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# Climate Change and the Vulnerable Occupied Palestinian Territories

*Lena Freij*

## ABSTRACT

Two of the most commonly discussed responses to climate change are mitigation and adaptation. It is necessary that the world continues to mitigate greenhouse gases in the atmosphere to prevent the most severe effects of climate change, but it is just as important that adaptation measures are implemented to prepare for the unmitigable effects. With the ongoing Israeli occupation—now reaching its fifty-third year—Palestinians in the Occupied Palestinian Territory (OPT) are prohibited from accessing resources and pursuing necessary measures to repair their existing infrastructure or prepare for the environmental effects of climate change. As such, this Comment sheds light on the Palestinian voice, struggle, and experience while examining climate impacts under occupation by analyzing the environmental, political, legal, and humanitarian impacts of climate change on Palestinians in the OPT.

## ABOUT THE AUTHOR

Lena Freij is a Palestinian American and third-year student at UCLA Law School with a specialization in Environmental Law. Lena has a degree in Environmental Science and Policy from California State University, Long Beach. Lena would like to thank Professors Cara Horowitz and Harjot Kaur for their guidance and feedback, as well as her mother and favorite editor, Jane Freij. This Comment is dedicated to her Palestinian family and all families living under military occupation.

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## INTRODUCTION

One day, Mohammad al-Sayis, a five-year-old Palestinian boy, accompanied his siblings and father to go to the beach to swim and cool down. The Middle Eastern summer of 2017 was hot; water was scarce and polluted; and Gaza was experiencing an ongoing electricity crisis.<sup>1</sup> The Mediterranean Sea was the only way for most of Gaza's two million inhabitants to cool down. Mohammad's father, Ahmed, explained, "[i]t's hot and humid and there is no power . . . . The sea is our only outlet."<sup>2</sup> The following morning, when Ahmed went to wake Mohammad, he found him unconscious in his bed.<sup>3</sup> Mohammad was rushed to the hospital, along with his siblings, who were also ill.<sup>4</sup> Upon arrival at the hospital, Mohammad's situation continued to deteriorate.<sup>5</sup> Doctors explained to Ahmed that Mohammad's symptoms were due to Ekiri Syndrome. This syndrome is a rare and lethal disease to children, and is caused by *Shigella* bacteria, which is commonly transmitted through the ingestion of fecal material.<sup>6</sup> After attempting and failing to obtain a permit to get

1. Gaza's electricity crisis began in 2006, when Israeli airstrikes demolished all six transformers at Gaza's only power station. The power plant has been partially rebuilt; however, Israeli blockades prevent delivery of the parts, equipment, and fuel necessary for reconstruction. Currently in Gaza, daily interruptions of electricity have threatened food security, water, sanitation services, healthcare, and education. Ashraf Al-Mashharawy, *Gaza Left in the Dark*, AL JAZEERA (2013), <https://interactive.aljazeera.com/aje/palestineremix/phone/gaza-left-in-the-dark.html> [<https://perma.cc/Y4TE-RP4H>].

2. Bethan McKernan, *Palestinian Boy Dies After Ingesting Poison at Gaza's Increasingly Polluted Beaches*, THE INDEP. (Aug. 28, 2017), <https://www.independent.co.uk/news/world/middle-east/gaza-pollution-kills-five-year-old-boy-electricity-sewage-water-crisis-israel-hamas-palestinian-a7916326.html> [<https://perma.cc/672G-Y864>].

3. Dorgham Abusalim, *First Death Caused by Sea Pollution in Gaza*, INST. FOR PALESTINE STUDIES (Aug. 16, 2017), <https://www.palestine-studies.org/en/node/232141> [<https://perma.cc/FF3V-J23C>].

4. McKernan, *supra* note 2.

5. *Id.*

6. CENTERS FOR DISEASE CONTROL & PREVENTION, SOURCES OF INFECTION & RISK

treatment abroad, Mohammad passed away from what doctors deemed to be “the first death caused by sea pollution.”<sup>7</sup>

The right to water and sanitation is a fundamental human right enshrined in international conventions.<sup>8</sup> However, due to Gaza’s rapidly expanding population, damaged infrastructure from wars with Israel, and an electricity shortage to run Gaza’s few functioning wastewater treatment plants, millions of gallons of raw sewage pour into Gaza Strip’s beach every day.<sup>9</sup> Adequate sanitation systems and access to clean water are necessary for survival, and their need will only grow more vital as resources become more scarce and weather patterns shift due to climate change. Thus, the time to act is now.

Climate change is one of the greatest threats facing humanity and ecosystems, and its effects are expected to be expansive, devastating, and highly disproportionate in distribution across the globe. There is extensive climate-related research that addresses the dynamics of violent conflicts;<sup>10</sup> however, less attention is focused on the extent to which populations under prolonged military occupation are able to adapt to climate change in their current condition.

This Comment first outlines the history of Israel’s occupation of Palestine as a foundational context to the Palestinian experience of climate change. It then discusses climate impacts to the OPT, including to aquifers and water quality, agriculture, and the existing political conflict.<sup>11</sup> This Comment analyzes the specific needs for action that will be required by the OPT to adapt to climate impacts, and discusses the authorities and constraints that the OPT faces in prevention and adaptation. This Comment then outlines what Palestine has been and is currently doing to address climate change. Lastly, this Comment provides an assessment of likely paths forward, including options to consider when facing the impacts of climate change in the OPT.

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FACTORS: SHIGELLA–SHIGELLOSIS (2017), <https://www.cdc.gov/shigella/infection-sources.html> [<https://perma.cc/MLK8-JGL5>].

7. Abusalim, *supra* note 3.

8. See G.A. Res. 64/292 (Aug. 3, 2010) (explicitly recognizing the human right to water and sanitation and acknowledging that clean drinking water and sanitation are essential to the realization of all human rights).

9. Tribune News Services, *Raw Sewage Flowing Into Mediterranean Poisons Gaza Strip Beachfront*, CHICAGO TRIBUNE (May 3, 2016), <https://www.chicagotribune.com/nation-world/ct-gaza-mediterranean-sewage-israel-20160503-story.html> [<https://perma.cc/AY7X-JG8V>].

10. See Rafael Reuveny, *Climate Change-Induced Migration and Violent Conflict*, 26 POL. GEOGRAPHY 656 (2007); see also Jon Barnett, *Security and Climate Change*, 13 GLOBAL ENV’T CHANGE 7 (2003).

11. The impacts of climate change in the OPT extend far beyond the scope of this Comment, including impacts to marine and terrestrial ecosystems, energy, gender, health, industry, tourism, and urban infrastructure.

## I. THE OCCUPATION

The relationship between Israelis and Palestinians is often presented as a conflict between two equal entities with irreconcilable views over a piece of land or access to a resource. In reality, however, the Palestinian-Israeli conflict is between a nationstate, Israel, possessing one of the world's most well-funded militaries,<sup>12</sup> and the indigenous population of Palestinians that has been occupied and displaced for decades.<sup>13</sup>

Following the Nakba<sup>14</sup> from 1947 to 1949,<sup>15</sup> a period during which 750,000 indigenous Palestinians fled or were expelled from their homes by Israeli forces,<sup>16</sup> Israel comprised 78 percent of historic Palestinian land. After the 1967 War, Israel occupied the remaining 22 percent of the land, and Zionist<sup>17</sup> forces began colonizing the regions shortly thereafter. Today, the OPT refers to the lands captured by Israel during the 1967 War that remain under Israeli military control. These lands include the West Bank, East Jerusalem, and the Gaza Strip.<sup>18</sup>

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12. The United States provides approximately \$2.75 billion in annual military aid to Israel. BILL VAN ESVELD ET AL., HUM. RIGHTS WATCH, SEPARATE AND UNEQUAL: ISRAEL'S DISCRIMINATORY TREATMENT OF PALESTINIANS IN THE OCCUPIED PALESTINIAN TERRITORIES (2010), <https://www.hrw.org/report/2010/12/19/separate-and-unequal/israels-discriminatory-treatment-palestinians-occupied> [<https://perma.cc/EK6J-XBBA>].

13. *Displacement*, U.N. OFF. FOR THE COORDINATION OF HUMANITARIAN AFF., OCCUPIED PALESTINIAN TERRITORY, <https://www.ochaopt.org/theme/displacement> [<https://perma.cc/X7RH-M5XZ>].

14. Arabic: النكبة Al-Nakbah, which translates to “disaster” or “catastrophe.”

15. For many Palestinians, the Nakba still continues today through Israel's ongoing destruction and theft of Palestinian land for settlements, destruction of Palestinian homes and agricultural land, revocation of residency rights, deportations, periodic military assaults, and the denial of the internationally recognized right of return of Palestinian refugees. INST. FOR MIDDLE EAST UNDERSTANDING, QUICK FACTS: THE PALESTINIAN NAKBA (2015) <https://imeu.org/article/quick-facts-the-palestinian-nakba> [<https://perma.cc/88A5-H9PW>].

16. See Commissioner-General of the U.N. Relief and Works Agency for Palestine Refugees in the Near East, 1, U.N. Doc. A/63/13 (July 31, 2008) (explaining how the United Nations Relief and Works Agency for Palestine Refugees became “operational on 1 May 1950, responding to the needs of about 750,000 Palestine refugees”).

17. A Zionist is a person who believes in Zionism, which is “a political movement that was originally begun in order to establish an independent state for Jewish people, and now supports the development of the state of Israel.” *Zionism*, OXFORD LEARNERS DICTIONARY (2020), <https://www.oxfordlearnersdictionaries.com/us/definition/english/zionism> [<https://perma.cc/6KDD5-XJWM>].

18. EUR. COUNCIL ON FOREIGN REL., MAPPING PALESTINIAN POLITICS 6 (Mar. 29, 2020) [hereinafter ECFR], [https://www.ecfr.eu/page/-/Mapping\\_Palestinian\\_Politics\\_Word\\_file\\_for\\_PDF\\_200618\\_%281%29.pdf](https://www.ecfr.eu/page/-/Mapping_Palestinian_Politics_Word_file_for_PDF_200618_%281%29.pdf) [<https://perma.cc/23GT-MMVC>]. The European Council on Foreign Relations is a policy institute of 300 members comprised of serving foreign ministers, former prime ministers, members of national parliaments and European Parliament, EU Commissioners, former NATO secretaries general, journalists, and business leaders. The European Council on Foreign Relations was created in 2007 and has a Middle East and North Africa program that researches political upheaval and sectarian conflict in the region. See EUR. COUNCIL ON FOREIGN REL., BROCHURE (2020), <https://www.ecfr.eu/page/-/>

Since the beginning of the Israeli occupation, Israel has imposed “a series of laws and practices targeting land and water resources.”<sup>19</sup> Water resources were confiscated for the benefit of Israeli settlements in the Jordan River Valley.<sup>20</sup> Additionally, after the 1967 War, Palestinian irrigation pumps on the Jordan River were destroyed or confiscated, and Palestinians were prohibited from further developing their water resources.<sup>21</sup> Palestinians were also prohibited from using water from the Jordan River System.<sup>22</sup> In other areas, Israeli authorities introduced quotas and caps on existing irrigation wells that restricted the quantity of water pumped from wells.<sup>23</sup> Furthermore, while Israeli authorities did not allow any new irrigation wells to be drilled by Palestinian farmers, they “provided fresh water and allowed drilling wells for irrigation purposes at the Jewish settlements” in the OPT.<sup>24</sup>

Israel’s occupation of Palestine continues today. Israel retains control over the borders and airspace of the territory, restricting what is allowed in and out, and periodically engages militarily in the territory.<sup>25</sup> Israel retains “exclusive control over all of the water resources on the land between the Jordan River and the Mediterranean Sea,” with one exception: a small section of the Coastal Aquifer that runs under the Gaza Strip.<sup>26</sup> As of November 27, 2020, 768 Palestinian structures have been demolished, 932 Palestinians have been displaced, and the average Palestinian in Gaza only had access to 14 hours of electricity per day in 2020.<sup>27</sup> For these reasons, the Israeli Occupation is understood by Palestinians to be a system of military rule under which Palestinians are denied civil, political, environmental, and economic rights and are subjected to systematic discrimination.<sup>28</sup>

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ECFR\_brochure\_2020.pdf [<https://perma.cc/Y82A-SJAH>].

19. KAREN FRENKEN, IRRIGATION IN THE MIDDLE EAST REGION IN FIGURES, FOOD AND AGRIC. ORG. OF THE U.S. 222 (2008).

20. *Id.*

21. *Id.*

22. *Id.*

23. *Id.*

24. *Id.*

25. ECFR, *supra* note 18, at 6–7.

26. *Water Crisis*, B’TSELEM: THE ISRAELI INFO. CTR. FOR HUM. RTS. IN THE OCCUPIED TERRITORIES (Nov. 11, 2017), <https://www.btselem.org/water> [<https://perma.cc/6JCT-B5BN>].

27. *Occupied Palestinian Territory*, U.N. OFF. FOR THE COORDINATION OF HUMANITARIAN AFF., <https://www.ochaopt.org> [<https://perma.cc/9PAP-DF9P>] (statistics updated every 48 hours on website).

28. INST. FOR MIDDLE E. UNDERSTANDING, FACT SHEET: PALESTINE’S OCCUPIED ECONOMY, <https://imeu.org/article/palestines-occupied-economy> [<https://perma.cc/LEC4-ZFK4>]. See also Discriminatory Laws in Israel, ADALAH: THE LEGAL CTR. FOR ARAB MINORITY RTS. IN ISR., <https://www.adalah.org/en/law/index> [<https://perma.cc/E5E5-CXEE>] (providing a list of over fifty Israeli laws that privilege Jews over Arabs).

## II. CLIMATE IMPACTS IN PALESTINE

Of the communities directly impacted by climate change, indigenous peoples<sup>29</sup> are among the first to experience climate change consequences, especially those who live under military occupation. Indigenous peoples have a “dependence upon, and close relationship with the environment and its resources,” making them extremely vulnerable to climate-induced impacts.<sup>30</sup> In addition, indigenous communities are the least prepared and least capable of protecting themselves from climate change.<sup>31</sup> This vulnerability exists because climate change exacerbates the difficulties indigenous peoples already face, including “political and economic marginalization, loss of land and resources, human rights violations, discrimination, and unemployment.”<sup>32</sup> Thus, while climate change will affect the entire global community, it will continue to have a disparately heavy impact on indigenous communities that are subject to imperial and colonial powers,<sup>33</sup> such as Palestinians in the OPT.

### A. *Aquifers and Water Quality*

The OPT has a Mediterranean climate and is located on the edge of a mid-latitude temperate climate to its north and arid climate to the south, making it extremely vulnerable to precipitation variations.<sup>34</sup> The OPT’s climate is characterized by long, hot, dry summers and short, cool, rainy winters, modified locally by latitude and altitude.<sup>35</sup> These fluctuations put Palestine in a “very sensitive climatic position.”<sup>36</sup>

According to a study that measured climate impacts in the eastern Mediterranean, the length of summer is predicted to increase by 25 percent in the mid-twenty first century and by 49 percent by the end of the century.<sup>37</sup> The opposite holds true for the winter season, which is predicted to shorten by 56

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29. Indigenous peoples are culturally distinct societies and communities. They live on lands and use natural resources that are “inextricably linked to their identities, cultures, livelihoods, as well as their physical and spiritual well-being.” *Indigenous Peoples*, THE WORLD BANK, <https://www.worldbank.org/en/topic/indigenouspeoples> [https://perma.cc/H4XP-WJXQ].

30. U.N. PERMANENT F. ON INDIGENOUS ISSUES, CLIMATE CHANGE AND INDIGENOUS PEOPLES, [https://www.un.org/en/events/indigenousday/pdf/Backgrounder\\_ClimateChange\\_FINAL.pdf](https://www.un.org/en/events/indigenousday/pdf/Backgrounder_ClimateChange_FINAL.pdf) [https://perma.cc/C9CB-2RDP].

31. *See id.* (discussing examples of how climate change exacerbates difficulties faced by specific indigenous communities).

32. *Id.*

33. *Id.*

34. FRENKEN, *supra* note 19, at 217.

35. *Id.*

36. Jehad M. H. Ighbareyeh et al., *Assessing Crop Yield Sustainability Under the Climatic & Bioclimatic Change in the Area of Palestine*, AM. J. OF CLIMATE CHANGE 4, Mar. 2015, at 49.

37. Assaf Hochman et al., *The Seasons’ Length in 21st Century CMIP5 Projections Over the East Mediterranean*, INT’L J. OF CLIMATOLOGY 1, 2017, at 4.

percent by the end of the century.<sup>38</sup> As one scholar explained, “[t]he lengthening of the summer season together with the shortening of the winter season may lead to substantial environmental changes, including deficit in the water resources and the hydrological regime, increased risks for agriculture, fires and air pollution, as well as health risks.”<sup>39</sup> While projections for changes in temperature vary, overall temperatures are projected to increase by approximately 3.6°F by 2055 and 5.4°F by 2090.<sup>40</sup>

Approximately three fourths of Israel and Palestine’s water supply comes from the Mountain Aquifer, the Jordan River Basin, and the Coastal Aquifer.<sup>41</sup> The Jordan River Basin, which includes parts of Jordan, Syria, and Lebanon, provides water to Israel and Palestine primarily from the Sea of Galilee and Lower Jordan River.<sup>42</sup> In many areas, though particularly in the Coastal Aquifer in the Gaza Strip, water withdrawal substantially exceeds renewable water resources.<sup>43</sup> As one scholar put it, “[c]ontinued withdrawal of these quantities will be hydrologically impossible.”<sup>44</sup>

With hotter temperatures, longer dry seasons, and less rainfall, the OPT can expect an increase in the risks of prolonged, severe droughts.<sup>45</sup> Higher temperatures also increase the demand for water and increase the amount of water discharged from aquifers, but precipitation reductions will result in lower groundwater recharge and a continued decrease in available groundwater.<sup>46</sup> These risks appear to have already increased. A NASA study published in 2016 found that “the recent drought that began in 1998 in the eastern Mediterranean Levant region, which comprises Cyprus, Israel, Jordan, Lebanon, Palestine, Syria, and Turkey, is likely the worst drought of the past nine centuries.”<sup>47</sup>

In addition, the predicted reductions in precipitation “will likely exacerbate groundwater salinity levels through reduced soil flushing and groundwater

38. *Id.*

39. *Id.* at 9.

40. U.S. AGENCY FOR INT’L DEV., WEST BANK & GAZA INCLUSIVE GROWTH DIAGNOSTIC 108 (2017) [hereinafter USAID GROWTH DIAGNOSTIC], [https://www.usaid.gov/sites/default/files/documents/1865/West\\_Bank\\_and\\_Gaza\\_IGD\\_2017\\_v9a.pdf](https://www.usaid.gov/sites/default/files/documents/1865/West_Bank_and_Gaza_IGD_2017_v9a.pdf) [<https://perma.cc/G3HT-BD9E>].

41. Jonathan Lautze & Paul Kirshen, *Water Allocation, Climate Change, and Sustainable Water Use in Israel/Palestine: the Palestinian Position*, 34 WATER INT’L 189, 190 (June 2009).

42. *Id.*

43. *Id.* at 191.

44. *Id.*

45. RICHARD SMITHERS ET AL., STATE OF PALESTINE ENV’T QUALITY AUTH., NAT’L ADAPTATION PLAN TO CLIMATE CHANGE 15 (2016) [hereinafter NAP].

46. *Id.* at 41.

47. Ellen Gray, *NASA Finds Drought in Eastern Mediterranean Worst of Past 900 Years*, NASA (Feb. 29, 2016), <https://climate.nasa.gov/news/2408/drought-in-eastern-mediterranean-worst-of-past-900-years/#.VwdNxWb48NI.facebook> [<https://perma.cc/4X-BH-NDRK>].



recharge.”<sup>48</sup> In a chart published by the UN Development Programme (UNDP) that depicts the relationship between climate impacts, risks, and public health levels, the bulk of vulnerability paths for the Gaza Strip led to reductions in the quality of groundwater, creating “reduced public health levels and more precarious livelihoods.”<sup>49</sup> This makes climate impacts potentially devastating when considering the inequity of current water allocations. Currently, Palestinians receive about 10 percent of withdrawn water from aquifers, “despite the fact that they comprise nearly 40 percent of the Israeli-Palestinian population.”<sup>50</sup> The World Health Organization’s optimal daily water allocation recommendation is 100 liters of water per day per person.<sup>51</sup> While the average Palestinian consumes 88.3 liters<sup>52</sup> of water per day in the Gaza Strip and West Bank,<sup>53</sup> the average Israeli consumes approximately 369 liters per day in West Bank settlements.<sup>54</sup>

Furthermore, the sea level along the Gaza coastline is projected to rise by 0.3 to 1.3 feet by 2100, making saltwater intrusion<sup>55</sup> into the over-pumped and already stressed Coastal Aquifer much worse.<sup>56</sup> The Coastal Aquifer has a shallow water table with high permeability, making it highly susceptible to multiple sources of contamination and pollution.<sup>57</sup> Contaminants can easily infiltrate through the Coastal Aquifer’s surface soil layer because it is unconfined in many places in the Gaza Strip.<sup>58</sup> Increased levels of nitrates from intensive agricultural practices are prevalent in groundwater, and there is contamination from raw sewage that either seeps through the soil or empties directly into

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48. U.N. DEV. PROGRAMME, CLIMATE CHANGE ADAPTATION STRATEGY AND PROGRAMME OF ACTION FOR THE PALESTINIAN AUTHORITY 36 (2010) [hereinafter UNDP CCAS].

49. *Id.*

50. Lautze & Kirshen, *supra* note 41, at 191.

51. GUY HOWARD & JAMIE BARTRAM, WORLD HEALTH ORG., DOMESTIC WATER QUANTITY, SERV. LEVEL & HEALTH 22 (2003).

52. PALESTINIAN CENT. BUREAU OF STAT. & PALESTINIAN WATER AUTH., PRESS RELEASE ON THE OCCASION OF WORLD WATER DAY (2019), [http://www.pcbs.gov.ps/portals/\\_pcbs/PressRelease/Press\\_En\\_21-3-2019-water-en.pdf](http://www.pcbs.gov.ps/portals/_pcbs/PressRelease/Press_En_21-3-2019-water-en.pdf) [<https://perma.cc/R8J2-J7WB>].

53. In 2012, the average domestic water consumption was 72 liters per day in the West Bank and 90 liters per day in Gaza, though the water quality in Gaza was well below health standards. PALESTINIAN WATER AUTH., STATUS REP. OF WATER RES. IN THE OCCUPIED STATE OF PALESTINE 1 (2012), <http://www.pwa.ps/userfiles/file/%D8%AA%D9%82%D8%A7%D8%B1%D9%8A%D8%B1%D8%AA%D8%B5%D9%86%D9%8A%D9%81%201/WR%20STATUS%20Report-final%20draft%202014-04-01.pdf> [<https://perma.cc/Z8WP-CEL9>].

54. Jad Isaac & Jane Hilal, *Palestinian Landscape and the Israeli-Palestinian Conflict*, INT’L J. OF ENV’T STUD. 413, 423 (2011).

55. Saltwater intrusion in aquifers is caused by over-pumping, which results in inland saline water that is beneath freshwater to rise upward into the freshwater zone of the aquifer. NAP, *supra* note 45, at 43.

56. USAID GROWTH DIAGNOSTIC, *supra* note 40; *see also id.*

57. NAP, *supra* note 45, at 43.

58. *Id.*

the Mediterranean Sea.<sup>59</sup> The current water quality of the Coastal Aquifer has already deteriorated to crisis levels “due to the imbalance between groundwater recharge and pumping,”<sup>60</sup> leaving over 90 percent of the water drawn from the Coastal Aquifer below the basic standard for human consumption.<sup>61</sup>

## B. *Agriculture*

Agricultural production is highly sensitive to climate change. Namely, climate impacts are predicted to cause increased flooding, prolonged droughts, changes in livestock viability and crops, and the introduction of new pests, pathogens, and invasive species.<sup>62</sup> These climate impacts will likely have repercussions on the OPT’s domestic food supply, leading to price instability and food shortages.<sup>63</sup> This increased instability is especially dangerous given that there is already widespread food insecurity across the OPT.<sup>64</sup> In 2014, 28.6 percent of Palestinian households were considered either severely or marginally food insecure, with 46.7 percent of Palestinians facing food insecurity in Gaza.<sup>65</sup>

Approximately 60 percent of the West Bank’s population lives in 500 rural villages.<sup>66</sup> These villages are primarily dependent on the surrounding area for economic productivity and less connected to centralized infrastructure.<sup>67</sup> Farming and agriculture also make up an integral part of cultural identity in these regions. Olive trees comprise 71.6 percent of trees and 15 percent to 19 percent of total agricultural production in the OPT.<sup>68</sup> Olive production is sensitive to drought, wind, heat waves, frost, rainfall, and hail.<sup>69</sup> In 2010, olive production was reduced by 20 percent due to a heat wave during the flowering season.<sup>70</sup> Decreased rainfall postpones planting dates, and lower tempera-

59. *Id.*

60. *Id.*

61. U.N. OFF. FOR THE COORDINATION OF HUMANITARIAN AFF., OCCUPIED PALESTINIAN TERRITORY, HUMANITARIAN SITUATION IN THE GAZA STRIP (2011).

62. *See* UNION OF CONCERNED SCIENTISTS, CLIMATE CHANGE AND AGRICULTURE: A PERFECT STORM IN FARM COUNTRY (2019).

63. NAP, *supra* note 45, at 30.

64. Food insecurity is defined for the OPT as households with income and consumption below \$1.60 per capita per day and households showing a decrease in total food and nonfood expenditures. UNDP CCAS, *supra* note 48, at 2.

65. PALESTINE ECON. POLICY RESEARCH INST., 13 FOOD SECURITY BULLETIN (Winter 2015).

66. STATE OF PALESTINE ENV’T QUALITY AUTH., THE ECON. OF CLIMATE CHANGE IN PALESTINE I (2017).

67. Zena Agha, *Climate Change, the Occupation, and a Vulnerable Palestine*, AL-SHABAKA (Mar. 26, 2019) <https://al-shabaka.org/briefs/climate-change-the-occupation-and-a-vulnerable-palestine> [<https://perma.cc/NT2C-J3F3>].

68. NAP, *supra* note 45, at 22.

69. *Id.*

70. U.S. AGENCY FOR INT’L DEV., WEST BANK & GAZA CLIMATE CHANGE RISK PROFILE, WEST BANK AND GAZA FACT SHEET 3 (2017) [hereinafter USAID CLIMATE RISK PROFILE], <https://www.climatelinks.org/file/3034/download?token=0WEvfeof> [<https://perma.cc/L4SL-6M86>].

tures delay maturation and the harvesting of crops.<sup>71</sup> In addition, overgrazing, increased drought, and low rainfall all combine to reduce vegetation cover, biodiversity, and productivity.<sup>72</sup> All of these factors contribute to increased fires and invasive species spread.<sup>73</sup>

In the Gaza Strip, agriculture offers life-saving job opportunities in a region rife with unemployment.<sup>74</sup> Agricultural land constitutes about 43 percent of the coastal area and contributes to 31 percent of the Gaza Strip's agricultural production.<sup>75</sup> Similar to the climate sensitivities in the West Bank, livestock production's sensitivity to climate change is high.<sup>76</sup> In 2015, a heat wave that was 21.6°F above the annual average temperature resulted in the death of 15 percent of the chickens in the Gaza Strip.<sup>77</sup> In addition, sea level rise will accelerate coastal erosion and will increase saltwater intrusion and coastal soil contamination for agricultural farms in the Gaza Strip, especially for land at lower altitudes. Reductions in precipitation will likely lead to decreases in air moisture, which will increase the soil water requirement of crops or result in reduced fruit production.<sup>78</sup> Lastly, higher temperatures will likely encourage fish to move from shallow, warm waters into cooler, deeper waters.<sup>79</sup> This would negatively impact the quality and quantity of fish for fisheries in the Gaza Strip. Moreover, seawater acidification due to increased levels of carbon dioxide in the atmosphere may dissolve the shells of some sea animals and impact the behavior and survival of fish, which would also have consequences for fisheries.<sup>80</sup>

### C. *Exacerbation of Political Conflict*

Within the climate change framework of international environmental law, there is an understood, yet complex relationship between climate-related impacts and armed conflict.<sup>81</sup> Growing evidence supports how armed conflict, including military occupation, “contributes to, and may result in, substantial environmental harm, furthering the already prevalent marginalization of

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71. NAP, *supra* note 45, at 21.

72. *Id.* at 23.

73. *Id.*

74. The Gaza Strip has higher unemployment than any other economy in the world. THE WORLD BANK, ECONOMIC MONITORING REPORT TO THE AD HOC LIAISON COMMITTEE 14 (2015).

75. NAP, *supra* note 45, at 27.

76. *Id.* at 24.

77. USAID CLIMATE RISK PROFILE, *supra* note 70, at 3.

78. UNDP CCAS, *supra* note 48, at 36.

79. NAP, *supra* note 45, at 26.

80. *Id.*

81. Int'l Comm. of the Red Cross [ICRC], *ICRC to U.N. Security Council: Double Impact of Climate Change and Armed Conflict Harms People's Ability to Cope*, (Jan. 25, 2019), <https://www.icrc.org/en/document/icrc-un-security-council-double-impact-climate-change-armed-conflict-harms-peoples-ability-cope> [<https://perma.cc/YXD9-ZDA2>].

communities who are primarily dependent on natural wealth and resources.”<sup>82</sup> For example, the U.S. Department of Defense has recognized that in addition to environmental degradation, climate change could cause substantial geopolitical impacts around the world, contribute to poverty, spur mass migration, and weaken already fragile governments.<sup>83</sup> In addition, the UN Security Council has stated that climate change is increasingly recognized as a “threat multiplier” to peace and security by scientists, political representatives, and civil society across the world.<sup>84</sup>

There is potential for climate change to offer a new avenue for Israeli-Palestinian cooperation. While climate impacts are highly unequal, both Israelis and Palestinians will inevitably *have* to adapt to climate change. Their populations live in such close proximity that health and environmental effects on one population will likely affect the other, including the spread of disease and invasive species. However, framing water as a security issue, along with the potential for furthering such securitization with reference to climate change, “may adversely affect the readiness of the parties to take adaptive measures and lead them to rigidify their negotiating positions.”<sup>85</sup> In addition, due to extreme weather events, there will likely be “increased demand for defense support to civil authorities for humanitarian assistance or disaster response both within the United States and overseas.”<sup>86</sup> This increased demand will likely place the burden to respond on both civilian institutions and militaries around the world.<sup>87</sup> Thus, as the U.S. Department of Defense stated, “[w]hile climate change alone does not cause conflict, it may act as an accelerant of instability or conflict.”<sup>88</sup>

### III. EXISTING AUTHORITIES

The OPT consists of a fragmented political landscape under the domestic and international legal framework, which poses some difficult challenges

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82. SUHA JARRAR, AL-HAQ, *CLIMATE CHANGE VULNERABILITY IN THE OCCUPIED PALESTINIAN TERRITORY* 9 (2019) [hereinafter AL-HAQ]. For a discussion about the history of climate change as a national security concern, see Hans Günter Brauch & Jürgen Scheffran, *Introduction: Climate Change, Human Security, and Violent Conflict in the Anthropocene*, in *CLIMATE CHANGE, HUMAN SECURITY AND VIOLENT CONFLICT* 3, 7 (Hans Günter Brauch ed., 2012).

83. U.S. DEP’T OF DEF., *QUADRENNIAL DEFENSE REVIEW REPORT 85* (2010) [hereinafter USDOD], <https://archive.defense.gov/qdr/QDR%20as%20of%2029JAN10%201600.pdf> [<https://perma.cc/MB55-F8DC>].

84. *Climate Change Recognized as ‘Threat Multiplier,’ U.N. Security Council Debates Its Impact on Peace*, U.N. NEWS (Jan. 25, 2019) [hereinafter U.N. NEWS, *Threat Multiplier*], <https://news.un.org/en/story/2019/01/1031322> [<https://perma.cc/R6L6-QJYZ>].

85. Eran Feitelson et al., *Climate Change and Security in the Israeli-Palestinian Context*, J. OF PEACE RES. 241 (2012).

86. USDOD, *supra* note 83.

87. *Id.*

88. *Id.*

to climate change adaptation and mitigation. Under the domestic and local framework, the Israeli government presides over the modern state of Israel, occupied Jerusalem, Golan Heights, and the Jordan Valley in the West Bank, while the Palestinian Authority (PA) governs the remaining part of the West Bank, and Hamas<sup>89</sup> governs the Gaza Strip.<sup>90</sup> These different political entities are often in conflict with each other, which has resulted in a broad imbalance in the effects of climate change, the ability to approach it, and the capability of producing synthesized assessments and evaluations of its effects due to poor and inconsistent data collection.<sup>91</sup>

With regard to the international framework, the State of Palestine is not recognized as a member state in the UN. In 2012, the UN General Assembly upgraded the PA's UN observer status to nonmember state.<sup>92</sup> This status upgrade granted the PA the ability to participate in some UN General Assembly votes and to join international bodies. The resolution allowed the PA to "procedurally operate like a member state when acting on behalf of the G77 and China—making statements, submitting and co-sponsoring proposals and amendments, giving rights of reply and raising points of order."<sup>93</sup> However, as a nonmember state, the PA cannot speak in meetings until after member states have spoken.

In December 2015, the State of Palestine acceded to the UN Framework Convention on Climate Change (UNFCCC). Since its accession to the UNFCCC, "the Convention has become binding on the State of Palestine in the OPT."<sup>94</sup> The State of Palestine also signed and ratified the Paris Agreement in April 2016.<sup>95</sup> It is crucial to note, however, that as the occupying power, Israel has extraterritorial duties and obligations in its application of the UNFCCC to the OPT.<sup>96</sup> As a developed country, Israel is responsible for reducing the climate vulnerabilities of vulnerable populations, as stipulated under Article 7 of the Paris Agreement. In addition, it is also important to note that the OPT is subject to the international law of belligerent occupation:

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89. See *Hamas*, HAARETZ <https://www.haaretz.com/misc/tags/TAG-hamas-1.5598922> [<https://perma.cc/JGS3-SKSK>] (explaining that "Hamas is designated as a terrorist organization by much of the international community, but enjoys wide support from Palestinians as a legitimate force against Israel's occupation.").

90. Agha, *supra* note 67.

91. *Id.*

92. G.A. Res. 67/19, Status of Palestine in the U.N. (Nov. 29, 2012).

93. Michelle Nichols, *U.N. Allows Palestinians to Act More Like Full Member in 2019*, [<https://perma.cc/3F93-BNKV>].

94. AL-HAQ, *supra* note 82, at 21.

95. STATE OF PALESTINE, *NATIONALLY DETERMINED CONTRIBUTIONS 2* (2016) [hereinafter *NDC*].

96. See Marc Limon, *Human Rights Obligations and Accountability in the Face of Climate Change* 38 GA. J. INT'L & COMP. L. 543, 558 (2010) ("[S]tates also have an extraterritorial legal duty not to interfere with the enjoyment of human rights in other countries (i.e., to reduce greenhouse gas emissions to safe levels) and to help vulnerable states adapt to the adverse impacts of inevitable climate change.").

The law of belligerent occupation, as expressed in both the Geneva and Hague conventions, serves three basic purposes: (1) to protect the inhabitants of the occupied territory; (2) to allow the occupying power to protect itself by not requiring withdrawal until a peaceful settlement has been reached, while imposing an obligation on the occupier to negotiate in good faith for a peaceful settlement; and (3) to safeguard the status and revisionary interest of the sovereign ousted by the occupant.<sup>97</sup>

Thus, as the occupying power, Israel is legally required to meet the needs of the occupied population. This also includes Article 55 of the Hague Regulations, which regards occupying states “only as administrator and usufructuary” of natural resources.<sup>98</sup> This obligation means Israel is prohibited from destroying, utilizing, or damaging the OPT’s natural resources in any way that undermines their capital, or results in economic benefits to Israel’s economy.<sup>99</sup>

More than 135 UN member states recognize Palestine as an independent state,<sup>100</sup> but Israel and a few other countries, including the United States, do not make this recognition.<sup>101</sup> The UN Committee on the Exercise of the Inalienable Rights of the Palestinian People (CEIRPP) was created in 1975 with a mandate to “advise the General Assembly on a programme to enable Palestinian people to exercise their inalienable rights, including the right to self-determination without external interference, the right to national independence and sovereignty, and the right to return to their homes and property from which they have been displaced.”<sup>102</sup> While CEIRPP’s mandate has been renewed on an annual basis since 1975, Palestine still remains a state with nonsovereign status. In 2018, however, 146 of the 193-member UN General Assembly voted to allow the PA to act more like a full UN member state during meetings in 2019.<sup>103</sup> The PA was allowed to chair the group of 77 developing nations.<sup>104</sup> The United States, Israel, and Australia voted against this decision.<sup>105</sup>

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97. Bob Labes, *The Law of Belligerent Occupation and the Legal Status of the Gaza Strip*, 9 MICH. J. OF INT’L L. 383, 385 (1988).

98. Laws and Customs of War on Land, Hague Convention, art. 55, Oct. 18, 1907, 36 Stat. 2277.

99. AL-HAQ, *supra* note 82, at 10.

100. Ishaan Tharoor, *Map: The Countries That Recognize Palestine as a State*, WASH. POST (Nov. 7, 2014), <https://www.washingtonpost.com/news/worldviews/wp/2014/11/07/map-the-countries-that-recognize-palestine-as-a-state> [perma.cc/HQN7-LC42].

101. *Palestine*, HISTORY <https://www.history.com/topics/middle-east/palestine> [perma.cc/KVA7-YZZQ].

102. *The Question of Palestine*, UNITED NATIONS, <https://www.un.org/unispal> [perma.cc/H4PR-QPAZ].

103. Nichols, *supra* note 93.

104. *Id.*

105. *Id.*

#### IV. CURRENT CLIMATE CHANGE PLANNING

As confirmed by recent UNDP consultations on climate adaptation in the OPT, the environmental impacts of climate change on the livelihoods of most Palestinians are minimal when compared to the nonenvironmental effects of Israel's occupation.<sup>106</sup> However, the expected impacts of climate change are likely to compound the devastating effects of the occupation, primarily by "impairing existing coping mechanisms or forcing the adoption of new ones."<sup>107</sup> This compounded impact will be in addition to Israel's contribution to extensive environmental degradation and exacerbation of existing environmental vulnerabilities among Palestinians.<sup>108</sup> Thus, as one scholar suggests, since environmental degradation and conflict exacerbate one another, "their spectrum and severity could expand unless they are addressed together."<sup>109</sup>

##### A. *Efforts by Palestine*

As noted above, the State of Palestine ratified the Paris Agreement in April 2016. Palestine created its Nationally Determined Contributions (NDC) and outlined its efforts to reduce national emissions and adapt to the impacts of climate change.<sup>110</sup> In its NDC, Palestine stated two different scenarios under which it will mitigate its CO<sub>2</sub> emissions: the independence scenario and the status quo scenario.<sup>111</sup> Under the independence scenario, Palestine commits to reducing its CO<sub>2</sub> emissions by 24.4 percent by 2040.<sup>112</sup> The independence scenario assumes the Israeli occupation ends, the State of Palestine's government achieves independence, and is able to exercise full control over its resources.<sup>113</sup> Under the status quo scenario, Palestine commits to reducing its CO<sub>2</sub> emissions by 12.8 percent by 2040.<sup>114</sup> The status quo scenario reflects a continuation of the Israeli occupation; however, the NDC explicitly states that providing a scenario in which the occupation continues "does not mean that [it] is an acceptable solution."<sup>115</sup> In addition, a few of the mitigation actions aimed at achieving these emissions reductions include generating 20–33 percent of elec-

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106. See UNDP CCAS, *supra* note 48, at 18 ("So pervasive are the effects of the Israeli occupation on the climate vulnerability of Palestinian communities that the occupation—in and of itself—is considered here a 'risk' . . ."). See also Agha, *supra* note 67 ("[T]he single greatest non-environmental risk facing Palestinians in the OPT is the Israeli occupation, to the extent that the [UNDP] considers it an environmental "risk" in its own right.").

107. Michael Mason et al., *Compounding Vulnerability: Impacts of Climate Change on Palestinians in Gaza and the West Bank*, 4 J. OF PALESTINE STUD. 38, 39 (2012).

108. See *id.*

109. THE MILLENNIUM PROJECT, GLOBAL CHALLENGE 10 (2017), <http://www.millennium-project.org/challenge-10> [<https://perma.cc/BED2-8DGJ>].

110. NDC, *supra* note 95, at 3.

111. *Id.* at 5.

112. *Id.*

113. *Id.*

114. *Id.*

115. *Id.*

tricity using solar photovoltaic, improving building standards in reliance on thermal energy, developing compressed natural gas refueling infrastructure, and an annual increase of 200 hectares of forested land.<sup>116</sup> Lastly, the NDC stated that its mitigation contribution is “conditional on receiving international support in the form of finance, technology transfer and capacity building.”<sup>117</sup>

In addition to its NDC, the Environment Quality Authority (EQA) of the State of Palestine released its National Adaptation Plan (NAP) to Climate Change in November 2016.<sup>118</sup> The NAP provided an assessment of historic trends in Palestine’s climate, identified and prioritized climate change vulnerabilities and adaptation measures, created future climate scenarios, examined future developments required to participate in climate-modeling research, and outlined the process for future monitoring and evaluation.<sup>119</sup> The vulnerability assessment outlined risks to water, tourism, coastal and marine resources, agriculture, waste and wastewater energy, gender, health, industry, terrestrial ecosystems, infrastructure, and food security, and specifically identified water, agriculture, food, and energy as those resources most vulnerable to climate impacts in Palestine.<sup>120</sup> Each of the vulnerabilities was assessed and given an adaptation option in the NAP, and responsibility for each adaptation plan’s implementation was assigned to a particular Palestinian Government Ministry.<sup>121</sup> Examples of adaptation options assessed in the NAP include rehabilitating water resources such as wells, canals, and springs; improving waste collection systems; promoting green buildings; improving infrastructure for livestock production; rainwater harvesting; and enhancing sustainable community-level irrigation schemes and infrastructure.<sup>122</sup> The EQA maintains oversight to ensure coordination across all adaptation plans.<sup>123</sup> Furthermore, the NAP expressed difficulties with prioritizing adaptations and vulnerabilities due to inadequate quantitative data.<sup>124</sup> The NAP also estimated the total cost of Palestine’s proposed water and agricultural adaptation measures to be in excess of \$3.5 billion over the next ten years, with no structure or plan for financial support, other than potential funding from international donors.<sup>125</sup>

In addition to Palestine’s NDC and NAP, a couple of small-scale efforts have been made to address climate change. For example, agricultural “extension, awareness-raising and training programs” are being implemented by Palestine’s Ministry of Agriculture (MOA) on farm management.<sup>126</sup> These

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116. *Id.* at 6–7.

117. *Id.* at 5.

118. NAP, *supra* note 45.

119. *Id.*

120. *Id.* at 63.

121. *Id.* at 64.

122. *Id.* at 46–60.

123. *Id.*

124. *Id.* at 20–44.

125. *Id.* at 64.

126. *Id.* at 21.



programs address the need to modify practices in order to adapt to climate impacts, such as prolonged drought.<sup>127</sup> In 2012, the MOA began a “greening” project that outlined strategic objectives and policies to conserve and sustainably use agricultural resources.<sup>128</sup> These objectives and policies identified, classified, and reclaimed lands to enhance productivity, afforest private and public lands, and rehabilitate rangelands.<sup>129</sup> The program was divided into two parts: the first distributed fruit tree seedlings, and the second distributed and planted forest and rangeland seedlings.<sup>130</sup> As a result, approximately 1,000,000 fruit tree seedlings and 500,000 forest and rangeland seedlings were distributed.<sup>131</sup>

While these programs represent specific efforts to address climate change, the PA has no sovereign jurisdiction over its natural resources or large swaths of its territory.<sup>132</sup> As a result, the PA has little to no independent political authority over how to manage climate risks. Nevertheless, Palestine is still tasked with addressing climate change, which “renders the PA’s adaptive efforts largely insignificant and counterproductive.”<sup>133</sup>

#### B. *Efforts by the International Community*

The international community has contributed to several projects and programs that provide assistance for climate adaptation in the OPT. From 2013 to 2016, the Government of Belgium donated \$1.6 million for a program entitled “Enhancing Capacities of Palestinian Institutions in Mainstreaming Environment and Climate Change.”<sup>134</sup> This program was implemented by the UNDP and Palestinian EQA and attempted to “enhanc[e] the capacities of Palestinian institutions to mainstream and address the challenges of climate

127. *Id.* at 21–22.

128. See Basem Hammad, Dir. Gen. of Forests & Rangeland, Ministry of Agric., Palestinian Nat’l Auth., Forests in Palestine, UNITED NATIONS (Feb. 14–18, 2013), [https://www.un.org/esa/forests/wp-content/uploads/2014/12/AHEG2\\_WG1\\_Palestine.pdf](https://www.un.org/esa/forests/wp-content/uploads/2014/12/AHEG2_WG1_Palestine.pdf) [<https://perma.cc/NWC3-PHC3>].

129. *Id.*

130. *Id.*

131. *Id.*

132. See generally Jonathan Cook, *Israel Continues Its Theft of Palestinian Natural Resources*, WASH. REP. ON MIDDLE E. AFF. (January–February 2014), <https://www.wrmea.org/014-january-february/the-nakba-continues-israel-continues-its-theft-of-palestinian-natural-resources.html> [<https://perma.cc/ED9S-DVSL>] (explaining World Bank’s argument that “Israel was destroying the Palestinian economy either by plundering Palestinian natural resources for itself or by making them inaccessible to Palestinians through movement restrictions and classifying areas as military zones”); see also G.A. Res. 66/225, at 3 (Dec. 22, 2011) (stating that the General Assembly “[r]eaffirms the inalienable rights of the Palestinian people and of the population of the occupied Syrian Golan over their natural resources, including land, water and energy resources” and “[d]emands that Israel . . . cease the exploitation, damage, cause of loss or depletion, and endangerment of the natural resources in [Palestine] . . .”).

133. Agha, *supra* note 67.

134. USAID CLIMATE RISK PROFILE, *supra* note 70, at 5.

change in the areas of reporting, mitigation and adaptation.”<sup>135</sup> The program was completed in 2016 and resulted in the preparation of Palestine’s Initial National Communication Report for the UNFCCC, which included chapters on “the State of Palestine’s national circumstances relevant to climate change, greenhouse emissions inventory, mitigation actions to reduce [greenhouse gas] emissions, vulnerability and adaptation to climate change, [and] constraints, gaps and related financial, technical and capacity needs.”<sup>136</sup>

The United States, through its Economic Support Fund (ESF), has supported two substantial projects aimed at providing assistance to the OPT for climate adaptation. From 2013 to 2018, ESF provided \$100 million to the Palestinian Community Infrastructure Development Program, a project implemented by USAID and American Near East Refugee Aid.<sup>137</sup> This program aimed to “increase Palestinians’ access to water and sanitation and implement other small and medium-scale community infrastructure projects that address basic infrastructure needs in rural and vulnerable Palestinian communities that lack basic services.”<sup>138</sup> This program was completed in 2018. In addition, ESF is providing \$750,000 to the Palestinian Community Assistance Program, also implemented by USAID.<sup>139</sup> This program is still underway and aims to “pave the way to a brighter future for Palestinians through social and economic relief and recovery by meeting basic humanitarian needs and laying the foundations for long-term recovery in Gaza.”<sup>140</sup> Objectives of this project include addressing social recovery needs in the Gaza Strip through improvements in food security, community infrastructure, housing, education, health, and income generation.<sup>141</sup> This project also aims to “meet the humanitarian needs of communities in Gaza and, as necessary, the West Bank.”<sup>142</sup>

In 2014, the Iceland Ministry of Foreign Affairs pledged \$455,000 to the Resilience Against Natural Disasters program, to be implemented by UNDP.<sup>143</sup> This project is ongoing and “aims at promoting a culture for disaster risk prevention, mitigation and preparedness in the State of Palestine” by focusing on

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135. *Enhancing Capacities of Palestinian Institutions in Mainstreaming Environment and Climate Change*, U.N. DEV. PROGRAMME: PROGRAMME OF ASSISTANCE TO THE PALESTINIAN PEOPLE, [https://www.ps.undp.org/content/papp/en/home/operations/projects/environment\\_and\\_energy/enhancing-capacities-of-palestinian-institutions-in-mainstreamin.html](https://www.ps.undp.org/content/papp/en/home/operations/projects/environment_and_energy/enhancing-capacities-of-palestinian-institutions-in-mainstreamin.html) [https://perma.cc/RS4X-ZEUV].

136. *Id.*

137. USAID CLIMATE RISK PROFILE, *supra* note 70, at 5.

138. U.S. AGENCY FOR INT’L DEV., WEST BANK & GAZA WATER RESOURCES AND INFRASTRUCTURE PROGRAM 2 (2014), [https://www.usaid.gov/sites/default/files/documents/1883/01312014\\_WRI\\_fact\\_sheet.pdf](https://www.usaid.gov/sites/default/files/documents/1883/01312014_WRI_fact_sheet.pdf) [https://perma.cc/LSH9-VBX5].

139. USAID CLIMATE RISK PROFILE, *supra* note 70, at 5.

140. *Palestinian Community Assistance Program*, NGO AID MAP, <https://www.ngoaid-map.org/projects/14106> [https://perma.cc/5WW5-N92R].

141. *Id.*

142. *Id.*

143. USAID CLIMATE RISK PROFILE, *supra* note 70, at 5.

“developing institutional and legal frameworks for disaster risk management.”<sup>144</sup> This project’s accomplishments include creating a Preparedness Assessment in 2014 and an institutional framework for disaster risk management in 2016.<sup>145</sup>

## V. PALESTINE’S RESTRICTED ADAPTIVE CAPACITY

Due to the threat of forced displacement in the OPT, the Palestinian population is increasingly vulnerable to the compounded impacts of the Israeli occupation due to climate change risks.<sup>146</sup> The struggle for Palestinians to adapt to climate change is magnified by two primary components: Israel’s discriminatory practices and monetary constraints.

### A. *Israel’s Discriminatory Practices*

Palestine’s NDC, which was submitted to the UNFCCC, stated that the “Israeli occupation, along with the illegal settlements regime, annexation, and expansion wall, substantially reduces the State of Palestine’s adaptive capacities in relation to many issues . . . thereby compounding climate vulnerabilities.”<sup>147</sup> Palestine’s NAP also stated:

It is self-evident that as Israeli occupation compounds climate vulnerabilities by reducing adaptive capacities, it also severely constrains the State of Palestine’s abilities to adapt. Israeli restrictions are particularly challenging for options that require import of new technologies, import and export of raw materials and products, or the development of domestic and industrial infrastructure. Hence, unless lifting of these restrictions can be resolved with Israel, it may be much more difficult for the State of Palestine to adapt to projected climate change with potentially dire consequences.<sup>148</sup>

Examples of Israel’s discriminatory practices include Israel’s control over water and land resources, Israeli-imposed restrictions on Palestinians’ access to arable lands and grazing areas, destruction of property, including homes, animal sheds, and water infrastructure, as well as the confiscation of land and water infrastructure.<sup>149</sup> Israel also targets natural resources in the OPT, which are vital sources of livelihood, sustainability, and resilience.<sup>150</sup> Exploitation of

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144. U.N. DEV. PROGRAMME: PROGRAMME OF ASSISTANCE TO THE PALESTINIAN PEOPLE, RESILIENCE AGAINST NATURAL DISASTERS, <https://www.undp.org/content/dam/papp/docs/Operations/Projects/Factsheets/UNDP-papp-operations-projects-88464.pdf> [<https://perma.cc/645V-RX8B>].

145. *Id.*

146. AL-HAQ, *supra* note 82, at 12.

147. NDC, *supra* note 95, at 4.

148. NAP, *supra* note 45, at 64.

149. *Id.*; AL-HAQ, *supra* note 82, at 25. See also *The South Hebron Hills*, B’TSELEM (Jan. 1, 2013), [https://www.btselem.org/south\\_hebron\\_hills](https://www.btselem.org/south_hebron_hills) [<https://perma.cc/52ZX-HMX7>] (explaining Israel’s discriminatory practices with regard to water, construction, energy, and settlements).

150. See AL-HAQ, *supra* note 82, at 25.

these resources is extremely damaging because they are necessary for effective climate adaptation.<sup>151</sup> For example, Israel exerts control over water through the Joint Water Committee (JWC), which requires “[a]ll water and sanitation projects in Palestine” to be approved by Israel.<sup>152</sup> Currently, the JWC prohibits Palestinians from accessing surface water from streams, lakes, creeks, reservoirs, or rivers that come from the Jordan Valley, the Dead Sea, and the Jordan River.<sup>153</sup> The JWC also denies Palestinians permits to capture runoff in dams, and the Israeli military has demolished projects that were executed without prior approval.<sup>154</sup> Israel’s control makes it extremely challenging, if not impossible, to build effective resilience for affected communities.<sup>155</sup>

In the West Bank, land reclamation and rehabilitation efforts, such as the construction of new agricultural roads, opening of stone terraces to minimize erosion, and creation of new water wells for irrigation, are restricted by Israel.<sup>156</sup> Closure and confiscation of access to large swaths of land strengthen pressures on the land to which Palestinians of the OPT retain access. In particular, the construction of the Separation Wall,<sup>157</sup> creation of illegal settlements and settler roads,<sup>158</sup> and the imposition of restrictions on movement have jeopardized “the watering and seasonal migration of herds, reduced grazing land and in many cases prevented access to closer filling points.”<sup>159</sup> This restriction forces herders to incur higher transportation costs by purchasing water from more distant filling points.<sup>160</sup> In addition, these burdens encourage overgrazing and intensive farming practices, making it difficult for Palestinians to prepare and execute sustainable land management practices.<sup>161</sup> Furthermore, Israel’s continual confiscation of Palestinian land for the building of settlements and engagement in military training, not only removes agricultural resources, but also hinders the maintenance of existing agricultural resources by creating obstacles for Palestinians that use the confiscated infrastructure for water transport.<sup>162</sup>

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151. *Id.*

152. ENAS BANNOURAH ET AL., APPLIED RESEARCH INST. JERUSALEM, STATUS OF THE ENVIRONMENT IN THE STATE OF PALESTINE 2015 75 (Jad Isaac & Khaldoun Rishmawi eds., 2015).

153. Agha, *supra* note 67.

154. BANNOURAH, *supra* note 152, at 75.

155. AL-HAQ, *supra* note 82, at 12.

156. NAP, *supra* note 45, at 22.

157. See BANNOURAH, *supra* note 152, at 79 (stating that the segregation wall isolates 28 groundwater wells in Palestine, constituting “more than 30 percent of Palestinian’s share in the Western Aquifer”). See also Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory, Advisory Opinion, 2004 I.C.J. 136 (July 9) (explaining how Israel’s construction of the separation wall was a violation of the principles of international law and humanitarian law, urging its dismantling and condemning its construction).

158. S.C. Res. 2334 (Dec. 23, 2016).

159. UNDP CCAS, *supra* note 48, at 37.

160. *Id.*

161. NAP, *supra* note 45, at 22.

162. See HUMANITARIAN SITUATION IN THE GAZA STRIP, *supra* note 61 (explaining how 35

In the Gaza Strip, vulnerabilities to climate change are exacerbated by the excavation of sand from coastal dunes. This excavation has substantially reduced the dunes' functions, which are "to protect the coast from erosion, to purify water reaching the subsoil, and to provide wildlife habitat." Israel restricts the import of sand, rocks, and cement into the Gaza Strip, which are required for implementation of effective coastal protection and remedial measures.<sup>163</sup> The blockade of Gaza<sup>164</sup> also makes it difficult to import the materials needed to maintain or repair water infrastructure, exacerbating the urgent issues of water shortages and contamination. In addition, Gaza's condition is compounded by the destruction of a significant number of agricultural facilities, including greenhouses and livestock barns, by Israeli air strikes during the last three wars in 2008, 2012, and 2014.<sup>165</sup>

These discriminatory practices substantially limit Palestinians' ability to respond to any consequences of climate change.<sup>166</sup> Access to natural wealth and resources, including land and water, are viewed as "prerequisites for the implementation of any climate change adaptation options for Palestinians in the OPT."<sup>167</sup>

#### B. *Monetary Constraints and Need for Additional International Support*

Palestine's capacity to adapt to climate change is also substantially limited by inadequate international support. When discussing feasibility for adaptation measures outlined in its NAP, the State of Palestine explained in its Nationally Determined Contributions, "[t]he State of Palestine aims to maintain the NAP as a living document and its intent on driving forward implementation of the NAP, subject to securing appropriate international support."<sup>168</sup>

Foreign aid is one of the main drivers of economic growth in the OPT.<sup>169</sup> However, Palestine has faced substantial cuts in funding and support over the last couple of years. In March 2018, President Donald Trump cut approximately one-third of U.S. foreign aid payments to the Palestinian Authority, followed by

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percent of Gaza's farmland and 85 percent of its fishing waters are completely or partially inaccessible due to Israeli military measures).

163. NAP, *supra* note 45, at 27.

164. Since the early 1990's, Israel has imposed movement restrictions on the Gaza Strip. In June 2007, Israel imposed a land, sea, and air blockade on Gaza. In recent years, despite relaxation of some blockade-related restrictions, "1.8 million Palestinians in Gaza remain 'locked in,' denied free access to the remainder of the [Occupied Palestinian Territory] and the outside world." *Gaza Blockade*, U.N. OFF. FOR THE COORDINATION OF HUMANITARIAN AFF., OCCUPIED PALESTINIAN TERRITORY, <https://www.ochaopt.org/theme/gaza-blockade> [<https://perma.cc/3CD9-6LYE>].

165. NAP, *supra* note 45, at 24.

166. *See id.* at 41.

167. AL-HAQ, *supra* note 82, at 12.

168. NDC, *supra* note 95, at 11.

169. THE WORLD BANK, IMPLEMENTATION COMPLETION & RESULTS REPORT TF017186 ON A SMALL GRANT IN THE AMOUNT OF US \$2.5 MILLION TO THE PALESTINIAN AUTHORITY FOR THE GAZA SUSTAINABLE WATER SUPPLY PROGRAM 4 (2018).

an additional cut of more than \$200 million in August.<sup>170</sup> The Trump Administration also cut aid to several UN bodies in 2018 that provided direct support to Palestinians, including a reduction of approximately \$300 million to the UN Relief and Works Agency and the UN Human Rights Council.<sup>171</sup> These cuts were an attempt to persuade Palestine “to participate in U.S. led diplomacy on the Israel-Palestinian peace process.”<sup>172</sup> However, Palestinians, the PA, and international bodies have rejected and denounced the Trump Administration’s attempts at peace negotiations in the region after his December 2017 recognition of Jerusalem as Israel’s capital.<sup>173</sup> In addition, in February 2019, the Trump Administration stopped all USAID to Palestinians in the OPT;<sup>174</sup> and in November 2019, the Netherlands cut \$1.5 million, previously paid to the PA for a victim compensation fund for families of Palestinians who were killed, injured, or incarcerated by the Israeli military.<sup>175</sup>

In addition to cuts in funding, many donors are discouraged from investing in sanitation services for Palestine due to the bureaucratic constraints of the JWC system.<sup>176</sup> Through the JWC system, Israel requires aid agencies “to go through the same process for a permit [as Palestinians], even if the intervention is humanitarian in nature.”<sup>177</sup> Many agencies will only implement sanitation projects after permits are obtained through the JWC, which results in neglecting some areas in the OPT.<sup>178</sup> In addition, agencies that establish sanitation infrastructure without a permit risk project demolition by the Israeli military and potentially jeopardize their relationship with Israel.<sup>179</sup>

These constraints narrow Palestine’s ability to fund existing plans and create future plans for climate adaptation. For example, in an attempt to alleviate some of the agricultural stress in the OPT, Palestine’s MOA established an agricultural compensation fund to assist with fiscal constraints for farmers

170. *U.S. Ends Funding of U.N. Agency for Palestinian Refugees*, CNBC (Aug. 31, 2018, 5:53 PM), <https://www.cnb.com/2018/08/31/us-ends-funding-of-un-agency-for-palestinian-refugees.html> [<https://perma.cc/N7ET-QH57>].

171. *Id.*

172. CONG. RESEARCH SERV., U.S. FOREIGN AID TO THE PALESTINIANS (2018), <https://fas.org/sgp/crs/mideast/RS22967.pdf> [<https://perma.cc/QLX5-6LPV>].

173. Colin Dwyer, Scott Neuman & Camila Domonoske, *How the World Is Reacting to Trump Recognizing Jerusalem as Israel’s Capital*, NPR (Dec. 6, 2017, 3:21 PM) <https://www.npr.org/sections/thetwo-way/2017/12/06/568748383/how-is-the-world-reacting-to-u-s-plan-to-recognize-jerusalem-as-israeli-capital> [<https://perma.cc/U8N7-NP2B>].

174. Yolande Knell, *U.S. Stops All Aid to Palestinians in W. Bank and Gaza*, BBC NEWS (Feb. 1, 2019), <https://www.bbc.com/news/world-middle-east-47095082> [<https://perma.cc/YEA5-X8G5>].

175. Ali Younes, *Netherlands Halts Aid to Palestinians Over Family Payments*, AL JAZEERA (Nov. 21, 2019), <https://www.aljazeera.com/news/2019/11/netherlands-halts-aid-palestinians-family-payments-191121123333913.html> [<https://perma.cc/4BZ7-Q8AT>].

176. BANNOURAH, *supra* note 152, at 79.

177. *Id.*

178. *Id.*

179. *Id.*

in the OPT.<sup>180</sup> However, this compensation fund is not currently active due to lack of financial support.<sup>181</sup> In addition, while there was discussion of providing subsidies for farmers, the State of Palestine is unable to do so, and while technical solutions are available and applicable to agricultural climate impacts in the OPT, such support would require additional financial resources.<sup>182</sup>

## VI. LOOKING TOWARD THE FUTURE

Water and agriculture are the two sectors in the OPT that are highly vulnerable to climate change. As such, adaptation options associated with these sectors require access to (and the exercise of rights of self-determination over) natural resources such as water and land. Israel's prolonged occupation of the Palestinian territory therefore constitutes the major cause of the exacerbation of climate change impacts on the OPT, as well as the deterioration of the standard of living for the indigenous Palestinian communities relying on land and natural resources for their subsistence. The occupation limits Palestine's ability to plan, prepare, and mitigate climate change impacts; by definition under international law, the occupation should constitute an inherently temporary and short-term presence.<sup>183</sup> Thus, adaptation to climate change will not be possible for Palestinians "without the genuine reali[z]ation of [their] collective right to self-determination and permanent sovereignty over natural resources."<sup>184</sup>

Many UN member states have recognized that the physical and societal impacts of climate change will exacerbate or trigger violent escalations of existing conflicts.<sup>185</sup> Thus, preventive measures are needed that heighten sustainability and adaptation strategies, policies, and measures to "strengthen efforts to minimize security threats, challenges, vulnerabilities, and risks."<sup>186</sup>

### A. *Government of Israel*

Climate resilience in the OPT requires the end of the Israeli occupation and the lifting of the blockade in Gaza. Planning authority over the OPT should be transferred to the Palestinian population and PA, and Israel should share its advanced resilience methods and technology, such as desalination best practices.<sup>187</sup> However, measures should be enacted to ensure that technology transfer and sharing does not foster dependency among Palestinians.<sup>188</sup> Adaptive technology sharing should also not be used to undermine Palestin-

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180. NAP, *supra* note 45, at 21.

181. *Id.*

182. *Id.*

183. VALENTINA AZAROVA, EUROPEAN COUNCIL ON FOREIGN RELATIONS, ISRAEL'S UNLAWFULLY PROLONGED OCCUPATION: CONSEQUENCES UNDER AN INTEGRATED LEGAL FRAMEWORK 3 (2017).

184. AL-HAQ, *supra* note 82, at 59.

185. U.N. NEWS, *Threat Multiplier*, *supra* note 84.

186. Brauch & Scheffran, *supra* note 82, at 3.

187. Agha, *supra* note 67.

188. *Id.*

ian land or water rights.<sup>189</sup> In addition, Israel, as the Occupying Power in the OPT, should refrain from exploiting and appropriating natural resources in the OPT and should act in accordance with its role as an usufructuary of natural resources.<sup>190</sup> Israel should also consider and apply human rights obligations when addressing climate change adaptation, and should act in accordance with its obligations to reduce climate vulnerabilities for the designated vulnerable populations of the OPT.<sup>191</sup>

#### B. *Palestinian Authority*

The PA should promote and enable sustainable agriculture and a cooperative economy that can foster more sustainable resilience.<sup>192</sup> For example, Palestinian agricultural workers should share best practices for dealing with the shortcomings of climate change effects under occupation. In addition, the PA should work toward fostering a coordinated collection, analysis, and sharing of reliable climate information.<sup>193</sup> This includes focusing on localized climate data to provide “real-time” monitoring and updates, with the goal of adopting a permanent climate impact monitoring system across the OPT.<sup>194</sup>

#### C. *Global Community*

Third-party states must adopt effective measures to pressure Israel to abide by its obligations under international and humanitarian law.<sup>195</sup> Third-party states must also immediately restrict the import and purchase of products, goods, and services that originate from illegal Israeli settlements in the OPT, for example, by imposing restrictions on settlement trade.<sup>196</sup> In addition, since Palestinians rely heavily on international aid, donors should work with local communities to fund and promote targeted projects to counter or prevent the effects of climate change.<sup>197</sup> However, it is important to note that there are substantial criticisms of the aid and NGO architecture in the OPT that were not discussed in this Comment. Thus, incorporating climate vulnerability into this framework is not without ethical concerns.<sup>198</sup>

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189. *Id.*

190. AL-HAQ, *supra* note 82, at 61.

191. *Id.*

192. Agha, *supra* note 67.

193. *Id.*

194. *Id.*

195. AL-HAQ, *supra* note 82, at 62.

196. *Id.*

197. Agha, *supra* note 67.

198. *See id.* (“By applying the same metric to assess PA and Israeli readiness to handle climate change, the international community and donor agencies normalize the occupation instead of treating it as an abnormal and debilitating structure.”).



## CONCLUSION

Climate change is a political, disproportionate phenomenon for Palestinians in the OPT that is exacerbated by their condition as an occupied indigenous people. Climate change adaptation, inextricably linked to armed conflict and prolonged occupation, is an environmental justice<sup>199</sup> issue for Palestinians. While many scholars have discussed and warned against the “securitization of climate change,”<sup>200</sup> others argue that Israel’s securitization of resources is nothing new, stating that climate change has been and will continue to be “skillfully and successfully employed to excuse the obvious injustice in water relations under the Israeli occupation.”<sup>201</sup> It is possible that climate change may, if handled correctly, provide an opportunity to reenvision and improve the relationship between Palestine and Israel. However, given the existing complexities and uncertainties surrounding Palestine and Israel’s security, politics, economy, and resources, climate change can be seen as an additional frustration to the gordian knot<sup>202</sup> that comprises the Palestinian experience in the OPT.

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199. “Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.” *Environmental Justice*, U.S. ENV’T PROT. AGENCY, <https://www.epa.gov/environmentaljustice> [<https://perma.cc/8AHG-JFNP>].

200. See Brauch & Scheffran, *supra* note 82, at 23.

201. Clemens Messerschmid, *Nothing New in the Middle East—Reality & Discourses of Climate Change in the Israeli-Palestinian Conflict*, in CLIMATE CHANGE, HUMAN SECURITY AND VIOLENT CONFLICT 423, 424 (Hans Günter Brauch ed., 2012).

202. A Gordian knot is comprised of several knots tightly entangled, making it impossible to see how each individual knot was originally fastened. See Evan Andrews, *What was the Gordian Knot?*, HISTORY <https://www.history.com/news/what-was-the-gordian-knot> [<https://perma.cc/USV7-UYWU>].