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AN ENVIRONMENTAL NO MAN'S LAND: THE OFTEN OVERLOOKED CONSEQUENCES OF ARMED CONFLICT ON THE NATURAL ENVIRONMENT

EVAN FRAUHIGER*

INTRODUCTION

Armed conflict has proven to be one of the most consistent and devastating occurrences throughout history and it affects almost every area of private and public life.¹ The near constant presence of armed conflict and its economic, political, and cultural effects on the world have spawned countless analyses of its causes and effects.² Despite this large amount of analysis, however, a study of the impacts of armed conflict would be incomplete without mentioning the effects on the natural environment.³ While most analysis focuses on how the environment impacts armed conflict and tactics, the effects of armed conflict on the environment have yet to be heavily covered.⁴ The environmental impacts of armed conflict are devastating,⁵ affecting nearly all aspects of the natural environment including sources of water,⁶ the fertility of the land,⁷ and the quality of the air.⁸ To best address this wide range of effects, the international community must adopt a multifaceted approach that combines rigorous adherence to international and regional treaties, implementation of reforms

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¹ James D. Fearon & David D. Laitin, *How Persistent is Armed Conflict?*, 1–2 (Econ. Res. Southern Afr. Working Paper No. 311, Sept. 10, 2012).

² Joseph P. Hupy, *The Environmental Footprint of War*, 14 ENV'T & HIST. 405, 405–06 (2008).

³ *Id.* at 406.

⁴ *Id.* at 405.

⁵ *Id.* at 417.

⁶ Gill Shepherd, *The Impact of Refugees on the Environment and Appropriate Responses*, THE HUMANITARIAN PRAC. NETWORK (Sept. 1995), <http://odihpn.org/magazine/the-impact-of-refugees-on-the-environment-and-appropriate-responses/> [https://perma.cc/93S5-JWGH].

⁷ MARGARITA PUERTO GOMEZ ET AL., THE IMPACTS OF REFUGEES ON NEIGHBORING COUNTRIES: A DEVELOPMENT CHALLENGE, at 14 (2011).

⁸ Rafael Reuveny et al., *The Effect of Warfare on the Environment*, 47 J. PEACE RES. 749, 758 (2010).

on the ground, and the provision of additional and tailored aid to each individual community.

The effects on the environment have been documented, although not heavily analyzed, since the dominance of the Roman Empire.⁹ These documented impacts only became more devastating as history progressed and technology evolved.¹⁰ Advancements in artillery, the introduction of smokeless gunpowder, and the invention of high explosives all contribute to the ever-growing impact on the environment.¹¹ These advancements and the increased duration, destruction, and magnitude of modern wars threaten to alter the environment to a point where it can no longer recover.¹² This looming threat must be understood if the environmental impacts of armed conflict are to be addressed effectively.

There are three main characteristics of armed conflict that contribute to environmental degradation. First, the physical ruin from troop movements, and use of weapons and resources, which cause general environmental destruction; the contamination of water sources and soil from chemical weapons; and deforestation, which causes the increase of carbon dioxide and nitrogen oxide, which affect climate change and the acidification of the environment.¹³ Second, the creation of refugee crises, which drastically increase resource consumption, strip the natural environment of the staples of a healthy ecosystem, such as fertile soil, and cause increased pollution as a result of improper waste disposal.¹⁴ Finally, prison overpopulation also affects the environment as a result of improper waste disposal, which contaminates the soil and water sources of the area, and the improper burial of bodies, which also can contaminate the surrounding environment.¹⁵ All of these factors and their destructive impacts can be observed in the current conflict in Syria.¹⁶ In order to mitigate the environmental degradation of armed conflict in both the present and the future, the international community should work together to support local reforms,¹⁷ change certain dynamics of international aid,¹⁸

⁹ Hupy, *supra* note 2, at 407–08, 417.

¹⁰ *Id.* at 405.

¹¹ *Id.* at 411–16.

¹² *Id.* at 405.

¹³ *See infra* Part II.

¹⁴ *See infra* Part III.

¹⁵ *See infra* Part IV.

¹⁶ *See infra* Part I.

¹⁷ U.N. HIGH COMM'R FOR REFUGEES, *Refugees and the Environment* (Jan. 1, 2001), <http://www.unhcr.org/en-us/protection/environment/3b039f3c4/refugees-environment.html> [<https://perma.cc/EQ2Q-LF6X>] [hereinafter UNHCR].

¹⁸ Shepherd, *supra* note 6.

and ensure the enforcement of international treaties and resolutions that address this issue.¹⁹

This Note will analyze armed conflict's three largest contributors to environmental degradation and discuss the potential solutions to each in the context of the current crisis in Syria. These solutions create a comprehensive plan for the international community to follow in order to immediately reduce the impact on the environment and the potentially permanent effects that it causes. This Note will be divided into five parts. Part I will provide a brief introduction to the conflict in Syria. Part II will discuss the environmental effects of weapons and troop movements as well as discuss the solutions to this problem. Part III will analyze refugee crises and how to best address the environmental impacts they cause. Part IV will concentrate on the problem of prison overpopulation caused by armed conflict and will propose various answers to this problem. Finally, the Conclusion will summarize the overall argument and provide additional thoughts.

I. AN INTRODUCTION TO THE CONFLICT IN SYRIA

Before the specific environmental impacts of armed conflict are addressed within the context of Syria, decision makers within the international community should understand the background of the conflict. In the spring of 2011, Syrians took to the streets to peacefully protest the dictatorship of President Bashar al-Assad in an attempt to install democracy and freedom for the Syrian people.²⁰ Assad's regime responded quickly and violently to the protests.²¹ Assad escalated the practices of arbitrary detention, disappearances, and torture to a normalized feature of national policy.²² As the protests continued through 2012, Assad also continued to increase the violence against the protestors, and the groups involved in the conflict continued to grow.²³ Assad's regime drew support from Lebanese Hezbollah and Iranian fighters that worked with Assad to control Damascus and much of western Syria because it was to their

¹⁹ HUMAN RIGHTS WATCH, *If the Dead Could Speak: Mass Deaths and Torture in Syria's Detention Facilities* (Dec. 16, 2015), <https://www.hrw.org/report/2015/12/16/if-dead-could-speak/mass-deaths-and-torture-syrias-detention-facilities> [http://perma.cc/Q8T7-9CFA].

²⁰ Alise Mofrej, *Inside Syria's Jails*, N.Y. TIMES (Feb. 3, 2015), https://www.nytimes.com/2015/02/04/opinion/inside-syrias-jails.html?_r=0 [http://perma.cc/B9D7-H9T7].

²¹ *Id.*

²² *Id.*

²³ *Id.*

benefit that Assad remain in power.²⁴ The various groups representing the rebels refused to give in and instead fought back more fiercely.²⁵ At the same time, however, the rebels became increasingly disjointed.²⁶ Adding to this confusion, other groups began fighting alongside the rebels including the Free Syrian Army and third party organizations like Ahrar al-Sham, Jabhat al-Nusra, ISIS, and other forces made up of Kurdish fighters in northern Syria.²⁷ All of these factors came together to create a powder keg that was waiting to explode at any moment, and unfortunately, it did exactly that.²⁸

Since the beginning of this conflict in 2011, the Assad Regime and its allies have committed not only war crimes, but also numerous other violations of international law.²⁹ Purposeful targeting and killing of civilians, the use of air strikes on civilian centers, and the targeting of hospitals, food markets, and residential areas all have become normal occurrences in Syria.³⁰ The Assad Regime detained over 200,000 people since the start of the conflict including men, women, and even children, all under the label of political prisoner.³¹ In addition, tens of thousands died either in conflict or while in detention.³² Unfortunately, prison officials, military forces, government employees, and the military police corps all have concrete knowledge of these actions but refuse to act out of tacit compliance.³³ As this crisis in Syria continues to develop, it is imperative that the international community study all aspects of the conflict as well as all appropriate solutions. This includes addressing the effects of troop movements and the use of weapons,³⁴ the environmental impacts of refugee crises,³⁵ and prison overpopulation.³⁶

²⁴ AMNESTY INT'L, *Amnesty International Report 2015/2016: The State of the World's Human Rights* 350 (2016), <https://www.amnesty.org/en/documents/pol10/2552/2016/en/> [<https://perma.cc/8J3P-HPRH>].

²⁵ *Id.*

²⁶ *Id.*

²⁷ *Id.*

²⁸ *Id.* at 350–51.

²⁹ *Id.* at 351.

³⁰ AMNESTY INT'L, *supra* note 24, at 351.

³¹ Mofrej, *supra* note 20.

³² HUMAN RIGHTS WATCH, *supra* note 19.

³³ *Id.*; Stephanie Nebehay, *Mass Deaths in Syrian Jails Amount to Crime of 'Extermination'—U.N.*, REUTERS (Feb. 8, 2016), <http://www.reuters.com/article/us-mid-east-crisis-syria-un-idUSKCN0VH14A> [<https://perma.cc/8BK8-MSAY>].

³⁴ *See infra* Part II.

³⁵ *See infra* Part III.

³⁶ *See infra* Part IV.

II. THE IMPACT OF THE PRACTICES AND WEAPONS OF WAR

A. *Background and Statistics*

The general practices associated with armed conflicts and their harmful effects on the environment typically go unnoticed and underappreciated in the international community.³⁷ The use of weapons, the need for resources to support troops, and the indirect consumption that goes into the production of arms and tools all contribute directly to environmental degradation.³⁸ This issue should be placed with mining, logging, and industrial atmospheric pollution as an equally serious threat to the environment.³⁹

In Syria, this trend of environmental damage caused by armed conflict is no different.⁴⁰ Government forces, as well as sections of the rebels and outside forces from countries like the United States and Russia, have engaged in extremely destructive practices throughout the conflict.⁴¹ Government forces have repeatedly used artillery, mortars, barrel bombs, and chemical weapons to target civilian populations and medical centers.⁴² According to the Syrian Network for Human Rights, in 2016 alone, the Assad Regime conducted around 1,400 attacks on civilian structures, and dropped almost 13,000 barrel bombs across Syria.⁴³ The United States also dropped well over 26,000 bombs in 2016, mostly in Syria and Iraq.⁴⁴

Finally, in addition to the weapons used, the massive amount of troops in Syria also adds to this problem.⁴⁵ While Syria claims only 50,000 of its own troops are fighting, Iran has deployed over 70,000 to Syria and hired an additional 250,000 militiamen and agents.⁴⁶ Making matters

³⁷ Reuveny et al., *supra* note 8, at 759.

³⁸ Hupy, *supra* note 2, at 406.

³⁹ *Id.* at 418.

⁴⁰ AMNESTY INT'L, *supra* note 24, at 351.

⁴¹ *Id.* at 350–51.

⁴² *Id.*

⁴³ Bethan McKernan, *Assad 'dropped 13,000 barrel bombs on Syria in 2016', watchdog claims*, THE INDEPENDENT (Jan. 11, 2017), <http://www.independent.co.uk/news/world/middle-east/bashar-al-assad-syria-president-regime-13000-barrel-bombs-rebels-aleppo-douma-2016-a7521656.html> [<https://perma.cc/DXR6-3W8T>].

⁴⁴ Medea Benjamin, *America Dropped 26,171 Bombs in 2016*, THE GUARDIAN (Jan. 9, 2017), <https://www.theguardian.com/commentisfree/2017/jan/09/america-dropped-26171-bombs-2016-obama-legacy> [<https://perma.cc/SU4F-KAWY>].

⁴⁵ Majid Rafizadeh, GATESTONE INST., *Iran's Forces Outnumber Assad's in Syria* (Nov. 24, 2016), <https://www.gatestoneinstitute.org/9406/iran-soldiers-syria> [<https://perma.cc/6SXB-AJZC>].

⁴⁶ *Id.*

worse, this does not count the other foreign troops currently fighting in areas of Syria such as soldiers from Iraq and Afghanistan.⁴⁷ In the end, the combination of the use of thousands of explosive and chemical weapons and the deployment of even more soldiers drastically contributes to environmental degradation.⁴⁸

B. Specific Effects of Armed Conflict on the Environment

1. General Environmental Destruction

History shows that armed conflict increases environmental stress.⁴⁹ Modern armed conflict raises this risk dramatically due to its increased extent, magnitude, and duration.⁵⁰ The increased destructive power of armed conflict has the capacity to make radical alterations to the landscape, and can permanently inhibit the surrounding environment from ever returning to its natural and productive state.⁵¹

The weapons of war, especially the use of artillery, mortars, and other explosive ordinances like barrel bombs, tear apart the land and can make it completely unusable through the complete destruction of vegetation and fertile soil.⁵² This effect is exacerbated when troops purposefully target areas of the environment in order to eliminate cover or resources of enemy combatants.⁵³ In the realm of armed conflict, however, it is not only weapons that cause environmental destruction, but other activities such as troop movements and resource consumption.⁵⁴

2. Chemical Weapons

While other weapons of war have a devastating effect on the environment, chemical weapons occupy a special category of their own and can produce harmful environmental effects that other weapons cannot.⁵⁵

⁴⁷ Oren Dorell, *A mind-boggling stew of nations is fighting in Syria's civil war*, USA TODAY (Feb. 16, 2016), <http://www.usatoday.com/story/news/world/2016/02/15/mind-boggling-stew-nations-fighting-syrias-civil-war/80406862/> [<https://perma.cc/9N23-M57F>].

⁴⁸ Hupy, *supra* note 2, at 406.

⁴⁹ Reuveny et al., *supra* note 8, at 749.

⁵⁰ Hupy, *supra* note 2, at 405.

⁵¹ *Id.*

⁵² *Id.* at 415.

⁵³ *Id.* at 406.

⁵⁴ *Id.*

⁵⁵ INT'L PEACE BUREAU *Chemical Weapons* (2012), <http://www.ipb.org/chemical-weapons/> [<https://perma.cc/M7WQ-XFWV>].

Chemical weapons are considered weapons of mass destruction, and although they do not have the same catastrophic effect as nuclear weapons, the use of chemical weapons causes severe environmental damage.⁵⁶ Chemical weapons contain highly toxic substances that can seep into the environment and contaminate the land and water of an area.⁵⁷

In addition to the negative environmental effects of using chemical weapons, their disposal also presents further challenges.⁵⁸ The destruction and disposal of chemical weapons create the same harmful environmental effects as actually using the weapons if these processes are not handled correctly.⁵⁹ Overall, because of the potential for environmental destruction and the use of dozens of chemical weapons attacks in Syria, it is important that the often overlooked environmental impact is not minimized.⁶⁰

3. Deforestation and Pollution

Another harmful environmental effect of armed conflict has to do with the release of emissions.⁶¹ Armed conflict can drastically increase deforestation through repeated bombings, resource consumption of troops, and the creation of encampments and defensive-works.⁶² Subsequently, this increase in deforestation increases emissions of gasses like carbon dioxide and nitrogen oxide that would otherwise not be released.⁶³ Cutting down trees immediately releases any carbon stored within and prevents the area from recycling excess carbon.⁶⁴ Nitrogen oxide emissions also increase as a result of the absence of forests and attempted development of the land.⁶⁵ An increase in nitrogen oxide can cause interactions that form products harmful to the environment, causing damage to vegetation and increasing the acidification of the surrounding area.⁶⁶ Carbon

⁵⁶ *Id.*

⁵⁷ *Id.*

⁵⁸ *Id.*

⁵⁹ *Id.*

⁶⁰ AMNESTY INT'L, *supra* note 24, at 351.

⁶¹ Reuveny et al., *supra* note 8, at 758–59.

⁶² J.R. McNeill, *Woods and Warfare in World History*, 9 ENVTL. HIST. J. 388, 399, 402 (2004).

⁶³ Reuveny et al., *supra* note 8, at 758–59.

⁶⁴ RAINFOREST ALL., *Deforestation: an Emissions Triple-Whammy* (Jan. 12, 2017), <http://www.rainforest-alliance.org/articles/deforestation-emissions-101> [<https://perma.cc/3678-DGV5>].

⁶⁵ *Id.*

⁶⁶ GOV'T OF CAN., *Environment and Climate Change: Nitrogen Oxides* (Apr. 24, 2013),

dioxide emissions also cause devastating effects by contributing to climate change and decreasing soil quality.⁶⁷

C. *Potential Solutions*

The existing treaty system contains many tools to uphold protections for the environment, but certain factors are necessary for the treaties to be effective.⁶⁸ If these factors are present, a treaty can be a powerful force to protect the environment, but unfortunately, many times these factors are missing.⁶⁹ The most important factors to ensure the effectiveness of environmental aspects of a treaty are: enforcing sanctions for non-compliance; providing financial assistance to developing countries to implement the treaty provisions; and ensuring that the treaty involves as many countries as possible.⁷⁰ By applying these factors to the following three treaties, the environmental problems listed above can be addressed, and should be greatly reduced.

1. Rome Statute

The Rome Statute established the International Criminal Court, which is a legal body that investigates and tries individuals accused of heinous crimes including genocide, war crimes, and crimes against humanity.⁷¹ The Rome Statute also condemns environmental infractions alongside these egregious crimes, which shows how important this topic is to the international community.⁷² Article 8(2)(b)(iv) of the Rome Statute prevents any excessive military attack with the knowledge that it will cause long-term and severe damage to the environment.⁷³ This provision, if strictly enforced with sanctions, as suggested above, would help to reduce the widespread damage to the environment from the use of weaponry

<https://www.ec.gc.ca/Air/default.asp?lang=En&n=489FEE7D-1> [<https://perma.cc/N8KB-QHP8>].

⁶⁷ RAINFOREST ALL., *supra* note 64.

⁶⁸ Katsuya Tanaka & Shunji Matsuoka, *The Effectiveness of International Environment Agreements: Empirical Findings from Treaty-level Panel Data*, BERLIN CONFERENCE ON THE HUMAN DIMENSIONS OF GLOBAL ENVIRONMENTAL CHANGE 11 (Oct. 8–9, 2010).

⁶⁹ *Id.*

⁷⁰ *Id.*

⁷¹ Rome Statute of the International Criminal Court art. 1, July 17, 1998, A/CONF.183/9; *About*, INTERNATIONAL CRIMINAL COURT, <https://www.icc-cpi.int/about> [<https://perma.cc/8ALQ-9CZG>].

⁷² Rome Statute of the International Criminal Court art. 8(2)(b)(iv).

⁷³ *Id.*

like chemical weapons and artillery that often cause permanent environmental damage.⁷⁴

2. Protocol I of the Geneva Convention

Protocol I of the Geneva Convention relates to the protections of victims in international conflicts.⁷⁵ While this Protocol provides broad protections to many aspects of an armed conflict,⁷⁶ it also has several important provisions to protect the environment.⁷⁷ Article 35 provides that it is prohibited “to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment.”⁷⁸ In addition to this, Article 55 is entirely dedicated to the protection of the environment in general.⁷⁹ Article 55 states that “care shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage[,]” and it includes both intentional damage and a reasonable expectation of damage.⁸⁰ If enforced properly with sanctions and international aid programs, all of the above issues related to armed conflicts could be better addressed through the provisions of Protocol I.⁸¹

3. Chemical Weapons Convention

The Chemical Weapons Convention aims to eliminate the use and stockpiling of all types of chemical weapons.⁸² One of the most important provisions of this Convention is its requirement for all state parties to submit to regular inspections.⁸³ In order to prevent chemical weapons from

⁷⁴ Tanaka & Matsuoka, *supra* note 68, at 1; Hupy, *supra* note 2, at 405.

⁷⁵ Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts, June 8, 1977, 1125 U.N.T.S. 17512 [hereinafter Protocol I].

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ *Id.*

⁷⁹ *Id.*

⁸⁰ *Id.*

⁸¹ Tanaka & Matsuoka, *supra* note 68, at 11.

⁸² Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, at preamble, Sept. 3, 1992, 1974 U.N.T.S. 45 [hereinafter the Chemical Weapons Convention].

⁸³ *Id.* art. IV(3); *see e.g.*, ORG. FOR THE PROHIBITION OF CHEM. WEAPONS, Rep. of the OPCW on the Implementation of the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction at Its Twentieth Session, C-20/4, at 9 (Dec. 2, 2015).

damaging the environment, the inspections should be increased beyond the current rate which is not sufficient.⁸⁴ In addition to the inspections, the Convention also specifically requires the protection of the environment during the transportation and disposal of chemical weapons.⁸⁵ The comprehensive nature of this Convention, along with the mandatory inspections, provides invaluable tools to address the grave environmental harms caused by chemical weapons. With a more robust inspection system and the application of meaningful sanctions, the environmental effects of chemical weapons and the use of chemical weapons in general can be greatly reduced or completely eliminated.⁸⁶

III. IMPACT OF REFUGEES

A. *Background and Statistics*

The refugee crisis coming out of Syria has drawn more attention than almost any other facet of the Syrian conflict. Between 2011 and 2015, over 4.6 million people fled Syria, including over 1 million in 2015 alone.⁸⁷ According to the U.N. Office for the Coordination of Humanitarian Affairs, in addition to those that fled Syria, there are another 7.6 million people who are internally displaced within the country, half of whom are children.⁸⁸ At the height of the refugee crisis, there were 10,000 refugees fleeing Syria a day and going to Turkey, Greece, Italy, Germany, Austria, and many other surrounding countries.⁸⁹ Turkey alone is housing more than 2.7 million Syrian refugees, making it one of the hardest hit by this influx of displaced people.⁹⁰ Syria, however, is not the only cause of the refugee crisis that is currently developing.⁹¹

⁸⁴ *Id.*

⁸⁵ Chemical Weapons Convention, *supra* note 82, art. IV(3).

⁸⁶ See ORG. FOR THE PROHIBITION OF CHEM. WEAPONS, *supra* note 83; see also Tanaka & Matsuoka, *supra* note 68.

⁸⁷ AMNESTY INT'L, *supra* note 24, at 353.

⁸⁸ *Id.* at 350, 353.

⁸⁹ Rod Nordland, *A Mass Migration Crisis, and It May Yet Get Worse*, N.Y. TIMES (Oct. 31, 2015), <https://www.nytimes.com/2015/11/01/world/europe/a-mass-migration-crisis-and-it-may-yet-get-worse.html> [<https://perma.cc/A3SU-F3RJ>]; Geir Moulson, *Europe's Refugee Crisis Simmers Despite Efforts to Solve It*, THE ASSOCIATED PRESS (Aug. 28, 2016), <http://bigstory.ap.org/article/376cf9669eee4e9a8aa4a39bf0c45f61/europes-refugee-crisis-simmers-despite-efforts-solve-it> [<https://perma.cc/MJ8B-6ALL>].

⁹⁰ Moulson, *supra* note 89.

⁹¹ Nordland, *supra* note 89.

There are over 60 million refugees and displaced people spread around the world,⁹² a number that is unprecedented in recorded history.⁹³ Not since World War II has such a large group of civilians been forced to flee their homes.⁹⁴ The majority of these refugees are coming from Syria, Afghanistan, Iraq, Gaza, Haiti, and a dozen other nations in sub-Saharan and North Africa.⁹⁵ These are people fleeing prosecution, poverty, ethnic and religious strife, and war.⁹⁶

The staggering numbers of reported refugees, from both the Syrian crisis and from past crises, represent a growing problem with a wide range of risks to the entire international community.⁹⁷ And while the refugee crisis has created discussions on terrorism, national security, human rights, and the economy, it also has a devastating effect on the local environments where refugees seek shelter.⁹⁸ The international community must address these effects if it hopes to get ahead of this growing problem.

B. The General Effects of Refugees on the Environment

When small groups of displaced people seek shelter and relocate themselves and their families in a new area, there is very little environmental impact.⁹⁹ Their ecological footprint is relatively small, and they do not require many resources.¹⁰⁰ When there is a spontaneous movement of thousands or even millions of people, however, the environmental impact grows exponentially.¹⁰¹ Water consumption, deforestation, pollution, and land use quickly consume the local environment and threaten to destabilize the surrounding area.¹⁰²

This environmental impact is worsened even further because many refugee camps are often located in environmentally sensitive areas, since

⁹² *Id.*

⁹³ *Id.*

⁹⁴ *Id.*

⁹⁵ Nordland, *supra* note 89.

⁹⁶ *Id.*

⁹⁷ Iman Safi, *Refugees are Humans. Growing Refugee Numbers, Escalating Worldwide Social Crisis*, GLOBAL RESEARCH (July 29, 2013), <http://www.globalresearch.ca/refugees-are-humans-growing-refugee-numbers-escalating-worldwide-social-crisis/5344230> [<https://perma.cc/26HM-PGR3>].

⁹⁸ GOMEZ ET AL., *supra* note 7, at 18.

⁹⁹ UNHCR, *supra* note 17.

¹⁰⁰ *Id.*

¹⁰¹ *Id.*

¹⁰² Shepherd, *supra* note 6.

these areas provide large open fields for large numbers of people.¹⁰³ This increases the risks of serious and long-lasting environmental damage due to the already weak state of the area and its inability to recover.¹⁰⁴ As a result, the environmental impact of refugees is often irreversible, making this current crisis a major priority in the fight against environmental degradation.¹⁰⁵

C. *The Specific Effects of Refugees on the Environment*

The environmental effects of refugees can be broken down into two major categories: resource consumption and waste disposal.¹⁰⁶ While each of these actions have their own specific set of circumstances and causes, they both equally impact the environment in an increasingly dangerous way.¹⁰⁷ The longer these actions go unaddressed, the harder it will be to start the eventual environmental repair and mitigation efforts.¹⁰⁸

1. Resource Consumption

The first and most readily observable category of the impacts of refugees is resource consumption. Refugees immediately impact the environment when they first arrive to a new area;¹⁰⁹ meeting their basic needs for resources as they settle into the area creates the largest impact.¹¹⁰ Even after this initial phase, however, environmental impacts are continuous and similarly devastating.¹¹¹ This is especially true for large refugee settlements because the necessary resources are in higher demand in a much more concentrated area, compared with a group of smaller camps dispersed around a larger area.¹¹² If each scenario involves an equal number of refugees, the dispersion of smaller camps puts less strain on natural resources.¹¹³ Unfortunately, in more cases than not, refugee camps

¹⁰³ Anna Stockmore, *The Environmental Impact of the Refugee Crisis*, GEO. ENVTL. L. REV. (Mar. 27, 2016), <https://gelr.org/2016/03/27/environmental-impacts-of-the-refugee-crisis/> [<https://perma.cc/SW5N-S46G>].

¹⁰⁴ Shepherd, *supra* note 6.

¹⁰⁵ *Id.*

¹⁰⁶ *Infra* Sections III.C.1–2.

¹⁰⁷ *Id.*

¹⁰⁸ Shepherd, *supra* note 6.

¹⁰⁹ GOMEZ ET AL., *supra* note 7, at 6.

¹¹⁰ *Id.*

¹¹¹ *Id.*

¹¹² Shepherd, *supra* note 6.

¹¹³ *Id.*

are very large for both political and logistical reasons.¹¹⁴ For aid workers and governments, it is easier to address refugees if they are all located in one central location.¹¹⁵ Additionally, local populations often push back against large influxes of refugees, making larger camps the most popular answer.¹¹⁶ These larger camps, however, in addition to consuming more resources, also make sustainable land-use practices nearly impossible.¹¹⁷ The constant presence of an unmoving sea of people prevents the local environment from recovering from associated harms and essentially renders the land useless for any purpose other than housing refugees.¹¹⁸ As a result, these large camps are one of the primary direct causes of environmental degradation.¹¹⁹

Moving beyond the size of the refugee camps themselves, the international community must also address the specific effects of resource consumption.¹²⁰ Deforestation is one of the most destructive practices surrounding resource consumption in refugee camps.¹²¹ When refugees first arrive in a camp, they immediately require that basic needs for survival be met, and this includes shelters for their families.¹²² Refugees will start to cut down trees and collect wood from the surrounding area in order to form the structures of their shelters.¹²³ While aid groups and other organizations typically provide polythene sheeting, they do not provide any structural supports for the sheeting, forcing the refugees to collect wood from the area.¹²⁴ Not only is this wood needed to finish constructing some form of shelter,¹²⁵ it is also needed to build fires for warmth and cooking.¹²⁶ While the refugees cannot be blamed for simply trying to survive, host nations and aid organizations must make efforts to mitigate the effects of deforestation.¹²⁷ This will minimize the harm to the environment,

¹¹⁴ DOCTORS WITHOUT BORDERS, *Dadaab to Somalia: Pushed Back Into Peril* (Oct. 2016), https://www.doctorswithoutborders.org/sites/usa/files/pushed_back_into_peril.pdf [<https://perma.cc/2TY4-JKY8>].

¹¹⁵ Shepherd, *supra* note 6.

¹¹⁶ DOCTORS WITHOUT BORDERS, *supra* note 114.

¹¹⁷ GOMEZ ET AL., *supra* note 7.

¹¹⁸ *Id.*

¹¹⁹ *Id.*

¹²⁰ UNHCR, *supra* note 17.

¹²¹ *Id.*

¹²² *Id.*

¹²³ *Id.*

¹²⁴ Shepherd, *supra* note 6.

¹²⁵ *Id.*

¹²⁶ UNHCR, *supra* note 17.

¹²⁷ *Id.*

while avoiding placing any more stress or responsibility on the refugee population who is already suffering.¹²⁸

In addition to deforestation, resource consumption of refugees also affects several other areas of environmental harm.¹²⁹ Competition over natural resources in areas concentrated by refugees puts more pressure on the local environment by increasing grazing, hunting, forest fires, and land encroachment.¹³⁰ Devegetation, unsustainable groundwater extraction, uncontrolled population growth, inhibition of environmental regeneration, and invasive weed expansion are also results of increased resource consumption in refugee camps.¹³¹ All of these negative effects threaten to combine with the already-existing resource scarcity in some areas caused by poverty, rising populations, weak property rights, and inappropriate management.¹³² This creates a perfect storm of factors that can threaten to destabilize the regional environment, potentially leaving permanent damage.¹³³

Increased resource consumption is a common theme of all refugee crises due to their similar characteristics, and has the potential to be one of the most long-lasting effects as well.¹³⁴ Rapid consumption and destruction of trees, water sources, vegetation, and soil has the capability to forever alter the landscape.¹³⁵ When multiplied by the thousands upon thousands of people constantly trampling the ground underneath them, and setting up and taking down shelters, refugee camp areas may remain unrecognizable long after the population has dispersed.¹³⁶ This will harm future generations who seek to live in that area because they are now deprived of much needed resources that would remain if not for the refugee camps.¹³⁷ Consumption, however, is not the only major problem that is created by these camps; waste also threatens the environment with the same veracity.¹³⁸

¹²⁸ *Id.*

¹²⁹ UN ENV'T PROGRAMME, Disasters & Conflicts: Field and Policy Update 6, at 92 (Dec. 2015), <https://europa.eu/capacity4dev/unep/document/disasters-conflicts-field-and-policy-updates> [<https://perma.cc/P4FM-5DXL>].

¹³⁰ *Id.*

¹³¹ UN ENV'T PROGRAMME, Conflict and the Environment, Sudan Post-Conflict Environmental Assessment Rep., at 92 (2007), http://postconflict.unep.ch/publications/UNEP_sudan.pdf [<https://perma.cc/3D9W-UGFL>].

¹³² Shepherd, *supra* note 6.

¹³³ *Id.*

¹³⁴ *Id.*

¹³⁵ *Id.*

¹³⁶ *Id.*

¹³⁷ *Id.*

¹³⁸ UN ENV'T PROGRAMME, *supra* note 129, at 7; GOMEZ ET AL., *supra* note 7.

2. Waste Disposal

Waste from refugee camps can come in many different forms but the two most common are medical/pharmaceutical waste and municipal/human waste.¹³⁹ Although by varying levels, each of these forms of waste damage the surrounding environment and can threaten future development of the area.¹⁴⁰ First, medical and pharmaceutical waste is largely produced by hospitals and local health care centers.¹⁴¹ With an influx of thousands of refugees, however, the production of this waste increases exponentially as more people arrive.¹⁴² In Jordan, which has been hit hard by the refugee crisis in Syria, the Ministry of Health recorded a 184% increase in medical waste and a 250% increase in pharmaceutical waste since the start of the refugee crisis.¹⁴³ If this type of waste increase is not managed appropriately, serious environmental consequences will result.¹⁴⁴

Medical waste is commonly mixed with general waste and dumped illegally in unfit areas.¹⁴⁵ Medical/pharmaceutical waste can include everything from human tissue to chemical waste to radioactive waste and medicines, all of which are sometimes dumped in the most convenient of locations without much protocol.¹⁴⁶ All of these harmful substances combine into a deadly mixture that then seeps into the ground.¹⁴⁷ It can contaminate water sources and spread harmful effects to livestock, plant life, and human populations.¹⁴⁸ If not properly managed, this waste can quickly spread its effects to the area surrounding the refugee camp and transform the environment into an uninhabitable tract of land.¹⁴⁹

The second type of waste that greatly impacts the environment is municipal and human waste. In Lebanon alone the increase of municipal

¹³⁹ GOMEZ ET AL., *supra* note 7.

¹⁴⁰ U.N. HIGH COMM'R FOR REFUGEES, Medical Waste—a health risk for many (Sept. 26, 2011), <http://www.ohchr.org/EN/NewsEvents/Pages/MedicalWaste.aspx> [<https://perma.cc/4SAQ-K5E7>]; U.N. DEVELOPMENT PROGRAMME, Lebanon Environmental Assessment of the Syrian Conflict & Priority Interventions, at 41 (Sept. 2014), <http://www.aicsbeirut.org/portal/en-US/in-depth/15/c/lebanon-environmental-assessment-of-the-syrian-conflict-priority-interventions/404/#sthash.mhpFX734.pKAAyt52.dpbs> [<https://perma.cc/59MJ-26ZB>].

¹⁴¹ UN ENV'T PROGRAMME, *supra* note 129, at 7.

¹⁴² *Id.*

¹⁴³ *Id.*

¹⁴⁴ U.N. HIGH COMM'R FOR REFUGEES, *supra* note 140.

¹⁴⁵ *Id.*

¹⁴⁶ *Id.*

¹⁴⁷ *Id.*

¹⁴⁸ *Id.*

¹⁴⁹ *Id.*

waste due to the refugee crisis from Syria amounted to 683 tons per day in May 2014.¹⁵⁰ Experts estimated this could soon reach 889 tons per day if nothing is done.¹⁵¹ This would amount to a total of 324,568 tons of municipal waste per year.¹⁵² It is not only the accumulation of this waste that is causing environmental problems however, the improper handling of the waste also contributes.¹⁵³ Of the total amount of waste produced each day, over 63% of it is open-burned while the rest is deposited into local dumps.¹⁵⁴ Both of these practices, if not handled correctly, can result in severe environmental damage.¹⁵⁵ A large increase in the dumping of waste will result in increased volumes of leachate that sink into the ground and the surrounding groundwater, polluting the entire area.¹⁵⁶ This practice can also increase soil contamination and negatively impacts the ability to use or develop the land in any way.¹⁵⁷ In addition to municipal waste, the large increase in human waste due to the refugee crisis in Syria also negatively impacts the environment.¹⁵⁸ Similar to municipal waste, human waste can easily contaminate ground water sources and cause the spread of disease to surrounding living beings and ecosystems,¹⁵⁹ especially with the dramatic increases exhibited in refugee crises.¹⁶⁰

D. *Potential Solutions*

Between the effects of resource consumption and waste disposal, refugee crises create a wide range of harmful environmental effects that threaten to destabilize and permanently damage the local environments that host refugees.¹⁶¹ The onus of the responsibility to fix this problem, however, does not rest on the shoulders of the refugees.¹⁶² They cannot be expected to consider the impacts on the environment as more important than their families' lives.¹⁶³ Instead, the solutions should largely be

¹⁵⁰ U.N. DEVELOPMENT PROGRAMME, *supra* note 140.

¹⁵¹ *Id.*

¹⁵² *Id.*

¹⁵³ *Id.* at 43.

¹⁵⁴ *Id.*

¹⁵⁵ *Id.*

¹⁵⁶ U.N. DEVELOPMENT PROGRAMME, *supra* note 140, at 43; Leachate is any liquid that has passed through a harmful substance and now carries that dissolved substance.

¹⁵⁷ *Id.*

¹⁵⁸ GOMEZ ET AL., *supra* note 7, at 14.

¹⁵⁹ *Id.*

¹⁶⁰ *Id.*

¹⁶¹ *See supra* Part III.

¹⁶² UNHCR, *supra* note 17.

¹⁶³ *Id.*

the responsibility of the international community, including international treaty bodies and local governments and organizations. Overall, it is vital to avoid developing a "one-size-fits-all" approach; the international community needs to develop a distinct solution for each refugee operation due to the differing social, cultural, and environmental characteristics of each area.¹⁶⁴

First, to address the problem of increased resource consumption, the size of refugee camps should be altered. While this may run into political roadblocks due to increased costs and logistics, it is the least burdensome way to mitigate the environmental effects of refugees.¹⁶⁵ The international community needs to move away from the large and overcrowded refugee camps and instead set up a group of small camps with enough dispersion to avoid excess strain on natural resources.¹⁶⁶ This will spread resource consumption over a large area and therefore limit the severity of the damage to a particular area.¹⁶⁷ Although this step is a good start, it will not change the fact that massive amounts of resources are being consumed by these camps, prompting the need for further solutions.¹⁶⁸

In addition to reducing the size of the camps, the international community also must drastically reduce the consumption of fuel and wood.¹⁶⁹ This can be done by providing alternative sources of fuel in order to prevent the overconsumption of surrounding resources.¹⁷⁰ This can also be accomplished by providing food that cooks faster such as "maize-meal" which can easily be served with minimum fuel consumption or preparation.¹⁷¹ Even the provision of basic cooking utensils and saucepan lids can reduce fuel consumption by limiting the time it takes to cook food products.¹⁷² Finally, providing refugees with poles to set up their shelters instead of forcing them to rely on cutting down trees limits deforestation further.¹⁷³

Second, in addressing the problem of waste disposal, one of the most effective ways of preventing municipal waste is to increase recycling efforts.¹⁷⁴ Recycling will drastically reduce the amount of waste sent

¹⁶⁴ *Id.*

¹⁶⁵ Shepherd, *supra* note 6.

¹⁶⁶ *Id.*

¹⁶⁷ *Id.*

¹⁶⁸ UNHCR, *supra* note 17.

¹⁶⁹ Shepherd, *supra* note 6.

¹⁷⁰ *Id.*

¹⁷¹ *Id.*; Maize-meal is made from dried corn kernels that are ground up. It can be used to create bread and other items that traditionally use flour.

¹⁷² *Id.*

¹⁷³ *Id.*

¹⁷⁴ U.N. DEVELOPMENT PROGRAMME, *supra* note 140, at 45.

to landfills or incinerated in furnaces.¹⁷⁵ Recycling therefore reduces the leachate seeping into the ground and the air pollution dispersing into the atmosphere.¹⁷⁶ In Lebanon alone, recycling programs would prevent over 79,000 tons of recyclables and organic material from polluting the environment.¹⁷⁷ Not only will this stop increased pollution, it also has the opportunity to save millions of dollars in production costs by using recycled materials.¹⁷⁸ This can be used as a major incentive for countries around the world to implement such programs.¹⁷⁹ Even simple solutions like providing extra collection services and reducing packaging for food and other items can drastically cut down on the waste and go a long way in preventing further environmental damage.¹⁸⁰

Change also must occur when addressing medical and pharmaceutical waste. The United Nations Human Rights Office of the High Commissioner Special Rapporteur recommends that the practice of incineration be phased out entirely and replaced with other processes such as autoclaving.¹⁸¹ Autoclaves use pressurized steam to sterilize medical and other waste by destroying the microorganisms within it.¹⁸² It is one of the most effective processes available.¹⁸³ This process shows the potential of the immediately available technology that can instantly reduce environmental degradation.¹⁸⁴

Overall, implementation of these potential solutions could drastically reduce the impact of refugees around the world.¹⁸⁵ As a result, one of the longest lasting environmental effects of armed conflict could be reduced.¹⁸⁶ It is imperative, however, that the international community take action now due to the potential permanent damage that refugee crises can cause.¹⁸⁷ The longer we wait, the more land and resources we risk losing forever, and that is not a risk that we should be willing to take.

¹⁷⁵ *Id.*

¹⁷⁶ *Id.* at 43.

¹⁷⁷ *Id.* at 45.

¹⁷⁸ *Id.*

¹⁷⁹ *Id.*

¹⁸⁰ U.N. DEVELOPMENT PROGRAMME, *supra* note 140, at 46.

¹⁸¹ U.N. HIGH COMM. FOR REFUGEES, *supra* note 140.

¹⁸² *Autoclaving Procedures*, DEPT. OF ENVTL. SAFETY, SUSTAINABILITY & RISK OF THE UNIV. OF MD., <https://www.des.umd.edu/research-safety/biological-safety/autoclaves/autoclaving-procedures> [<https://perma.cc/YC5Z-MJNX>].

¹⁸³ *Id.*

¹⁸⁴ U.N. HIGH COMM'R FOR REFUGEES, *supra* note 140.

¹⁸⁵ *See supra* Section III.D.

¹⁸⁶ Shepherd, *supra* note 6.

¹⁸⁷ *Id.*

IV. IMPACT OF PRISON OVERPOPULATION

A. *Background and Statistics*

In addition to causing the refugee crisis in Syria, the Syrian conflict has also caused an emergency in the country's prison system.¹⁸⁸ Since the start of the initial protests, the government security forces of Syria detained thousands of civilians across the county.¹⁸⁹ Some estimates have put this number around 200,000.¹⁹⁰ All of these detainees, regardless of whether they are men, women, or even children, are labeled under a single moniker: political prisoner.¹⁹¹ What makes this large influx of new detainees even more troubling is the alarmingly small capacity of the Syrian prison system.¹⁹² According to the last official reports concerning the Syrian prison system in 2004, the system can handle a total of 16,161 people.¹⁹³ Even today, Human Rights Watch was only able to locate twenty-seven detention centers across Syria that are being used to house the rapidly increasing prison population.¹⁹⁴ Overall, this disparity between the infrastructure of the prison system and the prison population presents a concerning trend not only for human rights but for the surrounding environment as well.¹⁹⁵

Thousands of prisoners have also died within this system as a result of torture or poor conditions.¹⁹⁶ Men, women, and children have perished within the poorly run and overburdened detention centers across Syria.¹⁹⁷ The Syrian government's notorious security agencies, collectively called the *Mukhabarat*, are primary responsible for the ill-treatment, torture, and killing of detainees.¹⁹⁸ Syria's four intelligence agencies, including the Department of Military Intelligence, the Political Security Directorate, the General Intelligence Directorate, and the Air Force

¹⁸⁸ Mofrej, *supra* note 20.

¹⁸⁹ AMNESTY INT'L, *supra* note 24, at 354.

¹⁹⁰ Mofrej, *supra* note 20.

¹⁹¹ *Id.*

¹⁹² *Syria*, WORLD PRISON BRIEF (2004), <http://www.prisonstudies.org/country/Syria> [https://perma.cc/3CWR-RJ38].

¹⁹³ *Id.*

¹⁹⁴ HUMAN RIGHTS WATCH, *supra* note 19, at 1.

¹⁹⁵ *Background on Mass Incarceration and the Environment*, PRISON ECOLOGY PROJECT (2016), <https://nationinside.org/campaign/prison-ecology/facts/> [https://perma.cc/D4P2-UEBC].

¹⁹⁶ AMNESTY INT'L, *supra* note 24, at 354.

¹⁹⁷ HUMAN RIGHTS WATCH, *supra* note 19, at 32.

¹⁹⁸ *Id.* at 1, 21.

Intelligence Directorate, also share a large portion of responsibility of the thousands upon thousands of deaths that are caused by the Syrian prison system.¹⁹⁹

The impact of prisons and their poor management and abhorrent practices have a measurable relationship with the surrounding environmental health of the region.²⁰⁰ This impact must be understood because of its long-term environmental effects.²⁰¹ The international community needs to approach armed conflicts from every angle available in order to ensure the highest likelihood of success moving forward.

B. The Effects of Prison Overpopulation

1. Waste and Pollution

Prisons can resemble small towns or cities and, as a result, they have the same problems with pollution and waste management.²⁰² This becomes even more obvious as the prison system becomes increasingly overcrowded or if there is poor management of the daily operations.²⁰³ In order to keep the environmental impact of prisons minimal, the prison must prioritize a sanitary and organized environment.²⁰⁴ Unfortunately, however, Syria's prison system usually does not meet these conditions.²⁰⁵

Panagioti Tsolkas, Director of the Prison Ecology Project, generally describes prisons as "factory farm[s] for humans."²⁰⁶ This description of the mentality behind prisons explains why prisons can have such a large effect on the local environment. Since the start of the Syrian conflict, the Assad Regime detained more than 200,000 people across Syria, with tens of thousands of known detainees being held at any given moment.²⁰⁷ In addition, this number does not account for the thousands of other

¹⁹⁹ *Id.*

²⁰⁰ PRISON ECOLOGY PROJECT, *supra* note 195.

²⁰¹ *Id.*

²⁰² *Id.*

²⁰³ *Id.*

²⁰⁴ *Almost 18,000 Died in Syria's Prisons: Amnesty*, ALJAZEERA, Aug. 18, 2016, <http://www.aljazeera.com/news/2016/08/18000-died-syria-prisons-amnesty-160818051435301.html> [<https://perma.cc/3EMG-PZX8>].

²⁰⁵ *Id.*

²⁰⁶ Dashka Slater, *Prison Ecology*, SIERRA CLUB (Oct. 5, 2015), <http://www.sierraclub.org/sierra/2015-6-november-december/grapple/prison-ecology> [<https://perma.cc/W8A2-3GRF>].

²⁰⁷ Mofrej, *supra* note 20; Nebhay, *supra* note 33.

detainees that disappear as they are whisked away to unlisted facilities across the country.²⁰⁸

As a result of this overcrowded and overburdened system, waste management is one of the largest issues within Syria's prisons.²⁰⁹ According to the United Nations Environment Programme, if this waste is not handled properly it can contaminate groundwater and quickly spread disease to the living organisms in the area.²¹⁰ In Syria's prisons, the people are tightly packed together, not able to sit or lie down, and often have no access to bathrooms.²¹¹ Some detainees go months without being able to bathe or properly take care of any waste.²¹² Cells that are meant for two hundred people are packed with six hundred.²¹³ One detainee reported to Amnesty International that thirty to forty men were forced into a fifteen square foot room and forced to stay there with dead bodies.²¹⁴

The abhorrent conditions and non-existent waste management practices have even caused some of the detainees to wish to be beaten by the prison guards.²¹⁵ One witness told Human Rights Watch, "[w]e wanted to get beaten, just so we could [leave the cell and] breathe . . . the punishment was easier than the smell, and the atmosphere."²¹⁶ These conditions, coupled with a total lack of ventilation and sanitation facilities, have turned Syria's prison system into a source of suffering for those trapped inside and for the local environment.²¹⁷ The environmental contamination caused by the improper disposal of waste and the rapid spread of disease has the potential to do untold damage to the groundwater and local life of the region.²¹⁸ If human waste is not properly transported, disposed of, treated, or stored, it turns into a destructive force that threatens the soil, air, and water of the area.²¹⁹ Because of this wide-ranging

²⁰⁸ Nebehay, *supra* note 33.

²⁰⁹ ALJAZEERA, *supra* note 204.

²¹⁰ GOMEZ ET AL., *supra* note 7.

²¹¹ HUMAN RIGHTS WATCH, *supra* note 19; Nebehay, *supra* note 33.

²¹² HUMAN RIGHTS WATCH, *supra* note 19.

²¹³ *Id.*

²¹⁴ Nebehay, *supra* note 33.

²¹⁵ HUMAN RIGHTS WATCH, *supra* note 19.

²¹⁶ *Id.*

²¹⁷ ALJAZEERA, *supra* note 204.

²¹⁸ GOMEZ ET AL., *supra* note 7, at 14.

²¹⁹ Misra Virendra & S.D. Padney, *Hazardous Waste, Impact on Health and Environment for Development of Better Waste Management Strategies in Future in India*, 31 ENV'T. INT'L. 417, 417 (Apr. 31, 2005), <https://www.sciencedirect.com/science/article/pii/S0160412004001448?via%3Dihub> [<https://perma.cc/URY7-6JVX>].

impact, the international community must come together to ensure that Syria's prison system is abiding by all necessary regulations.

2. Burial of Bodies

Another environmental problem of dramatic prison overcrowding in Syria is the effect of the thousands of deceased prisoners continuously streaming out of the Syrian prisons.²²⁰ Since the start of the conflict in Syria, almost 18,000 people have died in prisons across the country due to torture, disease, or executions.²²¹ This amounts to an average of three hundred people being killed every month since 2011.²²² Investigators from the United Nations stated that this amounts to a "state policy of extermination of the civilian population[,]” which is classified as a crime against humanity.²²³

However, it is not the death alone that causes the environmental threat; it is what happens afterwards.²²⁴ If dead bodies are not handled properly there can be widespread groundwater and environmental contamination.²²⁵ The World Health Organization (“WHO”) has laid out detailed guidelines that should be followed, especially in cases like Syria, where there are mass deaths.²²⁶ The WHO says that all bodies must be buried in plastic sheets, shrouds, or other materials and, in the case of mass graves, the grave site must be two meters above the water table and at least three hundred and fifty meters away from all water sources.²²⁷ This is especially important if the cause of death was disease, like many of the cases in Syria's prisons.²²⁸ If disease was the cause of death, the threat of contamination is much higher because the disease can spread quickly and efficiently.²²⁹

In Syria, the number of deaths outpace what the government forces can handle, and the procedure for burying bodies is chaotic.²³⁰ Hospitals

²²⁰ *Disposal of dead bodies in emergency conditions*, WORLD HEALTH ORG. (2011), http://www.who.int/water_sanitation_health/publications/2011/tn8_disposal_dead_bodies_en.pdf [<https://perma.cc/CGB7-H2LB>].

²²¹ ALJAZEERA, *supra* note 204.

²²² *Id.*

²²³ Nebehay, *supra* note 33.

²²⁴ WORLD HEALTH ORG., *supra* note 220.

²²⁵ *Id.*

²²⁶ *Id.*

²²⁷ *Id.*

²²⁸ *Id.*

²²⁹ *Id.*

²³⁰ HUMAN RIGHTS WATCH, *supra* note 19.

and government sites are far over their capacity, and many times, the thousands of bodies are stored outside in an open-air garage without any protection or care.²³¹ When the bodies are finally buried, they are hastily dumped into mass graves on military land—mostly in Damascus.²³² In addition to these mass graves in Syria, there have also been an additional seventy-two mass graves dug by ISIS across Syria and Iraq that have an additional fifteen thousand bodies within them.²³³

C. *Potential Solutions*

The best way to solve the environmental problems caused by prison overpopulation must rely on international cooperation.²³⁴ Ideally, the most effective solution would be to stop the conflict altogether, therefore putting a halt on the ever-increasing prison population.²³⁵ But this is an extremely difficult task for policymakers to accomplish, and it relies on many factors that are beyond control.²³⁶ Because of this, the best solution should focus on United Nations Resolution 2139, which was unanimously passed in 2014.²³⁷ Resolution 2139 focused partly on the state of the detention centers in Syria.²³⁸ The Security Council demanded that the Syrian government open up all detention centers, both official and unofficial, to international monitors.²³⁹

These monitors would have access to all detention centers without notification to the Syrian government, and would be able to conduct their investigations without interference.²⁴⁰ Unfortunately, however, this Resolution has largely lain dormant.²⁴¹ The Security Council should return to

²³¹ *Id.*

²³² *Id.*

²³³ Kareem Shaheen, *Up to 15,000 ISIS victims buried in mass graves in Syria and Iraq*, THE GUARDIAN (Aug. 30, 2016), <https://www.theguardian.com/world/2016/aug/30/up-to-15000-bodies-may-be-buried-in-mass-graves-in-syria-and-iraq-survey> [<https://perma.cc/96WQ-QR9E>].

²³⁴ HUMAN RIGHTS WATCH, *supra* note 19.

²³⁵ Mofrej, *supra* note 20.

²³⁶ *Id.*

²³⁷ Meetings Coverage, Security Council, Security Council Unanimously Adopts Resolution 2139 (2014) to Ease Aid Delivery to Syrians, Provide Relief from 'Chilling Darkness,' U.N. MEETINGS COVERAGE SC/11292 (Feb. 22, 2014), <https://www.un.org/press/en/2014/sc11292.doc.htm> [<https://perma.cc/4E8V-MRLR>].

²³⁸ *Id.*

²³⁹ *Id.*

²⁴⁰ *Id.*

²⁴¹ HUMAN RIGHTS WATCH, *supra* note 19.

this Resolution and work on enacting it with full force. This would curb the improper practices that have been occurring in Syrian prisons across the country.²⁴² One of the priorities should be ensuring that the proper waste management and body burial practices are being observed. In the end, this is the best possible solution because it also has Russia's support, which is rare for any policy involving Syria.²⁴³

Another possible solution would be for the Security Council to adopt targeted sanctions on those individuals or groups that are responsible for the practices within the prisons of Syria.²⁴⁴ The International Criminal Court could also create a renewed effort to prosecute those same perpetrators.²⁴⁵ These two solutions—Security Council sanctions and ICC enforcement—are not as likely to succeed as moving forward with Resolution 2139 because it is unlikely that Russia would grant its approval;²⁴⁶ however, they are still important steps to pursue to draw more attention to the issue. Any attention that is drawn to this issue is a positive development both for the state of human rights in Syria and for the local environment of the region.

CONCLUSION

The devastating effects of armed conflict on the natural environment must be addressed quickly and efficiently to prevent any further permanent environmental harm.²⁴⁷ At the same time, however, solving this growing problem is not a simple feat, it will require a concerted effort by the international community to combine solutions of all types into one overarching package. The international community should play a central role in this process because of its ability to push for comprehensive and consistent practices rather than piecemeal solutions that require each individual country to act independently. Despite the challenge that this comprehensive solution poses, however, the international community is well-equipped and adaptive.

²⁴² *Id.*

²⁴³ U.N. MEETINGS COVERAGE, *supra* note 237.

²⁴⁴ HUMAN RIGHTS WATCH, *supra* note 19.

²⁴⁵ *Id.*

²⁴⁶ Julian Borger & Bastien Inzaurrealde, *Russian vetoes are putting UN security council's legitimacy at risk, says US*, THE GUARDIAN (Sept. 23, 2015), <https://www.theguardian.com/world/2015/sep/23/russian-vetoes-putting-un-security-council-legitimacy-at-risk-says-us> [<https://perma.cc/SVJ5-Y5HC>] (Russia's approval is necessary because its veto on the Security Council cancels any potential resolution on the table that it does not agree with).

²⁴⁷ Hupy, *supra* note 2, at 405.

The most efficient solutions will target reforms on all levels. Treaties should be strictly enforced by international bodies to ensure compliance²⁴⁸ with weapons inspections,²⁴⁹ human rights obligations,²⁵⁰ and international aid requirements. In addition, new reforms should be put into place that provide additional and more environmentally friendly resources to countries in need,²⁵¹ and rethink the dispersion of refugee camps.²⁵² Finally, the solutions created by the international community should not follow a “one-size-fits-all” approach, rather, each should allow a degree of flexibility so solutions can be tailored to individual communities.

While the above methods will provide an efficient solution to the problem of armed conflicts’ environmental destruction, implementing all of these measures quickly provides an additional dilemma. To ensure that the environment is protected while these new reforms and measures are being created and implemented, mitigation measures should also be pursued.²⁵³ First, before anything is implemented, it is important to develop stronger connections between the ideas of conflict and the protection of the environment to ensure that countries know the harm that can be done.²⁵⁴ After this connection has been firmly established, mitigation measures can be created. Some of these measures include developing plans for a drought in resources, supporting land reforms like pastoralism, and integrating humanitarian and development work.²⁵⁵ These actions will provide a temporary patch to help lessen the environmental impact of armed conflicts while also raising awareness of this growing problem and making future reforms more acceptable.

Overall, the multifaceted approach of all of the above solutions have the ability to create meaningful change for current and future instances of armed conflict. This includes reducing, and possibly eliminating, the devastating environmental effects of the current conflict in Syria and the spillover it creates. The mere possibility of eliminating even one

²⁴⁸ Tanaka & Matsuoka, *supra* note 68, at 1.

²⁴⁹ ORG. FOR THE PROHIBITION OF CHEM. WEAPONS, *supra* note 83; Tanaka & Matsuoka, *supra* note 68.

²⁵⁰ HUMAN RIGHTS WATCH, *supra* note 19.

²⁵¹ Shepherd, *supra* note 6.

²⁵² *Id.*

²⁵³ Brendan Bromwich, *Environmental Degradation and Conflict in Darfur: Implications for Peace and Recovery*, HUMANITARIAN PRAC. NETWORK (Jul. 2008), <http://odihpn.org/magazine/environmental-degradation-and-conflict-in-darfur-implications-for-peace-and-recovery/> [https://perma.cc/GEM6-QJS4].

²⁵⁴ *Id.*

²⁵⁵ *Id.*

harmful after-product of armed conflict is worth pursuing. The prevention of suffering of those most in need, and the preservation of a healthy environment for the future, are goals that should unite the international community and pull this often overlooked problem out of its proverbial no man's land.