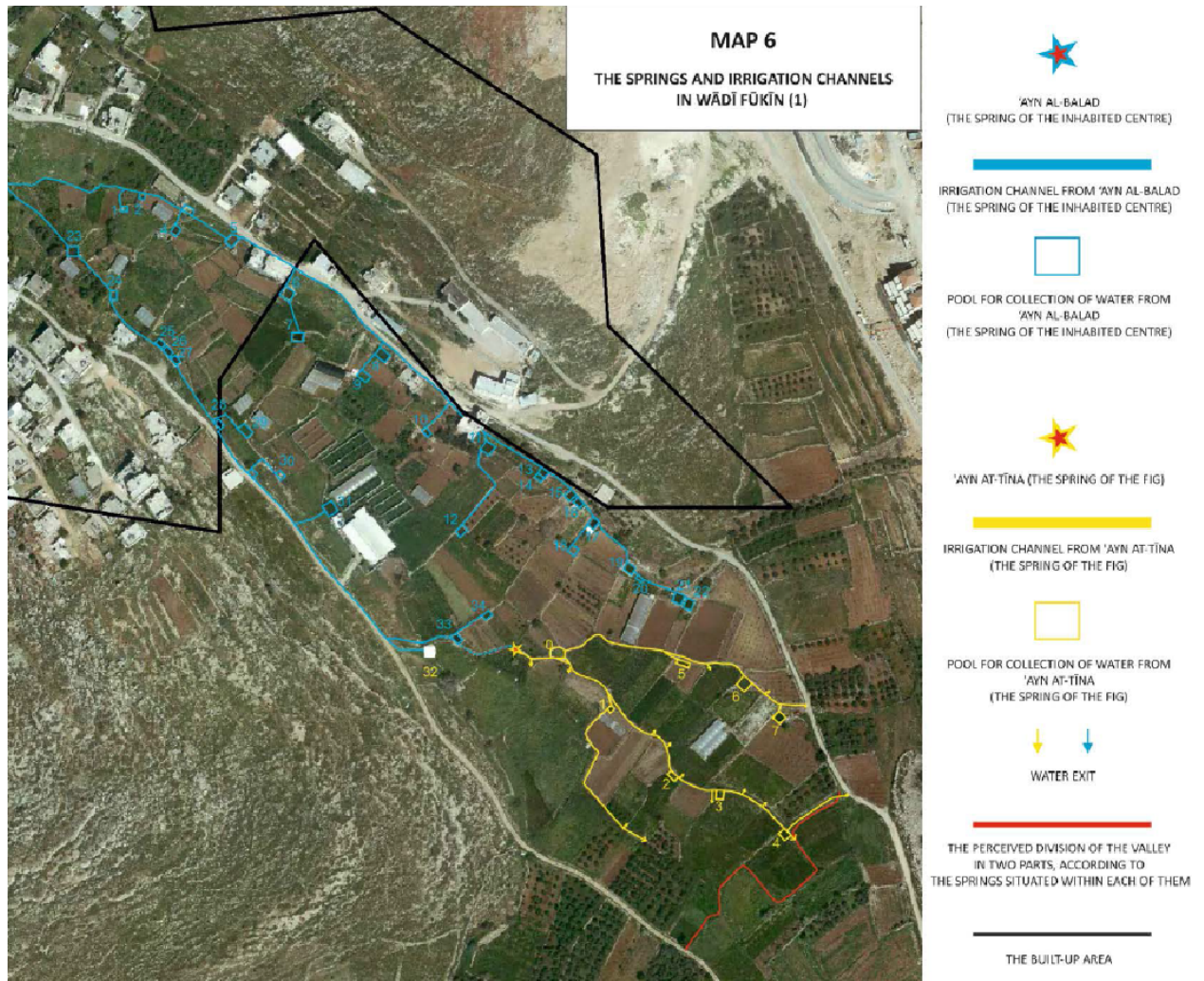
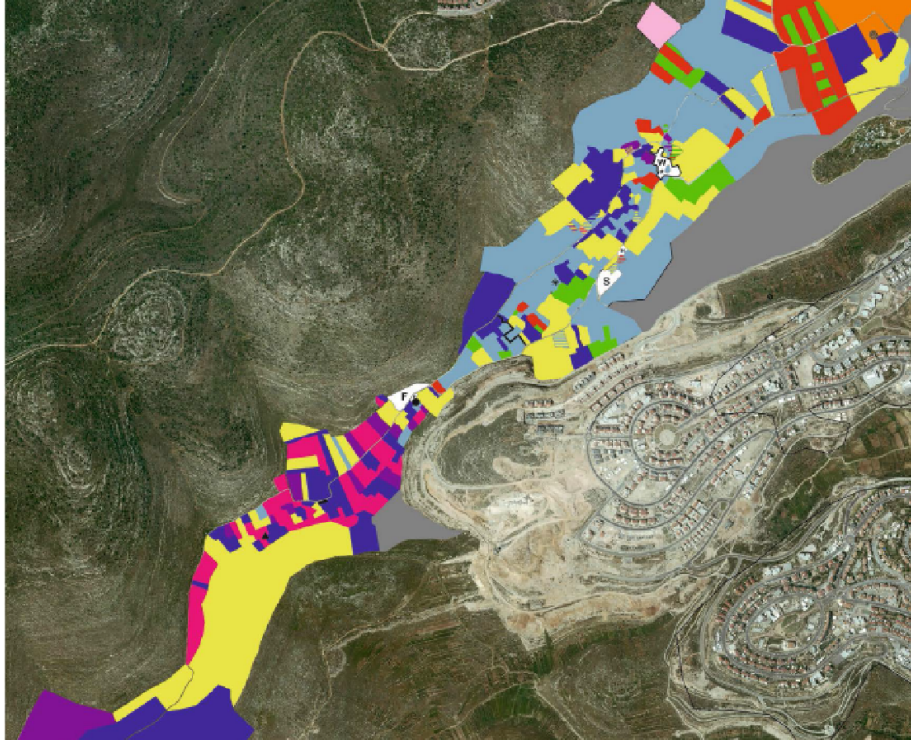


Fig. 15 Springs and irrigation channels (De Donato 2018)

“The local administration at Bitar Elit colony intentionally pumps sewage towards Wadi Fukin twice a month according to Mazen Atiyya, a member of Wadi Fukin village Council. The pumped sewage soaks a plot owned by Ata Aqra’ and extends to cover over 20 dunums of agricultural lands.” LRC 2012

Water and resources are significantly affected by the Israeli occupation here as elsewhere in the West Bank (Negotiation Affairs Department, PLO. 2006). De Donato did a very interesting series of studies on issues of water in Wadi Fukin



LEGEND OF THE MAP: EXTENDED FAMILIES' LAND OWNERSHIP IN WĀDĪ FŪKĪN



Fig. 16 Extended family land ownership (de Donato 2018)

We should note that Wadi Fukin is part of an ecocorridor. This ecocorridor covers all the South Jerusalem hills and valleys which are recognized as a key biodiversity area (EQA 2021), a protected area (new), and part of it as a UNESCO world heritage site. Management plans for its biodiversity recognize its connectivity which the walls and settlements clearly disrupt. There is a decline in biodiversity in the area resulting from population pressure, settlements, walls, and habitat destruction (see Qumsiyeh et al. 2014)

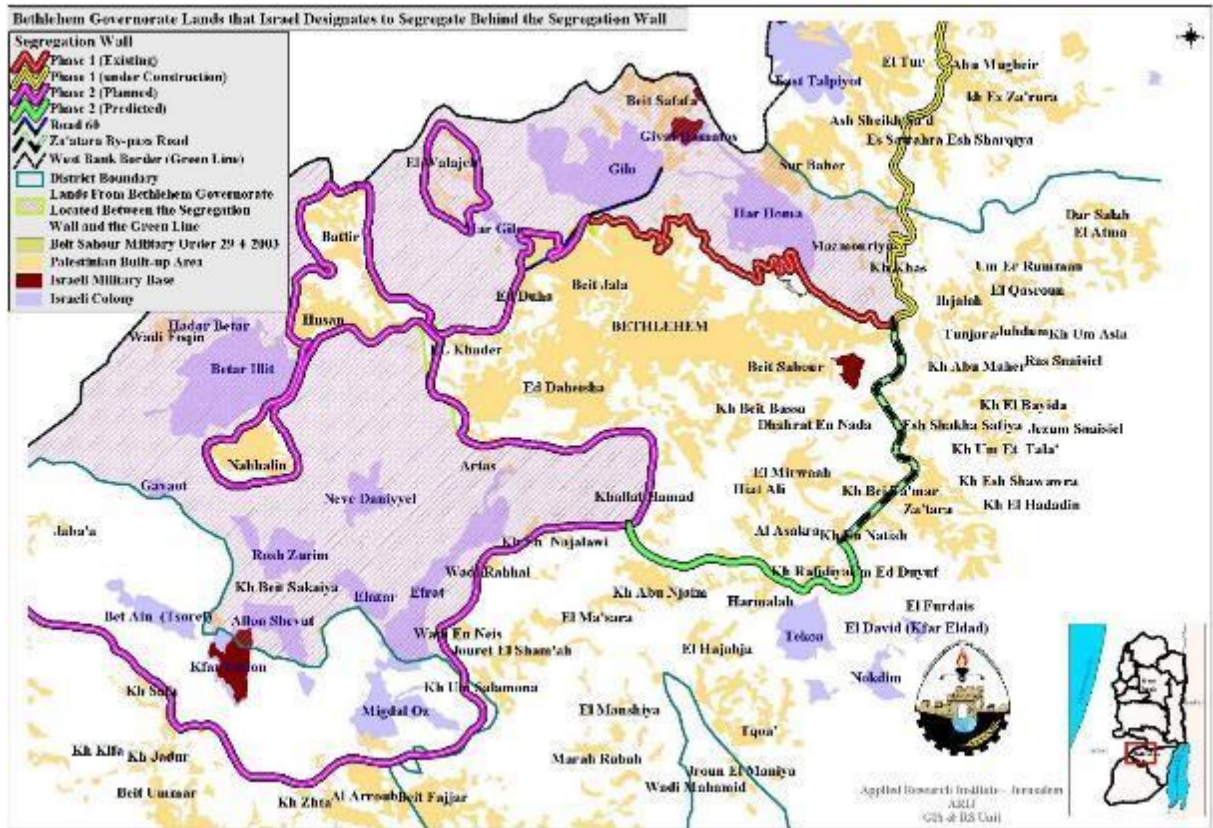


Fig. 17 Plans for walls in al-Arqoub village areas



Fig. 18. LRC

The establishment of the Israeli settlements in the Palestinian occupied territories violets the Article 49 of the Fourth Geneva Convention relative to the Protection of Civilian Persons in Time of War (adopted in Geneva, 12 August 1949), which states that the “occupying power shall not deport or transfer part of its own civilian population into the territory it occupies” (United Nations 1949).

There are international NGOs that work in the area who should be consulted for example the Italian NGO Overseas and also HEKS-EPER for the public park. PARC worked with the Representative of the Netherlands also to help the local people. There is a persistence and sumud of the local villagers (see Clarno 2015 and <https://mondoweiss.net/2014/11/fight-village-continues/>)



Fig. 19 Example of projects implemented

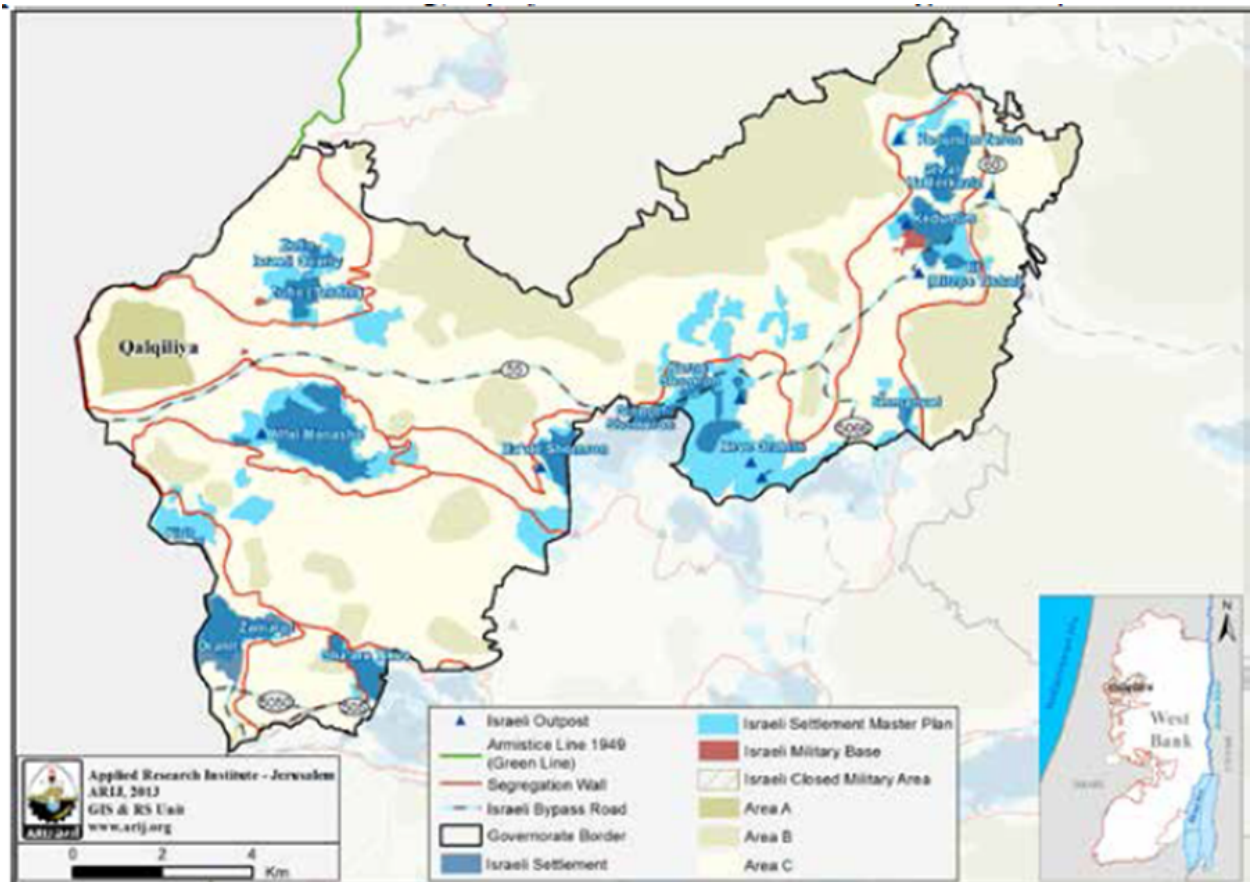


Fig. 20 Wadi Fukin Demonstration (ECCPalestine 2015)

For more on the village, see
https://www.palestineremembered.com/GeoPoints/Wadi_Fukin_1684/index.html
<https://www.middleeasteye.net/features/photos-wadi-fukin-residents-our-land>
<https://eastjerusalemidiaries.com/2021/03/15/fukin/>
 Website of colonial Israeli settlement <https://betar-illit.muni.il/eng/>

7.5 Ariel Settlement Block: Qalqilia and Salfit area

The area we focus on straddles the governorates of Qalqilia and Salfit. Here there are two fingers of settlements (ARIJ 2014d (Fig. 8))



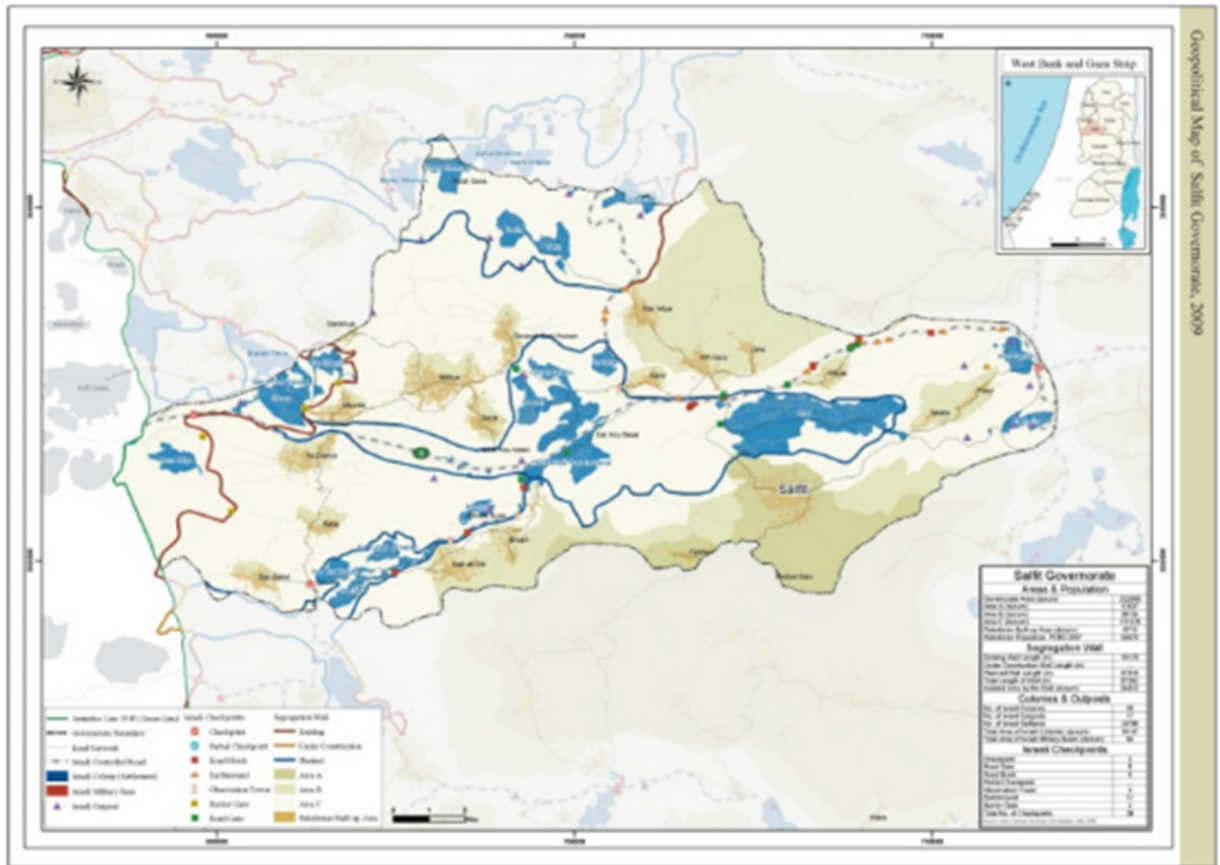


Figure 7 Communities of Qalqilia and Salfit governorates impacted by settlement activities (blue) (ARIJ 2014a,b)

Table 2 Communities Salfit impacted by settlements (Maan Development center 2008)

Communities	Population⁵ (In 2007)	Total Area⁶ (In Dunums)
City	8,796	22,576
Salfit	8796	22,576
Towns	33,997	120,105
Az-Zawiya	4,754	12,170
Biddya	8,064	13,519
Bruqin	3,236	12,210
Deir Ballut	3,195	13,647
Deir Istya	3,146	34,902
Kufr Ad-Dik	4,553	14,684
Kifl Hares	3,248	9,528
Qarawat Bani Hassan	3,801	9,445
Villages	16,777	61,869
Farkha	1,366	5,256
Hares	3,112	8,575
Iskaka	912	5,438
Khirbet Qeis	226	3,123
Marda	1,992	9,341
Mas'ha	2,003	8,123
Qira	1,143	2,080
Rafat	1,861	8,020
Sarta	2,530	5,786
Yasuf	1,621	6,118
Izbat Abu Adam	11	N/A
Total	59,570	204,550

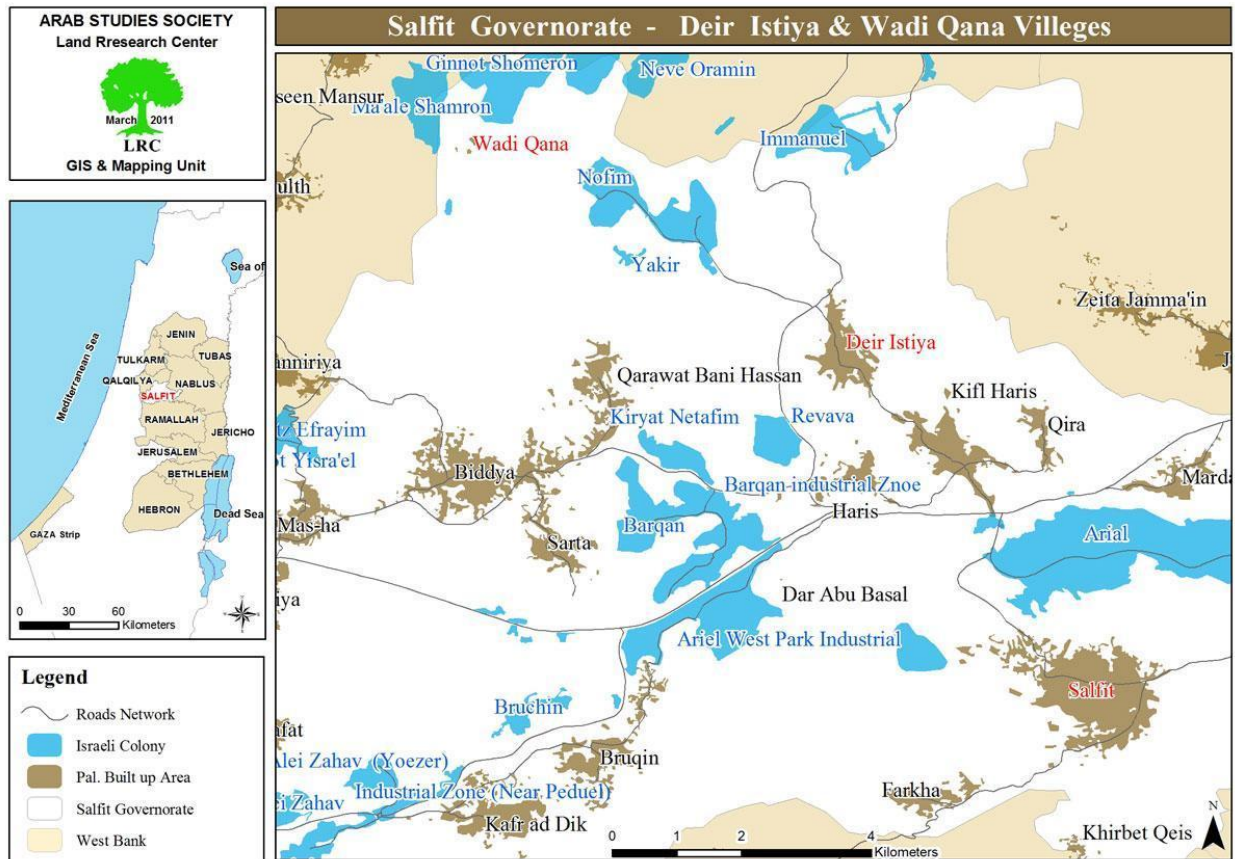


Figure 8 Ariel other settlements in the West Salfit governorate

Israeli settlers dump untreated sewage in Wadi Qana and Jinsafut and other areas which impacts the environment (Naser and Ghanem 2018). LRC Compiled data and photos on these environmental damages starting in 2012 (see Annex 1).



Figure 9 Sewage from the settlement of Emanuel on Palestinian Agricultural land in Jinsafut (LRC 2012).

Damage from these activities has been large. For example, the settlers dumped sewage 3 June, 1 July and 9 November 2012 damaging 40, 56 and 55 dunums lands of Jinsafut and nearby areas (LRC 2012, Fig. 11).



Figure 10 sewage 9 november 2012 in Jinsafut.

The wastewater in Barkan Industrial settlement is released every Saturday through pipelines and sewage channels that feed into the villages of Bruqin and Haris (Aidy et al., 2017). This contaminates the soil and underground aquifer which is accessed by Palestinians and is used for residential purposes. Farmers have also grazed animals near the wastewater, where testimonials of residents have purported that the milk of local livestock has been contaminated by heavy metals and chemicals (Aidy et al., 2017). 625 dunums of land and crops have been destroyed in 2021, and have been vandalized, bulldozed, and soaked with sewage water (LRC, 2022). Hammad and Qumsiyeh (2014) demonstrated genotoxic effects (chromosome damage and DNA breaks) effecting residents of Bruqueen village.

Many of the local villages have seen their lands taken for expansion of illegal settlements. For example, the village of Amatin had 160 dunums taken for expansion of Emanuel colony, 30 dunums taken for route 55 (infrastructure for settlers), 121 dunums for the building of the segregation and annexation wall (LRC 2018c). Amatin had 7,346 dunums total of which 3406 dunums were classified as area C and the rest as area BV. The village of Jinsafut (1700 dunums of which only 502 are left to develop/use) had also had significant land confiscation (LRC 2021b; Table xxx). There are regular attacks on villagers of Amatin. For example in January 2023, 60 olive trees were destroyed belonging to farmers (فهمي أحمد محمد صوان، فتحي محمود حامد صوان) in Alsuwwana area.

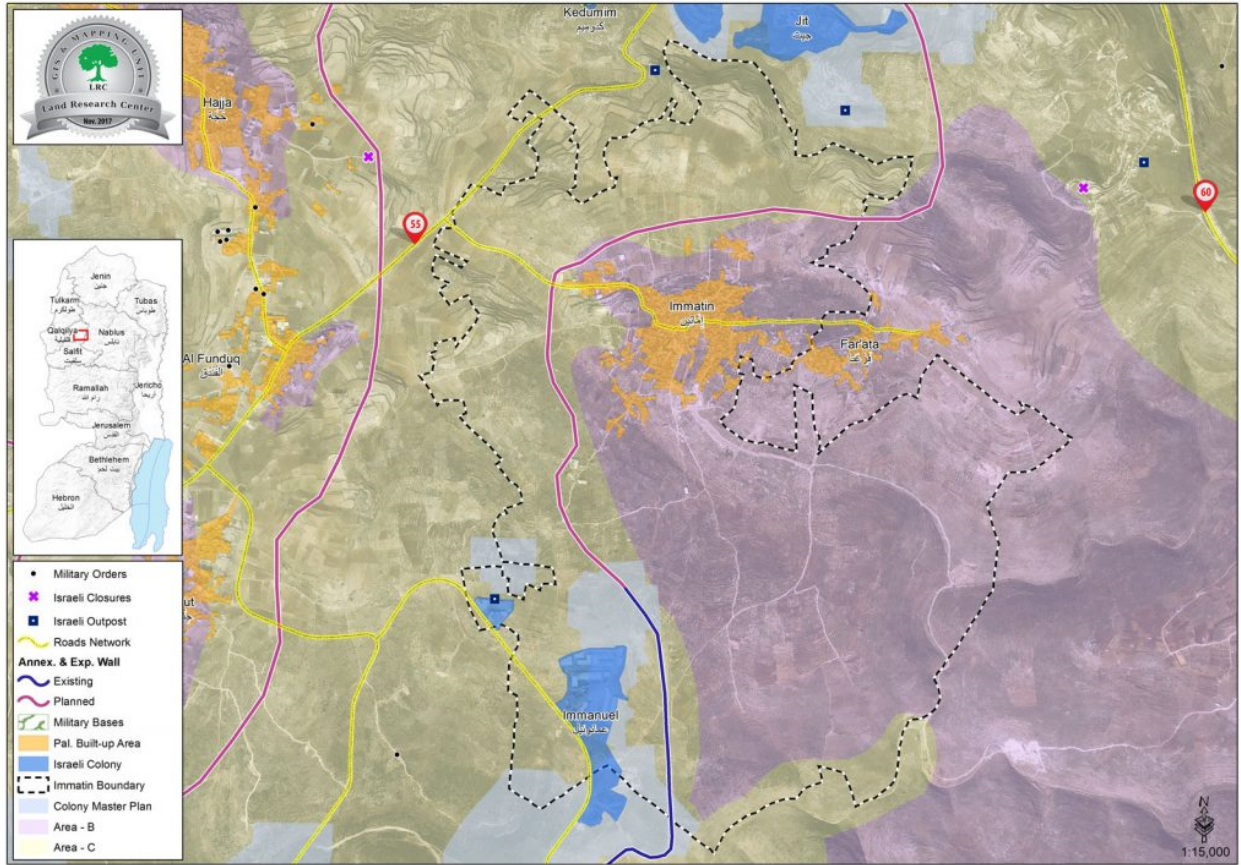


Figure 11 Area of Amatin (2018 LRC).

JINSAFUT is the most blatant example of excellent case study for settlers' destruction of environment and life in the area

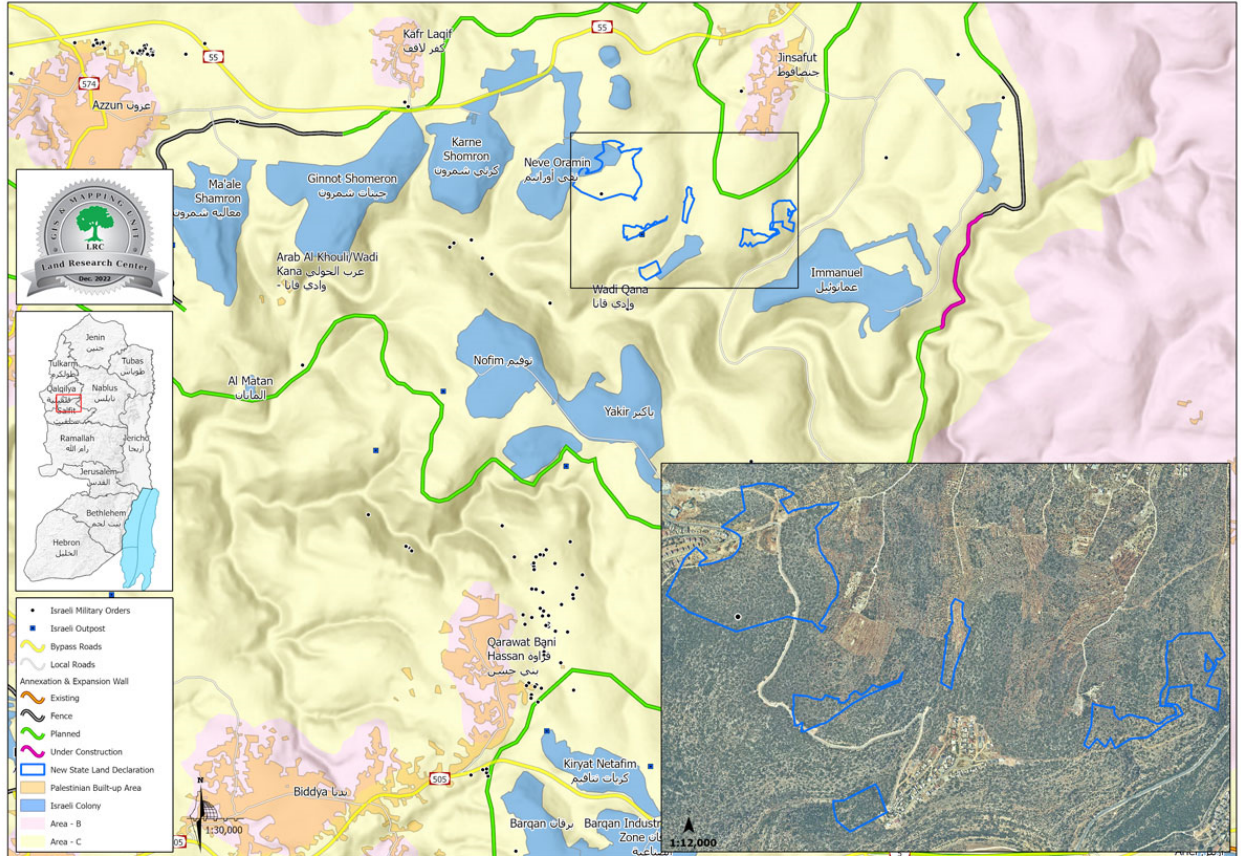


Figure 12 In box showing 398 dunums declared "state land" 6 December 2022.

Table 3 land taken via order 6 December 2022.

الموقع	الحوض	الرقم
القرنة	3	1
الباطن وخلة دجة	4	2
جبل السريج	5	3
خلة البلاع	6	4
راس بشير	7	5
واد الخانق وجبل السريج والعاروض	10	6

קרני שומרון - אלוני שילה - הכרזה על רכוש ממשלתי

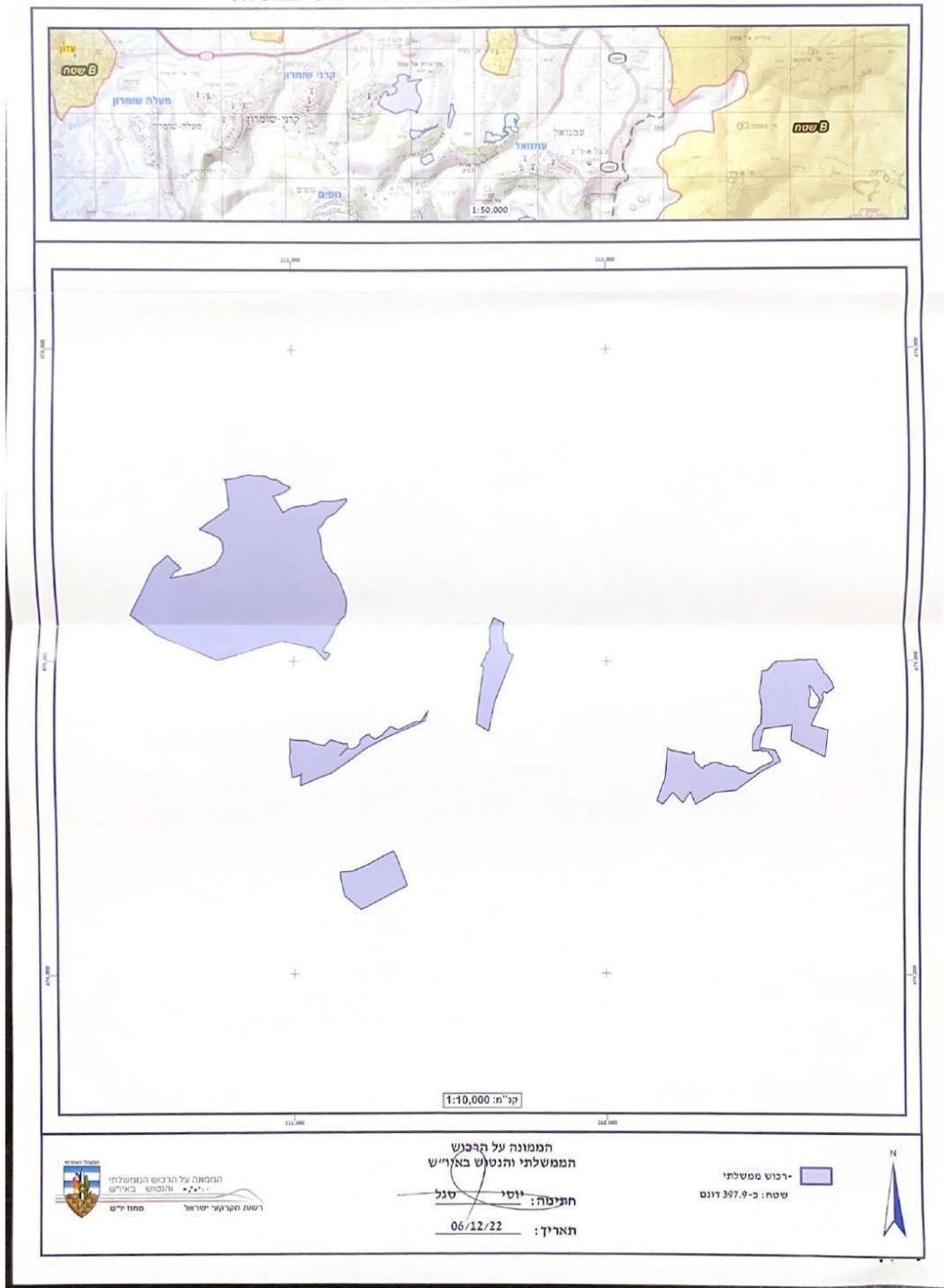


Figure 13 Areas affected per order 6 December 2012.

Table 4 Land confiscations for settlement expansion in the vicinity of Wadi Qana (LRC 2021b).

Palestinian village affected	Plan date	Plan number	Notes
Jinsafut	10/01/2014	Tender offer number 2014/3	Construction of 102 colonial units
Jinsafut	05/06/2014	Tender offer number 175/2014	The bedding was reopened for construction of 102 colonial units
Jinsafut	23/01/2015	Tender offer number 6/2015	Leasing plots
Jinsafut	23/01/2015	Tender offer number 7/2015	Building a mall
Deir Istiya	09/02/2015		Ratification of a new expansion plan/ construction of 102 colonial units on 92 dunums nearby the industrial area at the colony.
Marda – Deir Istiya	20/09/2021	10/120	A new plan enters into effect – establishing an industrial area , the plan was deposited in May 14 th 2018
Jinsafut	26/11/2020	3/6/120	Ratification of an organizational detailed outline

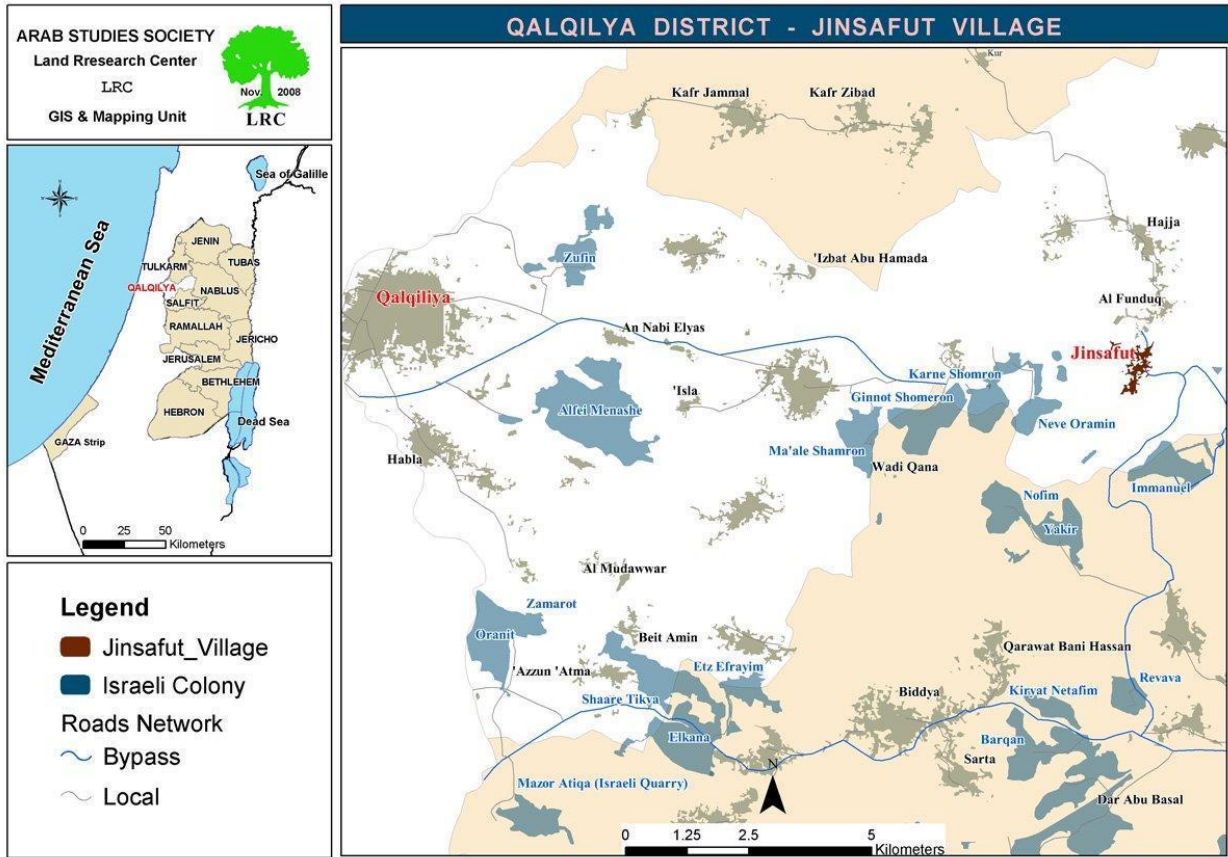


Figure 14 Location of Jinsafut with colonies' expansion in the area (LRC 2021b).

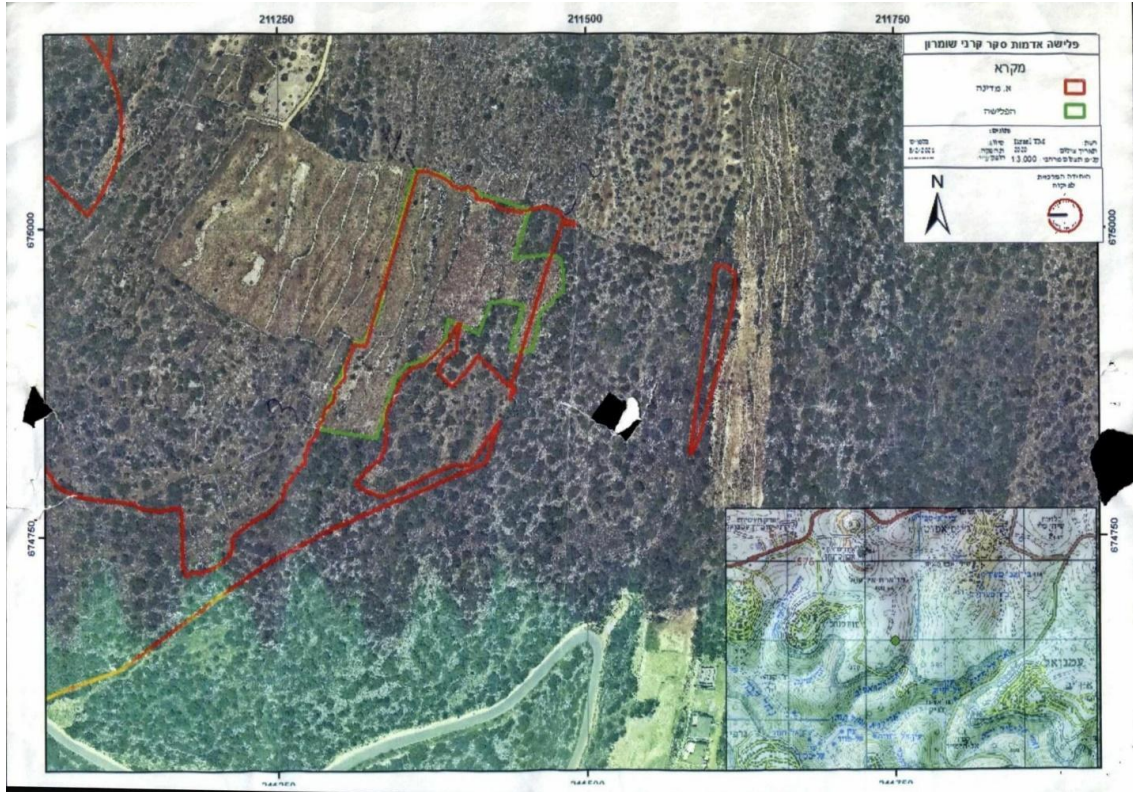


Figure 15 Area declared to confiscate 18 dunums in 2021 for settlement benefits from Jinsafut owners (see LRC 2021c for details).

Further there is a stone quarry that is built on Palestinian land in the area and this damages Palestinians' lives and livelihoods (sanctioned by an Israeli high court ruling – LRC 2012b)

To the West, there are a number of residential colonies (Ariel, Revivim, and Barqan) that also expanded on the expense of local village lands (LRC, 2021).

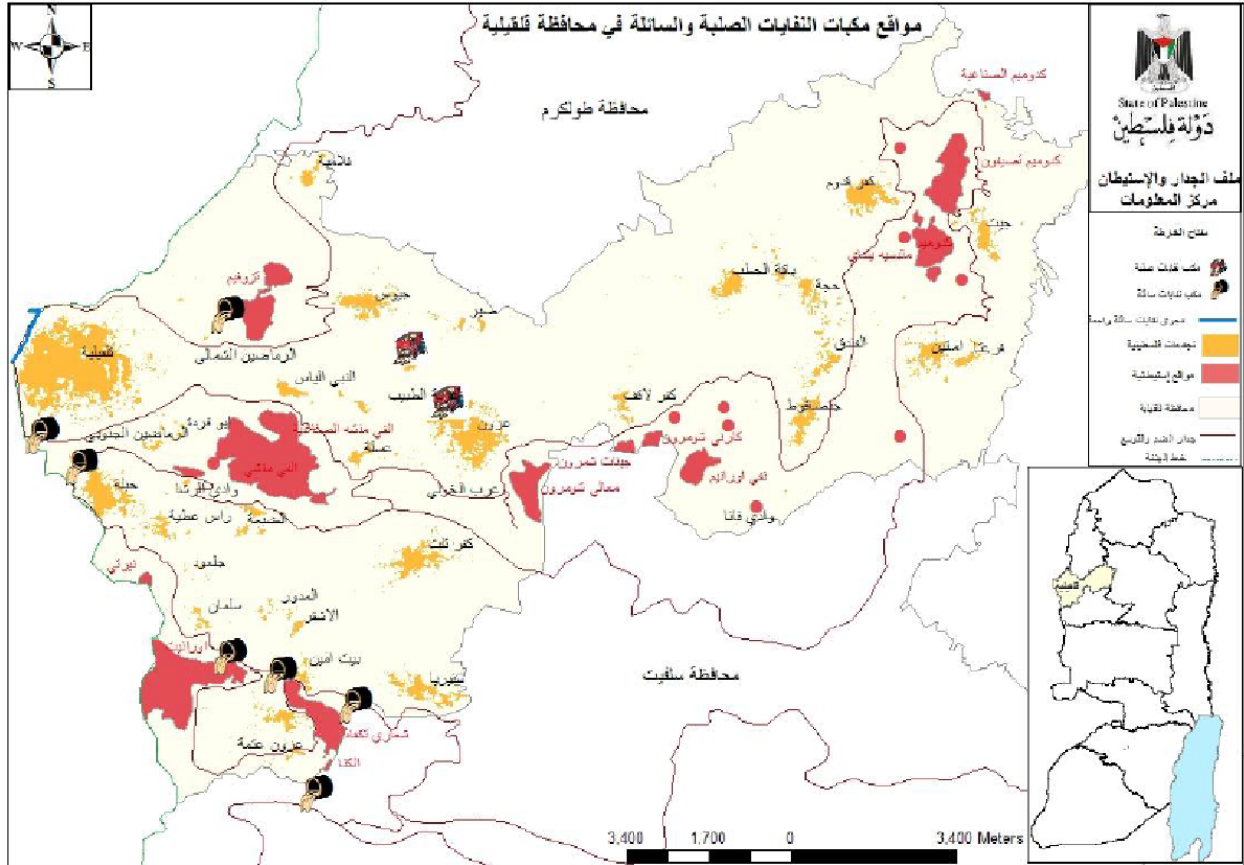


Figure 16 State of Palestine map of solid and liquid waste in the Qalqilia governorate (from LRC).

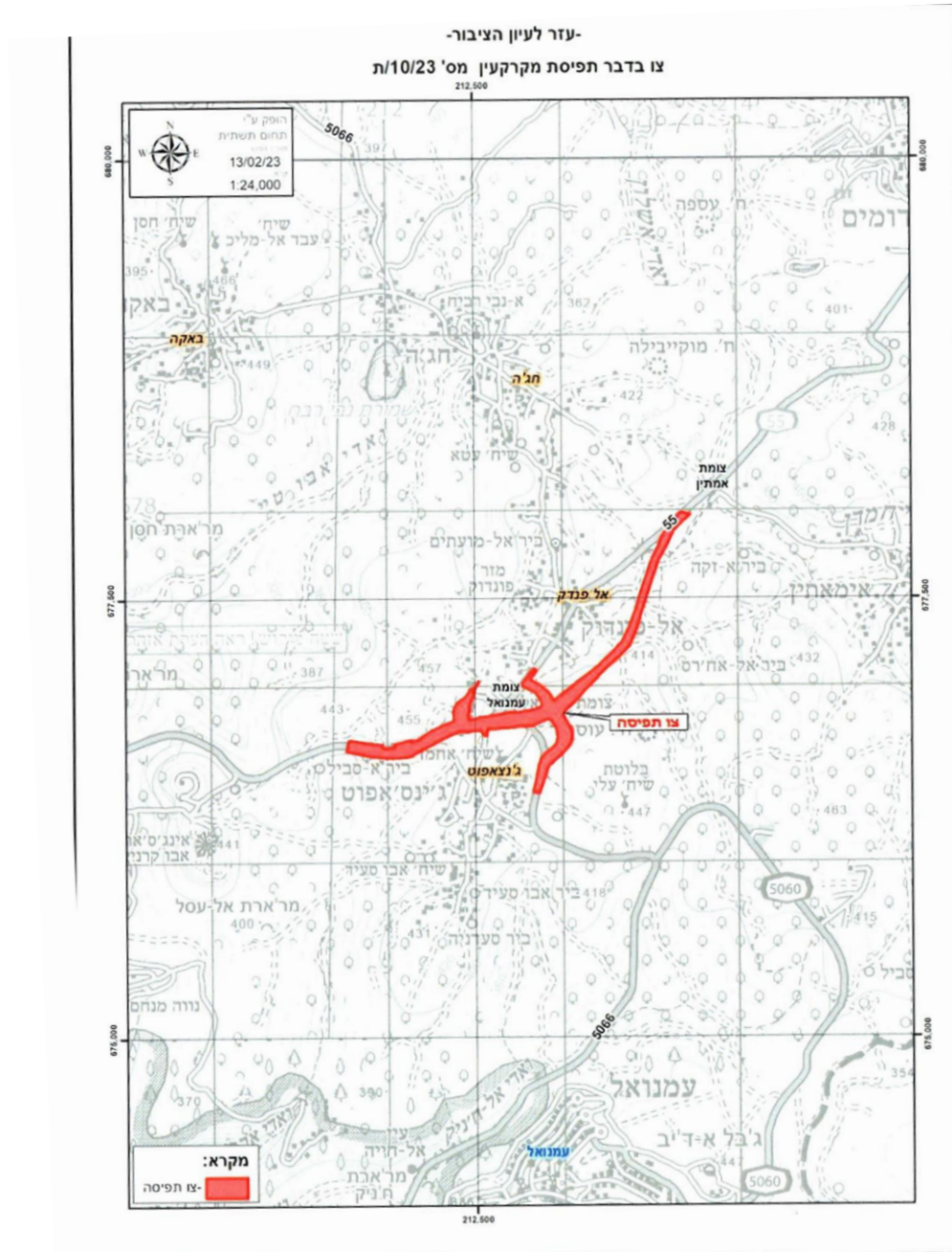
In June 2012 settlers set fire to land near Jinsafut which spread and consumed 300 trees on 70 dunums. Victims of the aggression are shown in Table 5.

Table 5 Example of setting fires and its impact on local people.

Victim	Family members	Children	Lost trees
Abdul Qader Bashir	8	4	27
Ahmad Bashir	9	7	23
Khader Eid	11	6	16
Abdul Hakim Eid	7	4	45
Rami Eid	7	3	43
Mahmoud Eid	9	5	29
Rami Bashir	6	3	34
Murad Bashir	2	0	38
Abdul Rahim Bashir	6	3	41
Total	65	35	296

Latest Development

A new order to lay hands (confiscate) 218 dunums of village lands of Hijja, Jinsafut and Al-Funduq was issued 22 March 2023 (order 23/10/T) to expand settler roads that pass through a very critical Uskar pond (Table 6. Fig. 18)



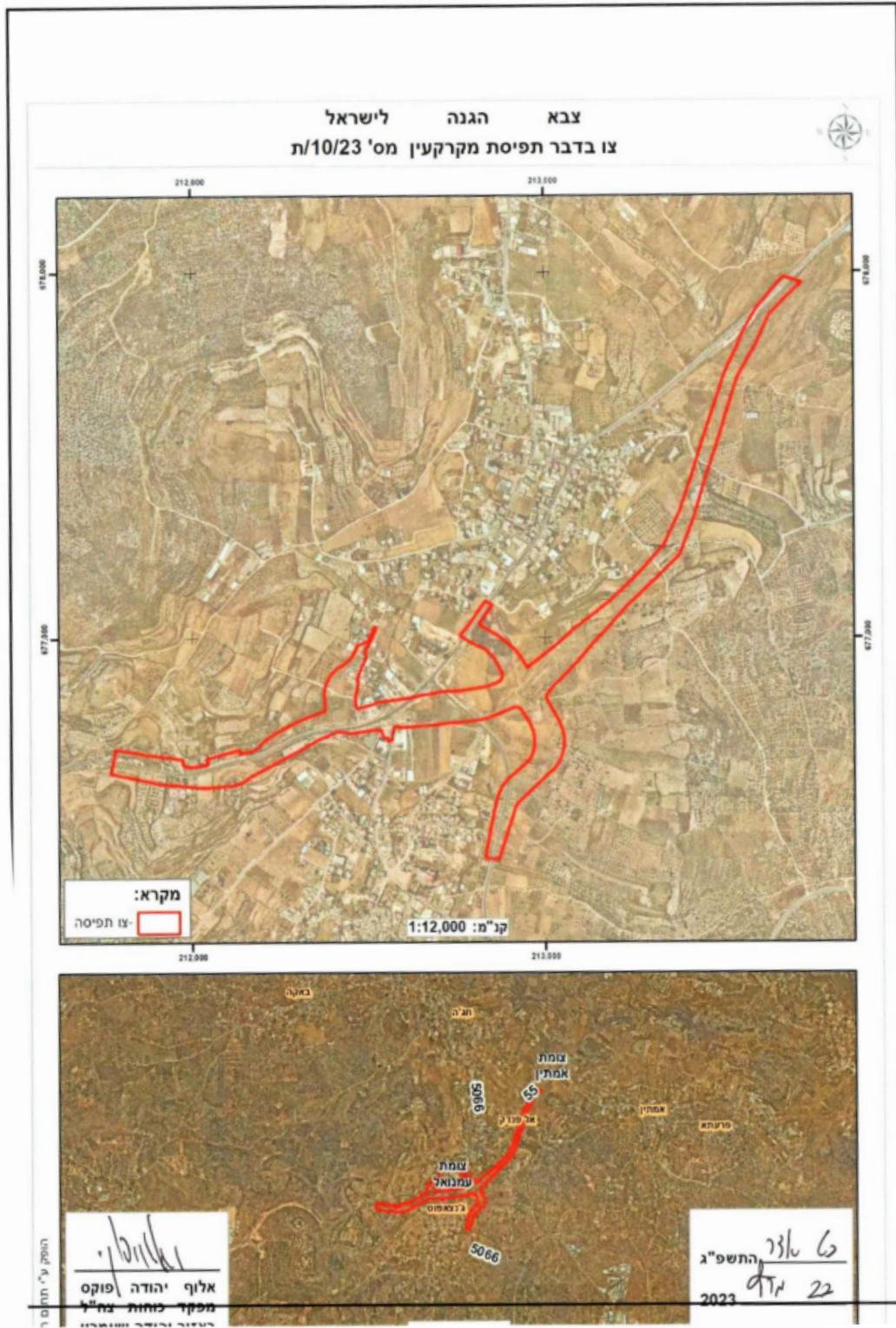


Figure 17 Taken from latest military order of land confiscation for settlement infrastructure (22 March 2023).

Table 6 Areas declared for building the infrastructure seen in Fig. 17

المساحة المعدة لوضع اليد عليها	أراضي قرية	حوض	قطعة/موقع
٢١٧,٩٤٦ دونم	حجة	٥ فيسكالي	الردة، اسم الموقع العبري البرصن
		٦ فيسكالي	الملين، المجرقة، أبو شحعة
		١٠ فيسكالي	النقل، بئر البيضة
	الفندق	٢ فيسكالي	كرم الصرر، الباب القبلي
		٣ فيسكالي	بقعان الشيخ، بقيق القصب
	جينصافوت	٨ فيسكالي	الحلت، الشتور، قطن الصفوطه، محريب، المروج
		٧ فيسكالي	الحبيل الغربية

Nature in Wadi Qana: In 1926, the British declared “Wady Kanah” a forest reserve of approximately “excluding land at present cultivated.” (Plumer 1926; Braverman 2023). In 1983, the Israeli Civil Administration designated the “Nahal Kana Nature Reserve” (B’Tselem 2015). However, Israel used these designations to allow for the expansion of colonial settlements that were dotted around the valley and to stifle the villages around like Jinsafut and Deir Istya (Braverman 2023). A recent study comparing flora, habitats, and threats to Wadi Qsana and Wadi Al-Zarqa al-Ulwi showed some similarities and differences (Qumsiyeh and Al-Sheikh 2023). The study notes that the area of Wadi Qana is unique and needs to be protected. Springs are many and are impacted by settler activities: Aqabet Ain or “springs of Kafr Qarai”, Ein Alfwar, Ein Eljoza, Ein elbasa, Ein elnweter, Ein tanur and others. Through the Israeli Civil Administration’s (ICA) Protection of Nature Committee, the Israeli occupation forces announced their control over the region. The occupation forces claim the region to be an Israeli nature reserve area because it is located within Area “C” (Oslo II Agreement). The occupation forces established settlements at the hiltops of Wadi Qana including within the borders of the designated “nature reserve”. This significantly endangered flora and fauna occur in the area (see Qumsiyeh et al. 2022; Qumsiyeh and Al-Sheikh 2023).

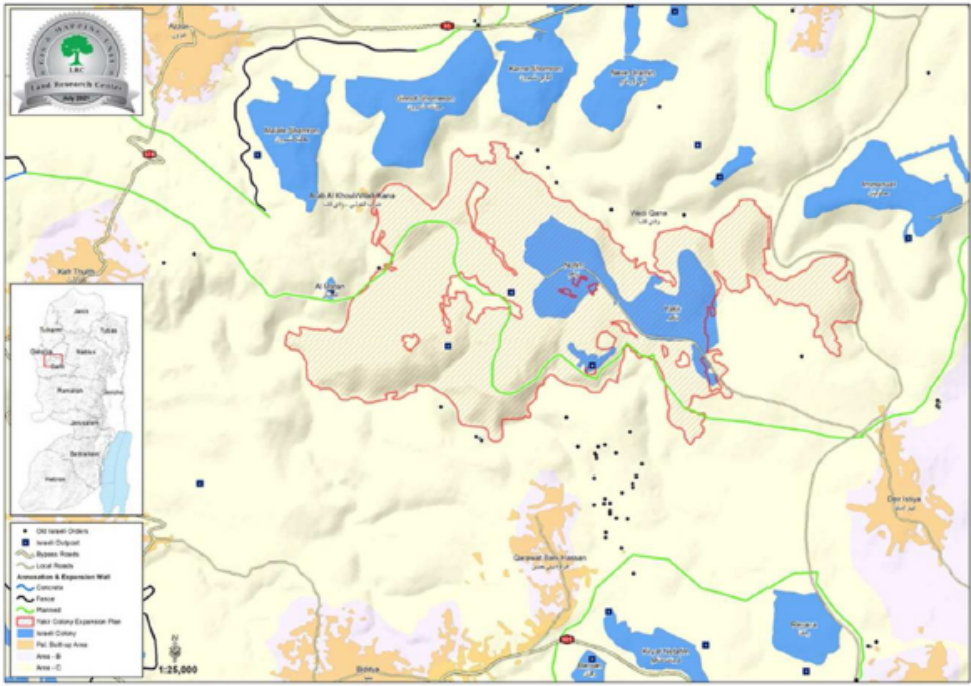
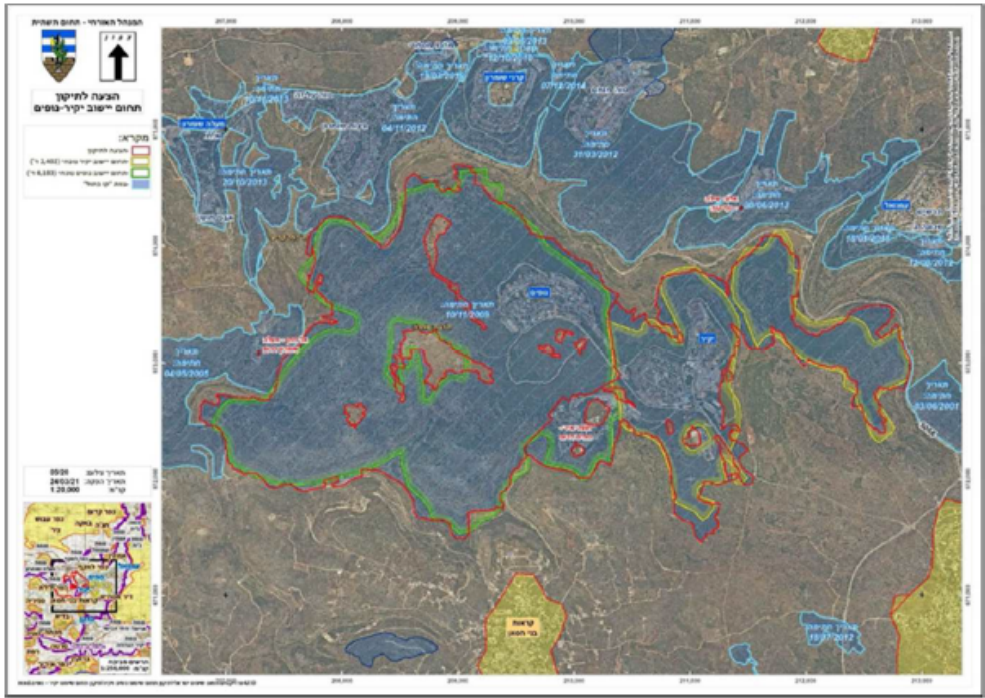


Figure 18 Wadi Qana are with settlements expanding even in supposed 'nature reserves' (source of both maps from LRC 2022).

As in other places, the occupation forces used protection of nature reserves as a ruse to expand settlements while restricting Palestinians (LRC 2022; Fig 58)

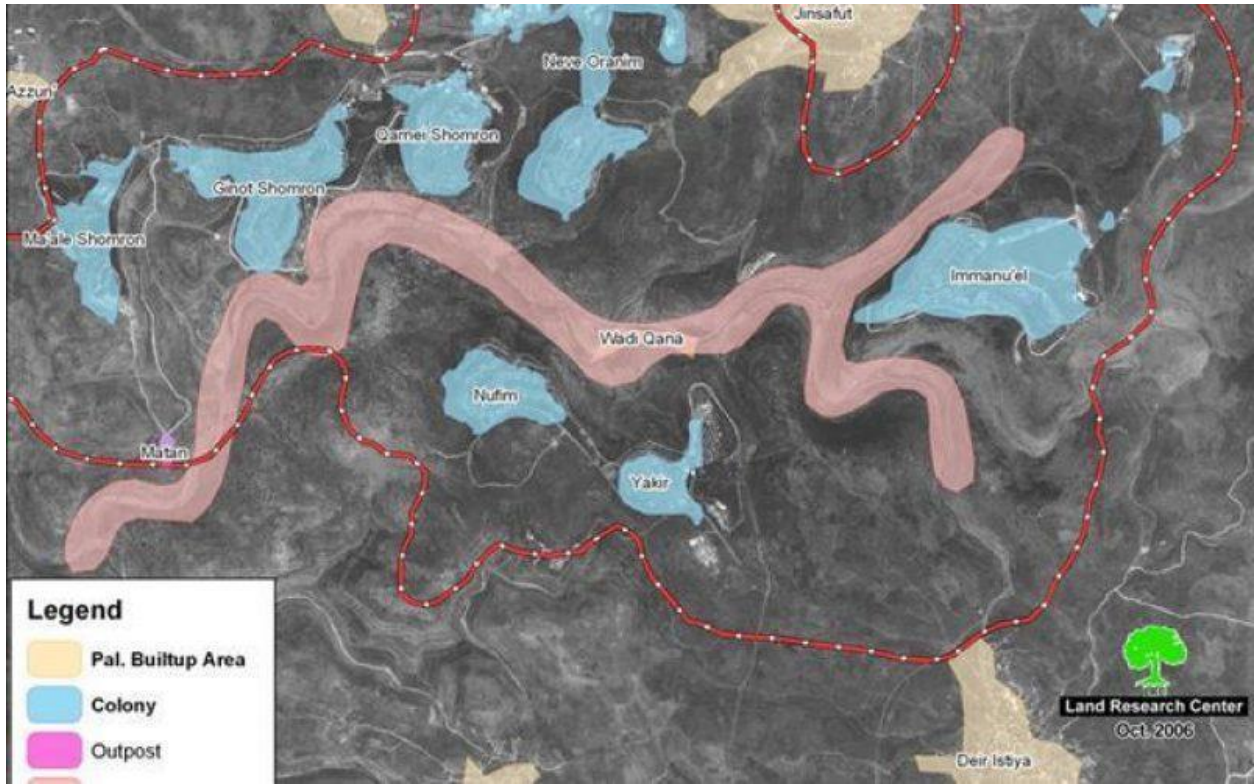


Figure 19 Wadi Qana and surrounding colonial settlements (LRC 2011).

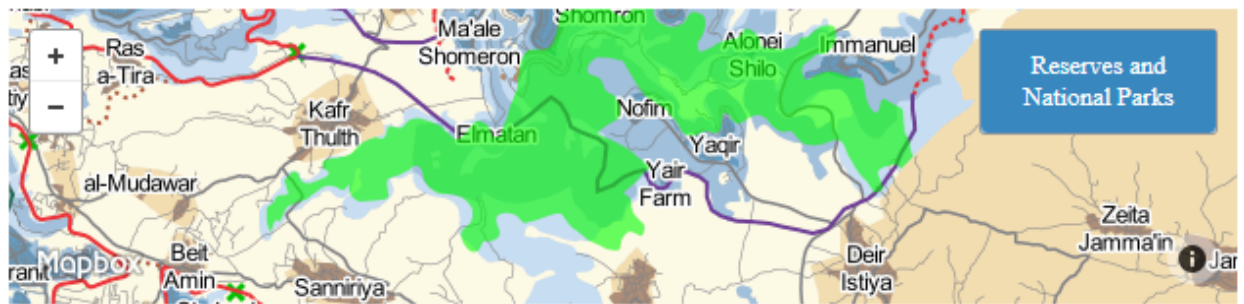


Figure 20 And an Israeli map (from B'Tselem 2015).

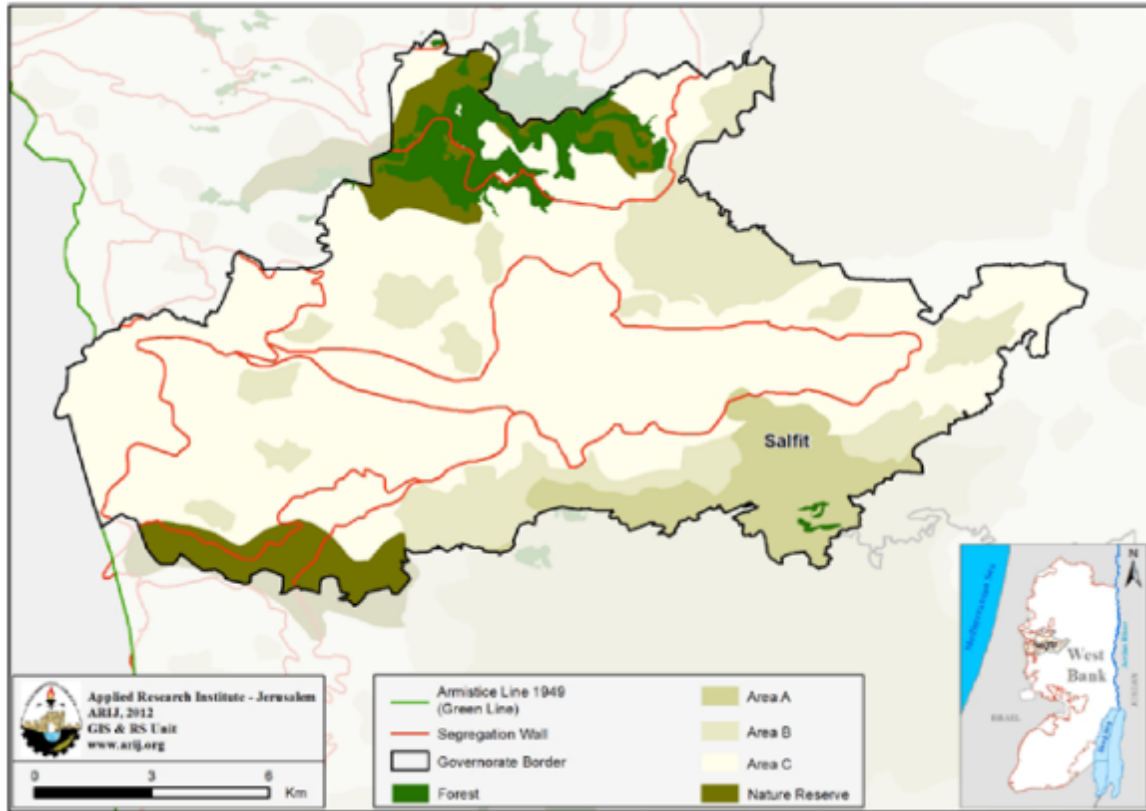


Figure 21 Salfit governorate with areas A, B, and C and Israel designated "Nature Reserves" (ARJ 2014d).

Table 7 Enclaves in Salfit area cut off (Maan Development Center 2008)

Az Zawiya Enclave	South-west Salfit	3 communities	9,810 people	Completely surrounded by the Apartheid Wall
Biddya Enclave	North-west Salfit	4 communities	16,398 people	Surrounded by the Apartheid Wall except for a 1.5 Km gap to the east
Deir Istiya Semi-Enclave	North-east Salfit	4 communities	10,659 people	Cut off by the Apartheid Wall from the west and south
Marda Enclave	Eastern tip of Salfit	3 communities	4,525 people	Cut off on one side by the Apartheid Wall and on three sides by Israeli-only roads
Salfit semi-Enclave	South Salfit	4 communities	14,941 people	Cut off by the Apartheid Wall from the east and north

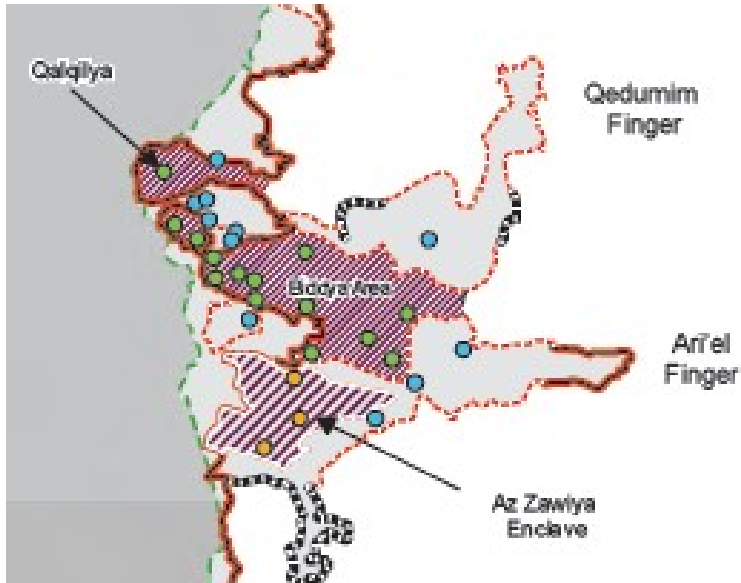


Figure 24 Az Zawiyah enclave.

Liquid waste (Sewage) dumping on farmers and nature and setting sewage treatment facilities only 50-10 meters near Qalqilya inside the Green Line while charging Palestinians for supposed treatment of Palestinian sewage (report by Mohammad Abulsheikh submitted 2019 to governor of Qalqilya). Specific areas that need to be better documented (but reported earlier): waste from Shaar Hatikva settlement that is dumped on Azzon Atmeh, Wadi Sineria and Wadi Beit Amin.



Figure 26 Wadi Beit Amin sewage from Shaar Hatikva mixed with rainwater.

Solid waste site developed on 25 dunum land belonging to Jayyus residents (family of Sabri Abdel Alnabi AbdelGhani Shamasnah, now in Jordan) between the villages of Azzon, Jayyus, & Seer (Military order 58/1256 24/22/1994). Updated/closed 2001 (see Fig. 26). There is a water pumping station serving Jayyus, Azzon and Seer that is about 50 meters from the waste dumping site.

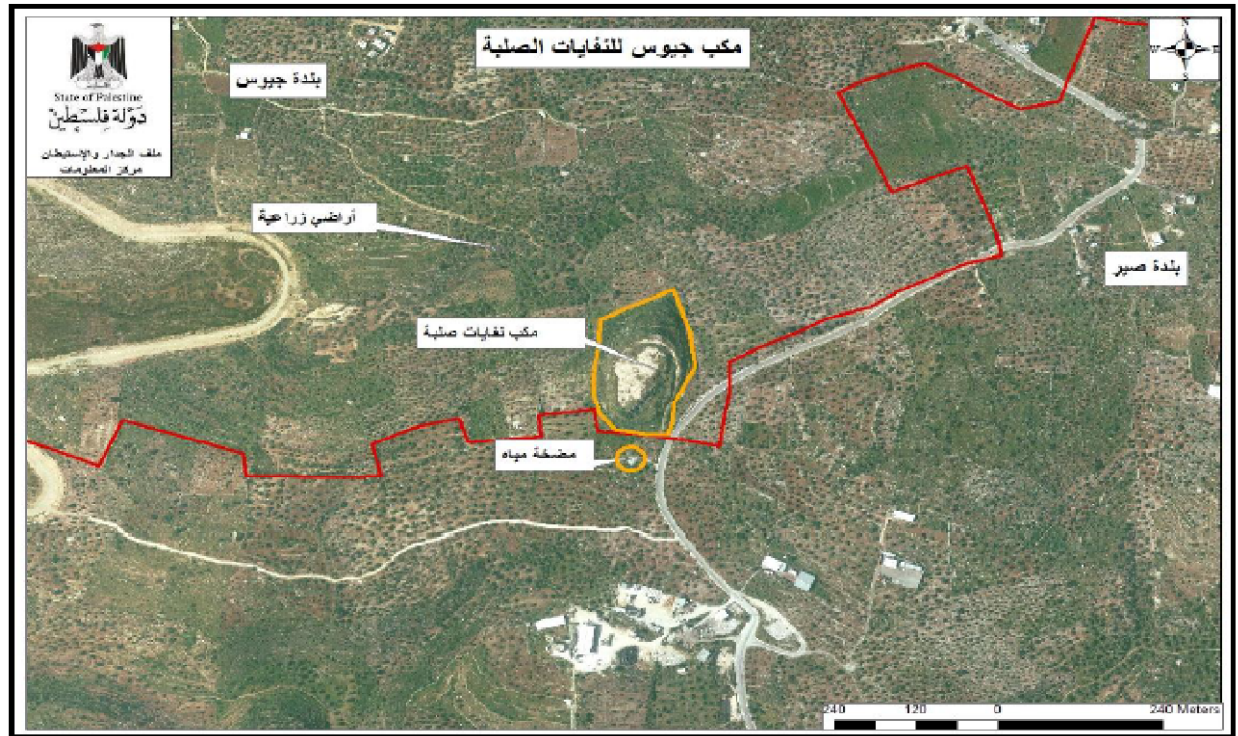


Figure 25 Solid waste dump site on confiscated private property

7.6 Other potential sites and WORK PLANS

There are other potential sites that provide compelling case studies and we discuss those (not in the details discussed above) but they also comprise compelling studies from other governorates. These include the effect of the Barqan industrial settlement on the local population in Salfit governorate (see section 3.6), the Gishuri Industrial settlement on the local population in Tulkarem governorate (see section 3.3), and the effect of the destruction of Silwan and Shaikh Jarrah communities by flimsy and legally unsupported excuses in the Jerusalem Governorate (section 3.9).

Israeli actions are violations of global conventions and customary international human rights and environmental laws (Qumsiyeh/LRC 2023). Issues of local jurisdictions and cases that came before Israeli courts shows the possibilities and limitations of using Israeli court system. Regional, transboundary, and global issues should be addressed by competent legal authorities. To do all of this as noted by Qumsiyeh/LRC (2023) is a challenging task. However, we propose that it is doable provided specific gaps in knowledge are filled appropriately (can be done in 6-12 months) for areas targeted and detailed above. As to a work plan going forward, we propose (roughly in order) for Beit Ummatr and Wadi Qana/Qalqilia area (but these can be applied to other targeted areas):

- 1) Do a land usage **GIS and remote sensing map** for both areas.
- 2) **Community assessment:** Identify with community the areas to which protections are needed and gap work completed. This at a minimum should include Equity, health (physical and mental), safety, clean air and water, healthy food, healthy economy, freedom of movement, protecting greenspaces
- 3) **Study threats** in a more rigorous and systematic way. Assess damages to people, homes, and lands from settlement This should be done via simultaneously
 - a) household surveys constructed well and done via **structured interviews** with a minimum of 20 heads of households in each village or town,
 - b) **Survey health records** in the targeted communities and compare with data of Palestinians not living near settlements,
 - c) Need assessment of discharges of liquid waste both from industrial and residential settlements and of any liquid waste from Palestinians going to other side of green line and coming back (to Qalqilia),
 - d) Need to do **rigorous case-controlled studies** similar to the one by Hammad and Qumsiyeh (2013) especially in the area of Ariel industrial settlement (little work done) and perhaps expand work done in Barqan industrial settlement. Here we need to use **soil analysis** to study at least three sites near the two largest industrial settlement complexes (assays for phosphates, heavy metals, etc). Potential areas for soil sampling can include areas after occasional dumping from area of Emanuel



Figure 27 Area in Jinsafut that should get soil testing.

- 4) Hold **focus group meetings with key stakeholders** to identify additional gaps and fill as needed with field and/or laboratory work
- 5) Structure a **database of environmental injustice** related to occupation and colonization. The database structure should be agreed to in a focus group of stakeholders especially from the EQA and academia and LRC, ALHaq and other NGOs involved
- 6) **Annotate the GIS maps** created in 1 using information from points 2 to 5
- 7) **Legal aspects:** a) Responsibility of the Palestinian authority to make Israel accountable including for UN security council resolutions relevant to this topic (UNSC Resolutions 242, 446, 452, 465, 478 etc.) and ICC ruling of 2005 on

illegality of settlements and walls built in the Palestinian areas, b) Pursue the matters in Israeli courts including the high court on damages done to local people from settlement activity including suppression of development, c) pending outcomes of b and c, proceed for **international fora**. For details and advise on legal matters see Pontin et al. (2015). In regards to the latter point, Israeli signed International conventions can be used by going to the Conference of Parties of the relevant convention, explain the trespass and demand either compliance or expulsion of Israel (as an offending party to the convention), While Israel unilaterally takes tax money belonging to Palestinians as supposed compensation for waste water going across the green line, Israeli settlement (both residential and industrial) dump solid and liquid waste that impacts human health on WB Palestinians with impunity. Israel also controls and manages national parks (stolen heritage sites that belong to the local Palestinians) and so called “nature reserves” (many are used as military training grounds and for settlement expansion. All of this is contrary to international law. Challenge the use of nature areas to exclude Palestinians: The recent study done by PIBS/IUCN/EQA reviewed all “nature reserves” declared in the West Bank by the State of Israel and found that 22 are declared for political purposes. That study provides an excellent resource for both legal and PR/advocacy (e.g. in Wadi Qana and the most recent plans about expanding settler roads on endangered ecosystem. Social survey with emphasis on impact of the Israeli occupation in the villages surrounding Wadi Qana and in Beit Ummar

- 8) **Public Relations and Advocacy.** Here we propose a number of steps
 - a) workshops for the community: to disseminate the accumulated information, to cause actions, to enlist support
 - b) “packaging information” in educational modules or ideas for dissemination via social and mainstream media. Messages should be tailored to serve different audience: school children university students, farmers, media personalities, foreigners etc.
 - c) Use innovative and modern tools effectively (Facebook, Twitter, TikTok etc.).
 - d) Leverage accurate knowledge (from published research papers) to reconnect people to their land and heritage.

- 9) **Promote and develop tourism and forms of agriculture** that are nature-friendly. This is doing proactive work in the community to increase resilience and resistance (sumud). Can work with women and farmers cooperatives



Figure 28 Wadi Qana could be developed to be both a nature reserve and a significant tourist attraction (Qasrawi, 2019).

8. Final word

“Ecology isn’t just about global warming, recycling, and solar power—and also not just to do with everyday relationships between humans and nonhumans. It has to do with love, loss, despair, and compassion. . . . It has to do with capitalism and with what might exist after capitalism. . . . It has to do with concepts of space and time. . . . It has to do with society. It has to do with coexistence” Timotjy Merton *The ecological Thought* (cited in Braverman 2023 p. 265)

Politics trumping facts can be devastating to understanding of issues like environment and water. For example, deliberately misstating facts, hiding them, selectively representing uncertainty and much more was done by Israeli officials to serve their political interests in the Jordan River basin (Messerschmid and Selby 2015). Israel’s unilateral actions of colonial settlement expansion and destruction of native lives has had devastating impacts on the Palestinian environment and raises significant questions about the possibility of planning let alone sustainability under occupation (Isaac et al. 2004). There may be good reasons to engage in legal proceedings that would be backed by good research and enlisting the services of good legal scholars and lawyers to pursue claims of environmental injustice and damages at local, national, and international fora. The term “Green-washing the occupation” comes to mind when we realize that in many cases

Israel takes land on the pretext of protecting it only to build colonies on it (Etkes and Ofra 2007). Ras Imweis and adjacent areas is a good example of this (became the settlement Nahal Shilo). “Nature Reserves” (POICA 2013) and closed areas became pretexts for land confiscation. Such exploitation was obvious in Bethlehem Governorate, when Har Homa settlement was established in 1997 on Abu Ghneim Mountain

The data collected here is highly significant and diverse material for challenging the destructive behaviour of the belligerent occupying state in the West Bank. Basically, there is significant theft of natural resources from the occupied Palestinian territories (land, water, stone, oil, gas, etc.) and significant damage to the environment, affecting lives and livelihoods of local people and local fauna and flora. We did not discuss Gaza or areas inside the Green Line which suffer from damage that in some cases is similar to what has happened in the WB (and is still happening) but have their own peculiarities and challenges. However, even though these 230+ pages and 450+ references suggest there is a lot of information, we must emphasise that there is so much more research to be done in these areas of threats and challenges to the Palestinian environment. We also like to point out that while the data is rigorous from many NGOs, CSOs, GOs, and IAAs, only a small fraction of it was published in peer-reviewed journals (see Qumsiyeh and Isaac 2012). More rigorous research is needed. Further, we must also research not only the challenges but research the remedies (i.e. expand on section 6). While Israel’s internal challenge between environmental Zionists and political Zionists was heated at times, they both agreed to the exclusion of Palestinians and developing the country including the occupied territories to serve Zionist ideals and thus exclude the indigenous people. They may have settled their differences and produced plans like “Tama 35” an “Integrated National Master Plan for Construction, Development and Preservation” (Reut Institute 2009) but the data presented above shows that the result will continue to be a nakba for Palestinians, their agriculture, and their environment until such time as real peacebuilding begins which can only be based in justice (Qumsiyeh 2014; Bronstein 2023).

Since the modern industrial revolution, much environmental damage has happened in our region (the Fertile Crescent) and this has been exacerbated by political instability and the resulting refugee crisis as well as massive economic and societal disruptions. The 17 UN Sustainable Development Goals (SDG) include health and economic improvements, protection of our environment, and peaceful coexistence of societies among others. The applicants strongly believe that these are overlapping and integrated issues but we chose to focus especially on the environment for very logical reasons. Palestine has rich biodiversity but faces unique challenges in areas of education and sustainability due to its political, social and geographic area. According to the Environment Quality Authority (EQA), Palestine has about 3% of the global biodiversity which is very high for the small size of the country and for the latitude (of course tropical areas have higher biodiversity). Our area is designated a Mediterranean biodiversity hotspot (<https://www.cepf.net/our-work/biodiversity-hotspots/mediterranean-basin/>). Factors that enter into success of environmental conservation in any country include quality of education, R&D emphasis, economic, and social factors. These all feed into sustainable development. National strategies for the state of Palestine (EQA 2016; MOEHE, 2017;

Salem 2011; EQA 2023) emphasize the need to challenge the occupation, attain freedom and sovereignty as a basic prerequisite to sustainability.

The data presented/summarized above while not comprehensive covers essentially the key elements of the environmental injustice that Palestinians in the WB face at the hands of settlers and Israeli occupation forces. For the Zionist project of redeeming the land and making it Jewish and Biblical meant targeting camels to replace them with wild asses, olives with pine trees, locals with european settlers, ancient villages living in eco-balance with industrial settlements (Braverman 2023). The latter author interviewed Israeli officials and wrote that “Quotes from various INPA officials demonstrate that the administration of nature and the takeover of land go hand in hand: both are about securing and protecting land from humans (certain humans at least), whether that land is then slotted as a placeholder for future Jewish settlement or as a reserve for valuable ecosystems” (Braverman 2023, p. 50). INPA paramilitary unit called “green patrol” was established in 1978 and focused its initial efforts on eliminating goats (livelihoods of Bedouins) in the guise of protecting the environment (Braverman (2023). **The actions inside the green line since 1948 and in the WB and Gaza since 1967 is nothing short of ecological imperialism** (Crosby, A.W. 2013), biopolitical warfare (Ghosh 2021), and eco-zionism (Braverman 2021c,2023 . Passing of the 2018 Basic Law: “Israel: The Nation State of the Jewish People” basically solidified Israel as an apartheid racist state in all aspects including the program to engineer the landscape we discussed in previous sections. But we could also argue that these transformations (socio-political-environmental engineering) started before 1948 and is certainly consistent with Zionist aspirations (Sufian 2007; Gottesman et al. 2021; Tal 2008b).

We did focus on Bethlehem and Hebron governorates (sections 3.10 and 3.11) as defined by the TOR. Further as requested we selected two areas one in Bethlehem (see section 7.1) and one in Hebron Governorate (section 7.2) for compelling cases that can be studied further for litigation and action that could affect changes on the ground and in reasonable period of time with reasonable investment.

In the end, we cannot just do diagnosis but we must offer therapies. Section 6 attempts to begin the conversation about this. But nothing short of decolonization our environment (ie. Developing a postcolonial environmentalism ala Nixon 2015) would help safe our precious biosphere (I chose the word here to reflect humans and nature living and proispering).



Figure 114 Olives were domesticated in the eastern Mediterranean Region over 5 millennia ago. Uprooting trees is a key element of Zionist assault. Thus a key element of resistance is olive planting. Olive groves also provide excellent habitats.

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- <https://www.asjp.cerist.dz/en/downArticle/552/14/5/195163>

10. Other resources- websites

- arij.org/books-atlases/
- fmap.org/resources/?rsearch=&rcat%5B%5D=355
- Global Environmental justice atlas <https://ejatlas.org/>
- ochaopt.org/
- water.gov.il
- kibush.co.il/
- visualizingpalestine.org/
- sabeel-kairos.org.uk/greenwashing-part-1-control-of-the-land/
- pcbs.gov.ps/site/lang__ar/753/default.aspx
- peacenow.org.il/maps/peacenow-desktop/index.html (interactive map in Hebrew)

11. Annex 1: Partner Institutions

Land Research Center – LRC – was founded in 1986 in Jerusalem as part of the Arab Studies Society, established by late Faisal Hussein. LRC was registered in the occupied Palestinian territories in 1999 as an independent nongovernmental body under the registration no. BL-322-P in accordance with the Law of Charitable Societies and Non-Governmental Organizations. The General Assembly consists of 24 members, professional in different domains related to the work of the center in addition to the 7-member board of directors elected every three years. LRC has branches in Hebron,

Bethlehem and Nablus; its main headquarter located in Jerusalem is closed since February 08, 2002 by a military order that is automatically renewed every six months.

Vision of LRC

Palestinians have full sovereignty over their land; they also have the right to the free use of land for all ends (residential and agricultural) in accordance and appliance with the technical work restrictions of the Palestinian law.

Mission of LRC

Protection, consolidation, and development of Palestinians and their lands, habitats, life styles, and capacities in standing up against the Israeli plan of forcible displacement.

Achievements:

In 2020, a study done titled as the use of insecticide and pesticide and the remains on the fruits on tomato and cucumber, funded by UNDP and GEF.

Many programs are ongoing in the LRC, 1- Human rights program, rights to land and houses, 2- Sustainable development program, 3- Information, studies and research programs related to land sustainability.

Using largely volunteer efforts and local donations but with significant networking globally (see below), **The Palestine Institute for Biodiversity and Sustainability at Bethlehem University** was established to focus on research, education, and conservation of our natural world, culture and heritage and the use of knowledge to promote responsible empowered human interactions with all components of our environment. We endeavored to work locally, regionally and globally to achieve the UN SDGs. In the past three years, PIBS:

1) Published dozens of applied research papers on issues ranging from environmental health to biodiversity to sustainable livelihoods, to education, and more (see examples here <http://www.palestinenature.org/research/>).

2) Developed an agricultural research station and botanical garden (including aquaponics) and use them to empower marginalized local farmers (production, research, and knowledge transfer). For example we trained farmers in use of aquaponics based on research in our facilities and created a community garden and helped people grow their own vegetables in their yards and balconies..

3) Developed educational programs that benefited thousands

- 4) Hosted thousands of local and international visitors who gained knowledge of local challenges and opportunities,
- 5) Built partnerships with local and global governmental and non-governmental entities resulting in benefit to environment and sustainability
- 6) Developed databases and other resources including collections, photo library, digital library, local biodiversity database, and a seed bank.

This is an integrated system for research, education, and conservation to address areas in need in Palestine, a country under stresses of occupation. Our motto is RESPECT (first for ourselves, then other human beings, then the environment with all its components). The museum grounds and its botanical garden (integrated ecosystem) is an oasis for wildlife in Bethlehem and an oasis for young people seeking alternatives and a new way of looking at themselves and their environment (empowerment and nature conservation).

The botanical garden and experimental agriculture research station develops modules that are expanding (a ripple effect). It has been well received and replicated in other places. Already in Nablus and Hebron initiatives are under way to create a similar project. PMNH/PIBS published papers that suggest to other developing countries that they could do similar projects and already received some inquiries and interests on these even before some our experiences are fully out and shared. For a short video of general accomplishments, see <https://youtu.be/BPhFLOsEIM0> . The latest annual report can be seen here: <https://www.palestinature.org/annual-reports/>

PIBS emphasized benefit sharing to local people and this increased our involvement in permaculture (including aquaponics and aquaculture) as well as in ecotourism for example in four communities (Husan, Battir, Al-Walaja, Beit Jala) surrounding Wadi Al-Makhrour, a UNESCO world heritage site where we benefited 80 farmers and many other locals.

As climate changes and population growth increases, the practices described above become even more critical to sustainable development. Having people grow food and herbs literally in their backyards gives them empowerment and increases their incomes and food security. The project also improves both physical (through better and more organic nutrition) and psychological (through gardening and fresh air and plants) well-being of marginalized communities especially in the difficult circumstances of occupation and marginalization. Increased vegetation cover while recycling nutrients via composting also reduces effects of global warming (mitigation and adaptation for sustainability). The social networking also allows us to get almost immediate support from colleagues and activists across continents. The collective work made our 14 dunum

garden, buildings, facilities and most importantly motivated and empowered PEOPLE an oasis of hope in the middle of the mayhem created by colonization and repression.

Key Author: Professor Mazin Qumsiyeh teaches and does research at Bethlehem and Birzeit Universities. He is founder and director of the Palestine Museum of Natural History (PMNH) and the Palestine Institute for Biodiversity and Sustainability (PIBS) at Bethlehem University (<http://palestinature.org>). Qumsiyeh published over 170 scientific papers and several books on topics ranging from cultural heritage to human rights to biodiversity to cancer. His many published books include "Bats of Egypt", "Mammals of the Holy Land", "Sharing the Land of Canaan: Human rights and the Israeli/Palestinian Struggle" and "Popular Resistance in Palestine: A History of Hope and Empowerment". He also published hundreds of articles and letters to the editor. He serves on the board of a number of Palestinian youth and service organizations (see also <http://qumsiyeh.org>).

12. Annex 2 "الحالات الدراسية التي تخص مستعمرة " عمانوئيل " 2012-2023"

تاريخ الانتهاك	موضوع الحالة
12/01/2023	مستعمرو " عمانوئيل" يقطعون غراس الزيتون في قرية إمامتين / محافظة قلقيلية
08/02/2023	الاعلان عن ايداع مخطط تفصيلي لتوسعة مستعمرة " عمانوئيل" على أراضي بلدة دير استيا / محافظة سلفيت
06/12/2022	الاحتلال يصادر 398 دونم من أراضي جينصافوط ويعلمها " أراضي دولة"
01/09/2021	الاحتلال الإسرائيلي يشرع في بناء حي استعماري جديد لتوسعة مستعمرة " عمانوئيل" على أراضي قرية جينصافوط / محافظة قلقيلية
25/04/2018	مواصلة تجريف الأراضي الزراعية لصالح توسعة المنطقة الصناعية " عمانوئيل" / محافظة قلقيلية
06/01/2015	مستعمرة " عمانوئيل" تنهب وتنهب أرض بلدة دير استيا وتتوسع على حساب أراضيها
05/04/2013	مجلس المستوطنات في واد قانا يشرع بعملية شق طريق التفافي يحيط بمستوطنة عمانوئيل
09/11/2012	مستوطنو " عمانوئيل" يضحون المياه العادمة باتجاه حقول الزيتون المثمرة قرية جينصافوط / محافظة قلقيلية
09/10/2012	مستوطنة "عمانوئيل" تدمر البيئة الفلسطينية محافظة قلقيلية
01/07/2012	مجري مستوطنة "عمانوئيل" تدمر البيئة و الزراعة الفلسطينية محافظة قلقيلية

01/07/2012	مستوطنو "عمانويل" يحرقون 70 دونماً من أراضي واد قانا محافظة قلقيلية
03/06/2012	مستعمرو " عمانويل" يواصلون ضخ مياه الصرف الصحي اتجاه الأراضي الزراعية قرية جينصافوط / محافظة قلقيلية

The situation of Sinai: is this part of the Greater Israel –Deal of the century!

<https://www.middleeastmonitor.com/20190722-north-sinai-creating-a-new-egypt-in-sisis-image/>

'They just die': Palestinian village choked by Israeli settlement dumpsite

<https://www.middleeasteye.net/news/palestinian-village-choked-toxic-dumpsite-israeli-industrial-settlements>

Waste from illegal Israeli settlements flows into salfit

http://www.palestinemonitor.org/details.php?id=z7qxo0a23693yzx35ilpsv&fbclid=IwAR3mdGCVzwtjPGihN0gNsIilTO_wu9BqZBENHORjZlnNwIX2bS3pGAgtvkU

Economic cost of occupation

http://www.lacs.ps/documents/Show.aspx?ATT_ID=4568

<http://www.un.org/depts/dpa/qpal/docs/2012Cairo/p2%20jad%20isaac%20e.pdf>

<https://al-shabaka.org/briefs/maps-technology-and-decolonial-spatial-practices-in-palestine/>

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