Trading your Neighbours Water

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Israeli appropriation of Palestinian water resources for export products: compiling existing data of water consumption of settlement exports in the Jordan Valley and Northern Dead Sea

"Preliminary Study"

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1. Introduction

Settlements and settlement trade have long been topics of discussion within Palestinian and international dialogue and the negative impacts of settlement trade on the Palestinian economy have been well documented. However; there has been limited research to date on the amount of virtual water that is illegally taken by Israeli settlers, or-in direct contravention of international law - West Bank water that is allocated by the State of Israel to the settlements for the production of export products and produce. Israeli settlements are illegal under international law, a fact that is emphasised by the international community on every possible occasion. Nonetheless, produce is steadily going from the settlements to Israel to then be sold under preferable conditions as Israeli products. An example hereof is the EU, Israel's biggest trading partner, who Israel made €30,610,000 from in 2013 alone for the sale of vegetables and edible roots from the settlements to the 27 EU countries. [1]

Trade is not limited to agriculture and extends to other products such as beauty products using the Dead Sea minerals which the Northern Dead Sea settlements have access too. All these products are sent through Israel so that their true origin is concealed. Moreover, the produce that is grown in illegal Israeli settlements, especially those in the Jordan Valley area which is known for being rich in natural resources are cultivated on land that has been illegally appropriated and with water that is being illegally extracted from Palestinian wells and natural water sources. Each product grown therefore has a virtual water content which represents the amount of water used throughout the cultivation, harvesting, packaging and transportation processes. Whilst Israel trades in Palestine's water, Palestinians living within the Jordan Valley have to do with less than the WHO recommendations of minimum water needed for daily survival-with some Palestinian communities, such as Al Hadidiya, accessing as little as 20 litres of water per person per day.

The resource focused on in this preliminary research is that of virtual water, the water content used for the lifespan of the product or food item, this includes all water for manufacturing, cultivating, packaging, transporting and processing, huge amounts of virtual water are lost to the Palestinians through the exporting of the Israeli settlement trade, especially that of vegetables of fruit, which is high in virtual water. Given the nature of Israel's over extraction of Palestine's water resources, the trading in virtual water further depletes the amount of water available for Palestinian communities which heavily affect their ability to develop in all sectors and results in severe water shortages across the region. Through this preliminary research it has become clear that there are research gaps in export figures, there seems to be no reliable data which indicates how much of Israel's export trade has originated from settlements in the Jordan Valley/Northern Dead Sea Area. There are also

1 European Commission: Trade Export Helpdesk.
http://exporthelp.europa.eu/thdapp/comext/ComextServlet?action=output&viewName=eur_partners&simDate=20120101&languageId=en&ahscode1=00&cb_reporters=EUR27&cb_partners=0624&list_years=2012&measureList=iv&measureList=ev

knowledge gaps relating to how much virtual water items contain and there is no reliable data available on how much economic profit each settlement gains from its exports.

2. Existing Research

There is a large array of research already existing which examines water usage in the Jordan Valley and Northern Dead Sea settlements compiled by a large array of organisations both in Israel and in the occupied Palestinian territory (oPt), they are as follows:

- Al-Haq (Palestinian)
- Applied Research Institute Jerusalem - ARIJ (Palestinian)
- B'Tselem (Israeli)
- Centre on Housing Rights and Evictions (Palestinian)
- Emergency Water Sanitation and Hygiene in the occupied Palestinian territories - EWASH (International)
- MA>AN Development Centre (Palestinian)
- OCHA - United Office for the Co-ordination of Humanitarian Affairs (International)
- Oxfam (International)
- Peace Now (Israeli)

There are then a list of governmental institutions which collect data on how much water is allocated to settlements both Israeli and Palestinian, these include;

- Palestinian Water Authority
- The Regional Council of the Jordan Valley (Israeli)
- The Central Bureau of Statistics (Israeli)
- The Israeli Water Authority
- The Israeli water company Mekorot
- The Jordan Valley Agricultural Committee (Israeli)

The above lists of organisations are then complimented by independent actors and researchers who are also focusing on the water usage in settlements, they are as follows:

- Dror Etkes
- Dr Nati Gilboa
- Yoav Kislev
- Michael Davidson
- Eyal Hareuveni

Existing reports, research and publications into the water usage in the Jordan Valley settlements and the Northern Dead Sea area, these including:

- Acting the Landlord: Israel's Policy in area C, the West Bank (B'Tselem, 2013)
- Water for One People Only: Discriminatory Access and 'Water Apartheid' in the oPt (Al-Haq, 2013)
- Water Resources Allocations in the occupied Palestinian territory (oPt): Responding to Israeli Claims (ARIJ, 2012)
- Parallel Realities: Israeli Settlements and Palestinian Communities in the Jordan Valley (Ma'an Development Centre, 2012)
- Hung out to Dry (Oxfam GB, 2011)
- Policies of Denial: Lack of Access to Water in the West Bank (Centre on Housing Rights and Evictions, 2008)
- Kerem Navot: Israeli Settlers' Agricutlture as a Means of Land Takeover in the West Bank (Dror Etkes, 2013)
- Trading Away Peace: How Europe helps Sustain Illegal Israeli Settlements (joint publication of 22 organisations, 2012)
- How Dispossession Happens (OCHA, 2012)
- Dispossession and Exploitation: Israel's Policy in the Jordan Valley and Northern Dead Sea (B'Tselem, 2011)
- Restricted Access and it's Consequences: Israel's Control of Vital Resources in the Jordan Valley and its impact on the Environment (Ma'an Development Centre, 2011)
- Cultivating Dispossession: Israeli Settlements in the Jordan Valley (Ma'an Development Centre, April 2012)
- Eye on the Jordan Valley (Ma'an and Jordan Valley Popular Committees, 2010)
- Feasting on the Occupation: Illegality of Settlement Produce and the Responsibility of EU Member States under International Law (Al-Haq, 2013)

Existing reports and publications that have been used for researching the wider context of virtual water, agriculture and exports:

- International Trade Centre
- European Union Commission Export Helpdesk
- International Expert Meeting on Virtual Water Trade (2002)
- Palestine Campaign publications
- ARIJ database- Geographic information system layers and data from satellite images.

3. Main Findings

3.1. Water Allocation

The existing research comprehensively maps and establishes the agriculture originating from the settlements in the Jordan Valley/ Northern Dead Sea area. Al-Haq, Ma'an, ARIJ and the Jordan Valley Regional Council have all mapped and identified the different forms of agriculture grown in each settlement, the water usage of each settlement and the land space in dunums that each crop occupies. Through the Israeli national water company Mekorot, the origin of the water that is supplied to the settlements has also been established. The area of the Jordan Valley itself encompasses 1.6 million dunums of land which equates to 28.8% of the West Bank overall. The area designated as area C[2] comprises 88% of the region which makes up 42% of all area C across the West Bank[3] . Across the West Bank there are 196 sanctioned settlements including East Jerusalem and 234 illegal outposts[4] , 31 of these settlements and 11 of these outposts are located in the Jordan Valley/Northern Dead Sea area hosting a population of 10,738[5] (Map 1). It should be noted that official data is not available for the population of outposts as they are not recognised by the state of Israel despite receiving all the benefits that other settlements receive. However, other non-governmental organisations have mapped the population of all outposts and settlements such as Ma'an and ARIJ.

With regards to the Jordan Valley potential settlers are given high incentives to move there by the Israeli government and to become involved in agricultural processes. Information about these incentive sis hard to find but research suggests that there is research which states that Jordan Valley settlers receive 70 dunums of land and NIS 1000[6] , moreover settlers in the Jordan Valley receive significant discounts for the provision of basic services such as water and electricity. One source suggests that families receive a 75% discount in their monthly water bills[7] whilst another source suggests that the monthly water bill is around NIS 105[8] for settler families. This equates to only 9% of a families' income per month whereas Palestinians in the same area are paying up to 50% of their monthly income for far less water[9]. Once Israeli citizens have moved to a settlement, there are fi-

2 Area C which constitutes 61% of the West Bank area is where the status remained as it was prior to the Oslo Accord; where the Palestinians has no control what so ever and where Israel Has full and obsolete control over administrative , land and security related issues

3 Btselem - Acting the Landlord: Israel's Policy in Area C, the West Bank. June 2013. http://www.btselem.org/sites/default/files2/201306_area_c_report_eng.pdf

4 ARIJ Database, 2013

5 Btselem - Acting the Landlord: Israel's Policy in Area C, the West Bank. June 2013. http://www.btselem.org/sites/default/files2/201306_area_c_report_eng.pdf

6 http://www.palestinecampaign.org/wp-content/uploads/2013/01/jordan-valley-factsheet-2012-WEB.pdf supported by Ma'an Development Centre, 'Eye on the Jordan Valley' and B'tselem 'Dispossion and Exploitation'.

7 http://www.palestinecampaign.org/wp-content/uploads/2013/01/jordan-valley-factsheet-2012-WEB.pdf supported by Ma'an Development Centre, 'Eye on the Jordan Valley' and B'tselem 'Dispossion and Exploitation'.

8 Ma'an (2012): Parallel Realties Israeli Settlements and Palestinian Communities in the Jordan Valley

9 Ma'an (2012): Parallel Realties Israeli Settlements and Palestinian Communities in the Jordan Valley

nancial incentives offered to start up an agricultural business. These incentives include cash sums that are granted over periods of time, such as NIS 135, 000 over a 30 month period or NIS 4, 500 per month[10]. Grants are also offered to cover up to 25% of the costs involved in establishing agricultural enterprises: settlers are in that case offered a tax reduction on profits ranging from 25-30% on investments.[11]

There are two regional councils in the Jordan Valley and Northern Dead Sea area: the Regional Council of the Jordan Valley and the Megilot Regional Council. These Councils are responsible for facilitating much of the above mentioned incentive processes. They also play active roles in lobbying for more land and water with the Israeli government, allocate water and land to each settlement and work in conjunction with other agencies to ensure that settlements receive the best in land and water resources. The tables below will help identify the key research findings. Table 1 is a summary for the Northern Dead Sea settlements which fall under the Megilot Regional Council.

Table 1: The water allocation to the settlements in the Megilot Regional Council

#	Settlement name in the Megilot Regional Council	settlement population (CBS-2011)	TOTAL domestic Allocation (TCM/yr)	TOTAL Agriculture Allocation (TCM/yr)
1	Almog	159	29.6	1,449.8
2	Avenat	119	n/a	n/a
3	Beit Ha'arava + Mul nevo outpost	122	25.4	1,211.6
4	Mitzpe Shalem	164	25.8	2,084.3
5	Qaliya (include individual users)	324	83.2	2,298.9
6	Vered Yericho	195	28.2	1,252.4
	TOTAL - Megilot Regional Council	1,083	192	8,297

TCM/yr : *Thousand Cubic Meter per year*

CBS: *The Central Bureau of Statistics* (*Israel*)

Under the Megilot Regional Council (2011) 192 thousand cubic metres (0.192 million cubic meter MCM) was allocated to settlements for domestic usage and a further 8,297 thousand cubic metres were allocated for agricultural usage which equates to 486 litres per capita per day for personal use and 20,989 litres per capita per day for agricultural use[12]. Table 2 is a summary for the the Jordan Valley settlements which fall under the Regional Council of the Jordan Valley.

10 Ma'an (2012): Parallel Realties Israeli Settlements and Palestinian Communities in the Jordan Valley

11 Ma'an (2012): Parallel Realties Israeli Settlements and Palestinian Communities in the Jordan Valley

12 If we take out the number of persons living in Avenat, which no data is available for regarding water allocation, the per capita litter per day is higher (546 and 23,580 respectively).

Table 2: The water allocation to each settlement in the Regional Council of the Jordan Valley[13]

#	Settlement name in the Regional Council of the Jordan Valley	settlement population (CBS-2011)	TOTAL domestic Allocation (TCM/yr)	TOTAL Agriculture Allocation (TCM/yr)
1	Argaman	163	35.27	2200
2	Beqaot	165	36.76	2748
3	Gittit	302	29.95	1900
4	Gilagal	167	21	2450
5	Hamra	94	14.35	2300.05
6	Hemdat/ Chemdat	174	11.1	63.12
7	Mechora	116	17.55	1400
8	Mehola	421	55.95	2200
9	Maskiyyot /Nahal maskiyyot	72	5	52
10	Massu'a	148	30.39	2600
11	Mevot Jericho	n/a	n/a	n/a
12	No'omi/Na'ama	95	25.93	2300
13	Netiv HaGedud	176	22.95	2350
14	Niran/Na'aran settlement	58	8.1	2000
15	Peza'el (Fasail settlmt.)	209	44.84	3700
16	Roi	153	25.93	1950
17	Rotem Yahad	110	2.2	104.6
18	Shadmot Mehola + Havat Shokek	508	65.1	2801.07
19	Tomer	236	42.3	4150
20	Yitav (include individual users)	167	48.24	1856
21	Yafit	106	26.99	1550.27
	The Financial Company for the Jordan Valley 1987 (regional organisation)		10	665.4
	TOTAL - Regional Council of the Jordan Valley	**3,640**	**580**	**41,341**

TCM/yr : Thousand Cubic Meter per year

CBS: The Centeral Bureau of Statistics (Israel)

13 The Regional Council of the Jordan Valley. http://www.jordanvalley.org.il/?categoryId=38842

The water statistics clearly show that there are huge discrepancies in the amount of water that Palestinians and Israeli settlers are receiving and that the agricultural figures are also far exceeding those of domestic figures. There is data available on 20 of the settlements which fall under the Regional Council of the Jordan Valley. This 2011 data suggests that Mekorot allocated 580 thousand cubic metres for domestic usage and upto 41,341 thousand cubic metres for agricultural usage which equates to 41.3 MCM within that year. In litres this likens to 436 litres per capita per day for domestic usage and 31,116 litres per capita per day for agricultural usage. Table 3 is a summary for the 2011 consumption for the whole Jordan Valley area according to the Israeli Water Authority[14] (no specific areas or settlements stated). It gives additional information regarding the types of water and volumes.

Table 3: The water provided to the settlements

	Non-Fresh (inferior) water MCM			Fresh water MCM
Source/ Use	**Mekorot**	**Independent**		**Mekorot**
Type	treated waste water	treated waste water	brackish water	Fresh water
Agriculture	1.899	12.950	5.183	18.108
Domestic	-	-	-	1.261
Industry	-	-	-	0.0198
Total	20.032			19.390
	39.422			
MCM: Million cubic meter				

B'Tselem (2011) note that much of the drilling and pumping that occurs in the Jordan Valley/Northern Dead Sea area is done in enclosed compounds or fences preventing Palestinians from accessing. Regarding Mekorot's operation in the area, B'Tselem noted that "Mekorot acts independently in the Jordan Valley, detached from the [Israeli] national system in which it supplies water to communities in Israel and to other settlements in the West Bank. Its pumping stations, including those on or near land of Palestinian communities, are closed and fenced"[15]. In 2005, Mekorot extracted 44.1 MCM which constituted 77% of all Israeli West Bank extractions (from Palestinian water resources), all of which was designated to Israeli settlement agriculture[16]. Most importantly these figures show that Israeli settlements are allocated vast amounts of water to further their agricultural production, many

14 The Israel Water Authority - consumption survey for 2011 by Regional Planning Area. http://www.water.gov.il/Hebrew/ProfessionalInfoAndData/Allocation-Consumption-and-production/20112/plan.pdf

15 Btselem - Dispossession and Exploitation: Israel>s Policy in the Jordan Valley and Northern Dead Sea, May 2011. http://www.btselem.org/download/201105_dispossession_and_exploitation_eng.pdf

16 Al-Haq, 2013. Water for One People Only: Discriminatory Access and 'Water Apartheid' in the oPt

settlements consume around 20,000-30,000 litres of water per day for agricultural production but there are some cases where more water is consumed such as the settlement of Niran which uses just over 65,000 litres per day[17]. This water allows for the cultivation of High Value Crops all of which require intensive irrigation. An estimated 80% of all Jordan Valley cultivation is grown for exporting largely to the EU and often runs in cultivation cycles so that they are able to supply produce when the EU countries can not due to climate constraints[18]. According to the Regional Jordan Valley Council, settlement farmers have 4 sources of water they can use:

1. Fresh water from the wells of the Mekorot Company which are inadequate during the summer season;
2. Winter floodwater that flows from the Nablus region to the Tirza reservoir;
3. Water from the Jordan River which has a high saline level and is appropriate only to irrigate date palms;
4. Treated Wastewater from East Jerusalem from the Wadi al Nar stream.

3.2. Agriculture

According to the Israeli Central Bureau of Statistics, there is a total of 86,400 dunums[19] allocated for agricultural usage within the settlements in the West Bank (Table 4):

Table 4: Crop type and area of dunums in the West Bank

Crop Type	Area Size in dunums
Field crops	37,500
Vegetables, potatoes and melons	14,200
Citrus plantations	7,100
Other plantations	27,600
Total	86,400

Within the Jordan Valley Settlements, the Jordan Valley Regional Council estimates that there is 32,000 dunums of agricultural land (Table 5).

17 Ma'an (2012) Cultivating Dispossession: Israeli Settlements in the Jordan Valley

18 Ma'an (2012) Cultivating Dispossession: Israeli Settlements in the Jordan Valley

19 The Central Bureau of Statistics (CBS) - AGRICULTURAL CROP AREA, BY NATURAL REGION 2012. http://www.cbs.gov.il/shnaton64/st19_03.pdf

Table 5: Crop type and dunums in the Jordan Valley[20]

Produce type	Area in Dunums
Spices	2,320
Peppers	3,180
Vegetables	3,199
Field Crops	3,500
Dates	16,233
Grapes	4,644
Citrus Fruits	1,230
Other Plantations	1,359

It is important to note that there are significant disparities in the dunums per crop area between organisations mapping them. The Jordan Valley Regional Council notes that they have 3,000 dunums allocated to spices, 3,100 dunums allocated to peppers, 14,000 dunums for dates (80% of which is exported) and 4,600 dunums of grapes (70% of which are exported). However, according to Israeli researcher Dror Etkes, there are 67,627 dunums of agriculture areas in the Jordan Valley[21] - this is 86% more than the official data given by the Jordan Valley Regional Council. Regarding this difference, Etkes, noted that it is common that the Israeli authorities, particularly in settlement reporting, report inaccurate information and data. In Megilot, the regional council around the northern Dead Sea, there are 11,214 dunums of agriculture according to Etkes. Disparities of this nature suggest that further research needs to be conducted to establish exact areas of land given for agriculture in both areas.

In his report, Dror Etkes mainly dealt with additional agriculture areas from 1997 to date and their ownership (private Palestinian land, Israel's public (state) land according to Israeli law or Waqf land). Below are graphs from his report indicating the amount of dunums that were added to agriculture areas in the Jordan Valley and Megilot.

20 Regional Council of the Jordan Valley. <http://www.jordanvalley.org.il/?categoryId=38842>

21 Dror Etkes, Kerem Navot, 2013.

Figure 1: Distribution of agricultural area by councils

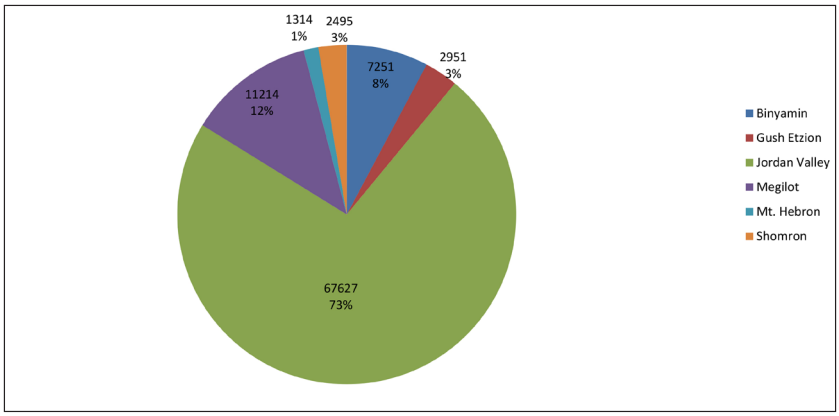


Figure 2 illustrates area of date trees added in dunums added between 1997 and 2012: 7,885 dunums in the Jordan Valley and 2,498 dunums in Megilot regional council[22].

Figure 2: Date area added from 1997

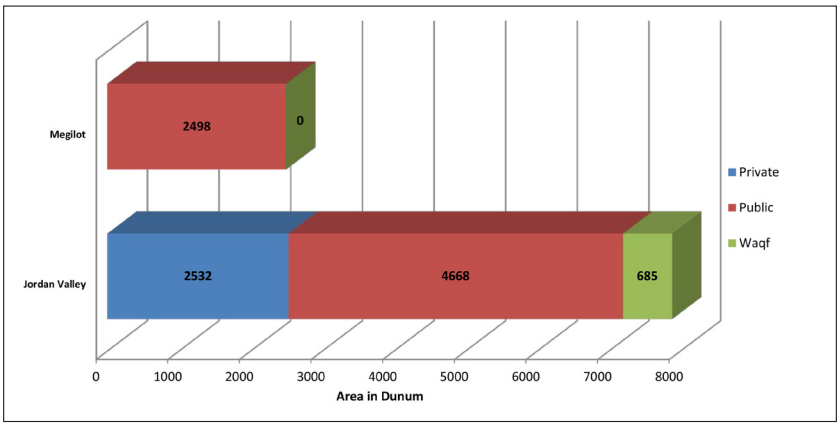


Figure 3 illustrate Vineyards area in dunums added between 1997 and 2012: around 150 dunums in the Jordan Valley and 415 dunums in Megilot regional council[23]

22 Dror Etkes, Kerem Navot, 2013.

23 Dror Etkes, Kerem Navot, 2013.

Figure 3: Vineyard area added since 1997

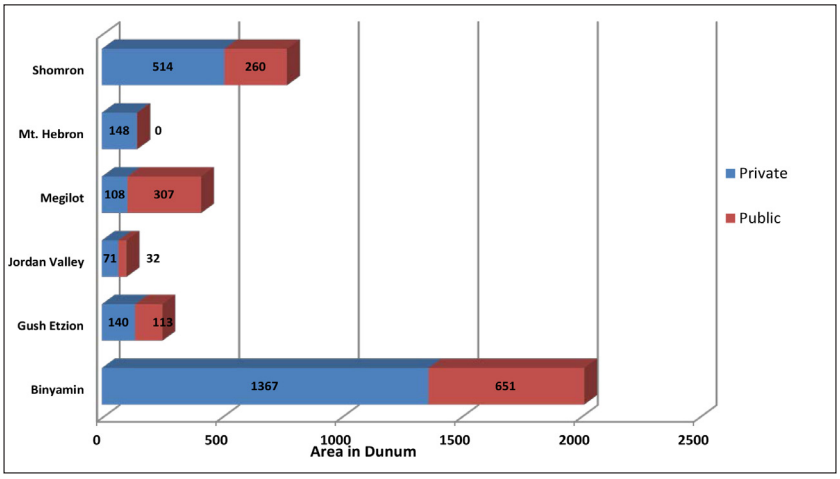


Figure 4 illustrates the area planted with olives in dunums that was added between 1997 and 2012: around 351 dunums in the Jordan Valley[24].

Figure 4: Olive area added since 1997 in dunums

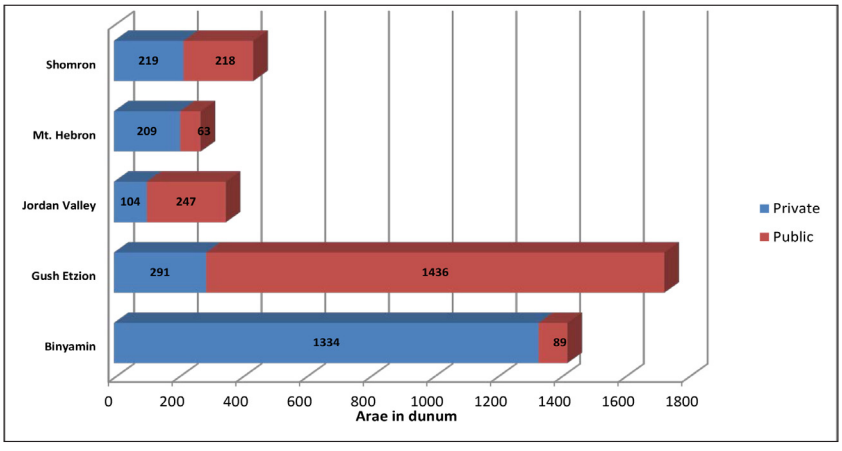
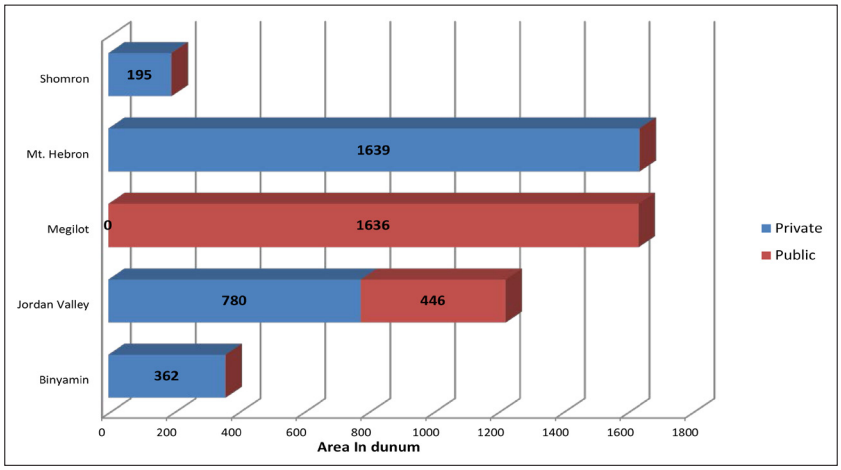


Figure 5 illustrate the Field crops (Falha) area in dunums added between 1997 and 2012: 1,226 dunums in the Jordan Valley and 1,636 dunums in Megilot regional council[25].

24 Dror Etkes, Kerem Navot, 2013.

25 Dror Etkes, Kerem Navot, 2013.

Figure 5: Field crops (Falha) area added since 1997



Of the settlement communities 30% of settlers are involved directly in agricultural farming and a further 30% are directly involved in the packaging and production[26]. They produce an estimated half a billion NIS annually (NIS 500,000,000,000)[27] (€104,032,189,520.61). There used to be one umbrella organisation which operated in the Jordan Valley area which was responsible for centralised packing, transporting and freezing services. However, in recent years there has been a de-centralisation in management and there are now many companies who offer these services, one of the larger ones is that of Agresco who also operates under the brand name of Carmel[28]. There is also animal rearing occurring in the Jordan Valley area which settlements will require water for: 18 dunums are allocated to fisheries which are fish farms and there are 350 sheep, goats, chickens and turkeys[29]. The variations between estimations are clearly shown in table 6.

26 The Regional Council of the Jordan Valley. http://www.jordanvalley.org.il/?categoryId=38842

27 The Regional Council of the Jordan Valley. <http://www.jordanvalley.org.il/?categoryId=38842>

28 Btselem - Acting the Landlord: Israel>s Policy in Area C, the West Bank. June 2013. <http://www.btselem.org/sites/default/files2/201306_area_c_report_eng.pdf>

29 Btselem - Acting the Landlord: Israel>s Policy in Area C, the West Bank. June 2013. <http://www.btselem.org/sites/default/files2/201306_area_c_report_eng.pdf>

Table 6: The discrepancies between estimations regarding production

Product in the Jordan Valley	*Btselem's report from 2011*	*Dr. Nati Gilboa 2013* [30]	*Zvi Avner chairman of the Jordan Valley agriculture committee 2011* [31]	*Dror Etkes, Kerem Navot, 2013*
Dates	16,000 dunums and several thousand in northern Dead Sea	18,000 dunums	16,233 dunums	
Vineyards/ Grapes for eating	4,000 dunums	5,000 dunums	4,642 dunums	
Peppers	2,400 dunums		3,180 dunums	
Spices	3,000 dunums		2,320 dunums	
Other Vegetables			3,199 dunums	
Field crops			3,500 dunums	
Citrus			1,230 dunums	
Different groves			1,359 dunums	
Cowshed			1,930 heads	
Ponds for fish	18 dunums		15 dunums	
Chicken and Turkey			10,140 tons	
Sheep and Goats	6,350 tons of meat a year		1,785 heads	
flowers		a few hundreds dunums	550 dunums	
Total	**32,000 dunums**	**23,000 dunums +**	**36,213 dunums**	**67,627 dunums**

There is also a suggestion that the National Infrastructures Ministry plans to transfer approximately 2,400 dunums of land from abandoned army bases (closed military areas) within the area to settler families for further agricultural land[32]. These numbers are in line with data presented by Zvi Avner (Figure 6), the chairman of the Jordan Valley agriculture committee, in 2011. According to his presentation, the whole processed area in the Jordan Valley contains 12,749 dunums of plants/plantae and 23,464 dunums of plantation, which make up to 36,213 a total of dunums. He also mentioned that there are 289 Farmers (27% from total household) 61% of them work in plantation, 34% work in plants/ plantae and 5% work in animal farming. The water consumption for Israeli agriculture settlements in 2010 was 30 MCM"[33].

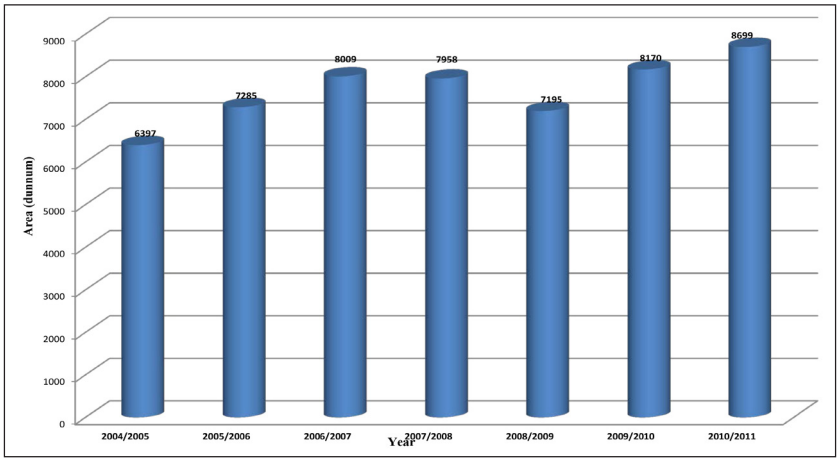
30 Dr. Gilboa: Manager of the Valley District at the Ministry of Agriculture and Rural Development.

31 Presentation - «Vegetables sector in the Jordan Valley 2010/2011» by Zvi Avner chairman of the Jordan Valley agriculture committee. 20.6.2011. http://www.mop-bika.org.il/image/users/130651/ftp/my_files/knasim/yerakot/zvi.pdf?id=8545924

32 There is also a suggestion that the National Infrastructures Ministry plans to transfer approximately 2,400 dunums of land from abandoned army bases (closed military areas) within the area to settler families for further agricultural land

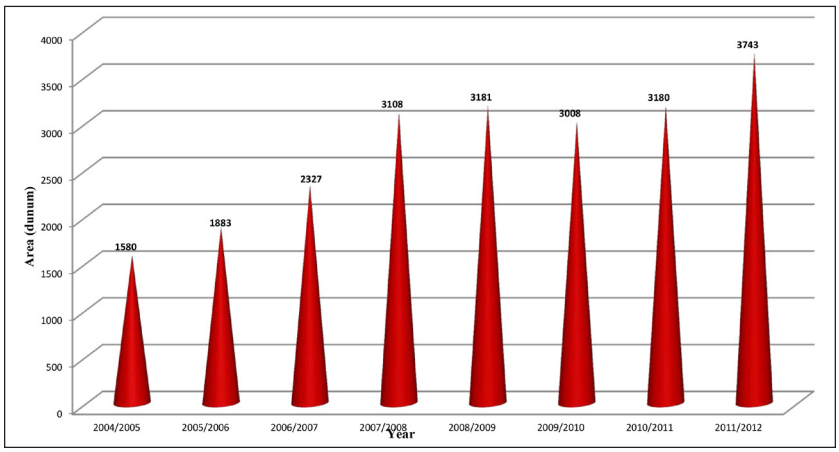
33 Presentation - «Vegetables sector in the Jordan Valley 2010/2011» by Zvi Avner chairman of the Jordan Valley agriculture committee. 20.6.2011. http://www.mop-bika.org.il/image/users/130651/ftp/my_files/knasim/yerakot/zvi.pdf?id=8545924

Figure 6: Pepper area added according to Zvi Avner from 2004[34]



According to Uri Adler from The Plants Production & Marketing Board, pepper continues to be the main sector that keeps on growing (Figure 7), spices seem to be in stagnation, some other crops slowly enter the local market, onions and watermelons are grown mainly in Northern Dead Sea and stable[35].

Figure 7: Dunums of peppers in the Jordan Valley according to Uri Adler[36]



34 Presentation - «Vegetables sector in the Jordan Valley 2010/2011» by Zvi Avner chairman of the Jordan Valley agriculture committee. 20.6.2011. http://www.mop-bika.org.il/image/users/130651/ftp/my_files/knasim/yerakot/zvi.pdf?id=8545924

35 Presentation - «Summery of peppers crops in the JV 2011-2012» by Uri Adler from The Plants Production & Marketing Board. http://www.mop-bika.org.il/image/users/130651/ftp/my_files/knasim/yerakot/uriadler.pdf?id=10185324

36 Presentation - «Summery of peppers crops in the JV 2011-2012» by Uri Adler from The Plants Production & Marketing Board. http://www.mop-bika.org.il/image/users/130651/ftp/my_files/knasim/yerakot/uriadler.pdf?id=10185324

3.3. Product Export

Export data is harder to quantify, according to the Jordan Valley R&D Authority the grapevine is most exported sector and constitutes 40% of the settler income within the Jordan Valley. In recent years 50% of all grapes for export which are for direct consumption have been from the Jordan Valley [37]. 80% of dates grown are for EU export, 70% of grapevines are for export and 100% of the spices grown are for export and constitutes around 50% of Israel's total spice export.

The European Commission[38] places Israel's annual net export value at €30,610,000 alone in 2013 on only vegetables and edible roots within the 27 EU countries. This figure represents only a fraction of the total net value of exports as other figures will include worldwide trade, fruits, citrus fruits, tree plantings and ornamental plants, all of which are produced in the Jordan valley. Whilst there are no direct figures to identify settlement export trade from Israel proper export trade as all produce departs through Israel we can assume that a large amount of the export value is in fact from settlement agricultural trade and therefore largely the Jordan Valley due to the yields in tons that the Jordan Valley cultivation produces. Current Palestinian exports differ, the Palestinian Central Bureau of Statistics (PCBS) states that in January of this year (2013) export values stood at $62,300,000[39] which would show a significant mark up from the 2002 figures which stood at $17,175,000 of which $12,351,000[40] are exports to Israel. This equates to €9,191,336 exports into Israel and €3,590,092 exports in the 27 EU countries. Yet in comparison to Israel, Palestinian exports are still far lower.

3.4. Virtual Water

There is a lack of research conducted on virtual water statistics in general and apparently none of settlement virtual water statistics, which is the biggest knowledge that has been identified so far throughout this research review. Understanding the quantity of virtual water that is exported out of Israel is vital. Table 7 is taken from a water footprint report in which virtual water exports for each country and estimated by researchers, the table clearly shows huge disparities in estimations. It is also unclear whether this table includes settlement trade, however given all export trade leaves through Israel proper it would be assumed that the figures account for all trades. However the figures are also dated in that they are from 2002[41]. But what they do demonstrate is the clear need for further and far more complex research to be conducted into virtual water statistics in exporting from Israeli settlements.

37 Jordan Valley R&D Authority - Evaluation of new table grape varieties in the Jordan Valley (n.d) http://sfile.f-static.com/image/users/130651/ftp/my_files/MA%20HADASH/zany%20gefn%202012.pdf?id=10599955

38 European Commission: Trade Export Helpdesk. <http://exporthelp.europa.eu/thdapp/comext/ComextServlet?action=output&viewName=eur_partners&simDate=20120101&languageId=en&ahscode1=00&cb_reporters=EUR27&cb_partners=0624&list_years=2012&measureList=iv&measureList=ev>

39 Palestinian Central Bureau of Statistics <http://www.pcbs.gov.ps/Portals/_Rainbow/Documents/E-Ftrade%202013.htm>

40 Palestinian Central Bureau of Statistics <http://www.pcbs.gov.ps/Portals/_Rainbow/Documents/other_2011_e_6.htm>

41 Proceedings of International Expert meeting on Virtual Water Trade 2002 <http://www.waterfootprint.org/Reports/Report12.pdf>

Table 7: Estimated export and import quantities of virtual water[42]

	Chapagain and Hoekstra 2003	Yang and Zehnder 2002	Yegnes - Botzer 2001
Israel			
Gross virtual water import	6.4		6.90
Gross virtual water export	0.8		0.38
Net virtual water import	5.6	5.0	6.52

There are global estimations available for virtual water statistics; however these can only be taken as a estimate as it does vary between regions and climates exactly how much water is needed per product (Table 8). For example, the virtual water of each of the animals reared for meat varies depending on the production system that the meat is derived from which includes its diet, feed conversion efficiency and whether the grazing system is natural of production dependant. However, it is useful for giving a baseline indication from which to work.

Table 8: Estimated virtual water content for items globally[43]

Product Type	Virtual water estimate per item (litres)	Virtual water estimate per kilo in litres (global average)
Banana	160	790
Grapes for wine	Per 125 ml glass 109	870 litres of water per litre of wine
Tomatoes	50	214
Orange	80	560
Olives		3,015
Dates		2,277
Cucumber/pumpkin		353
Beef		15,415
Pork		5,988
Sheep		10,412
Goat		5,521
Olive Oil		14,400
Peach	140	910
Potato		287

42 Proceedings of International Expert meeting on Virtual Water Trade 2002 <http://www.waterfootprint.org/Reports/Report12.pdf>

43 <http://www.waterfootprint.org/?page=files/productgallery>

4. Conclusion

It is clear from the preliminary review that there are major consistent gaps in knowledge surrounding settlement exports, virtual water content and financial revenue from the export market. These are all vital statistics for the continuation of this research and should be the core focus of the following research. On a basic level it is important that there is an agreement as to how much land is being used for agriculture in the illegal Israeli settlements in the Jordan Valley and Northern Dead Sea area, without this knowledge the calculations for further statistics will be unreliable and misleading. It is entirely plausible that different organisations simply have different methods of calculating and classify different land usages as different crop types, however there are large variations between the estimations that are available which indicates there needs to be some consistency in reporting or at least establish a base line definition for the purpose of the further research. This is especially so as the settlement areas in the Jordan Valley and Northern Dead Sea area are closed areas which makes it very hard for research to be collected, especially field surveys.

Whilst many organisations have focused on the issue of appropriated water in the Jordan Valley and Northern Dead Sea area, it has been from the argument of denying Palestinians their right to water and development, not from a virtual water framework which further emphasizes the need for the research to focus in this area. Virtual water is the most important component of this research as it further highlights the quantity of water that is being removed from Palestine. Arguing the concept of virtual water allows for us to fully understand the implications of removing this water and the longer term impacts upon Palestine. Moreover the concept of virtual water entrenches the need for the EU to ban settlement trade otherwise they are knowingly sustaining an illegal situation which violates international norms. The relatively new field of virtual water means that statistics are inconsistent, as can be seen in section 3; researchers are disagreeing with the overall export content of virtual water which makes it very difficult to begin to understand how much of that virtual water content could be originating from the Jordan Valley/Northern Dead Sea area.

There is no information available regarding how much of Israel propers exports have originated from the Israeli settlements, without this data it will be impossible to quantify the amount of virtual water being exported. It is also vital to understand exactly how much the Jordan Valley and Northern Dead Sea agriculture is being relied on by Israeli export markets. There should comprehensive research conducted on this area. The research also needs to be classified into understanding export amounts of each individual crop and if possible the export of that crop from each individual settlement. The more exact and in-depth the data can be on this aspect the stronger the further predictions regarding virtual water will be strengthening the overall argument.

Once the export quantity has been established we can move into researching the financial revenue per product per ton and if possible per settlement. Very limited research has been conducted in this area and the data that is available are estimates made from Geo-informatic systems maps/satellite image data and the knowledge of overall exports through Israel, similar to the understandings drawn in the discussion above. These estimations need to be concrete.

The four research areas that have identified are highly intertwined and each aspect heavily relies on accurate data being available within another aspect. Therefore for the actual research project each strand will have to be carefully identified, researched and established in order for the research to become successful. It is clear that there is a strong argument to be made for EU third state responsibility and the duty of non recognition being violated by through the importing of virtual water from illegal Israeli settlements.

5. Recommendations

The research has clearly demonstrated some important knowledge gaps.

1. Firstly is that of area size used for agriculture within the Jordan Valley and Northern Dead Sea area. The current data is not consistent with one another and for the purposes of being able to lobby the further research to be conducted it is essential that this figure be accurately recorded along with what produce is allocated what area size. It may help to establish a method of recording land usage and ensure that measurement is used consistently throughout the research.
2. There is a need for extensive and accurate research on virtual water statistics for settlement exports which are separated from any Israeli virtual water export statistics. Generally, to know how much (virtual) water is been exported in the form of agriculture products we can use this formula: VW = T1*X1 + T2*X2 +….Ti*Xi, Where VW is cubic meters of water, Ti is tons of an exported specific product (e.g. dates) and Xi is the water per ton ratio (e.g. for every 1 ton of dates Y cubic meter of water needed). Moreover, and in order to accurately work out the virtual water statistic we also need to establish how much water is used during the production on each product.
3. Research needs to be conducted on how much of Israel proper exports are in fact settlement products (in tons annually). This could be done in one of four ways:
    - Getting the information from the farmers themselves in some way.
    - Placing an observation to count the products that leave the farms and estimate how much tons are there. By roughly knowing the percentage of export for any products, estimate the amount that is been exported.
    - There should be a professional data/material that can be bought at the Ministry of Agriculture and Rural Development on how much tons of a specific crop is produced per dunum. Given that data we can make an estimation of how much tons of each crop are produced as we approximately know the area used for each one.
    - Finding data on the contribution of the Jordan Valley to the Israeli export. By finding approximate figures on exported products which are coming from the Jordan Valley, and using data on the total amount of export that for every product published by the Ministry of Agriculture and Rural Development, we can know how much is been exported from our targeted area.
4. Following that the financial revenue for the settlements need to be researched further. There needs to be an understanding of how much money settlements earn and to break that figure down further into understanding how much money each crop has the ability to earn settlements and what that money is then used for. This is needed for understanding the contribution of agriculture to the settlements sustainability.