

Potential Impact of Climate Change on Human Trafficking

A Narrative Review

Jessica C. Sheu, BA,* Melissa I.M. Torres, PhD, MSW,† Mollie R. Gordon, MD,†
Phuong T. Nguyen, PhD,† and John H. Coverdale, MD, MEd†

Abstract: Climate change is a threat to the public health with wide-reaching impacts that are becoming more studied and recognized. An aspect of climate change that has not yet gained adequate scholarly attention is its potential impact on human trafficking. We review the potential impact of climate change on risk factors to human trafficking including poverty, gender inequality, political instability, migration or forced displacement, and weather disasters. We conclude that climate change is a crucially important consideration in understanding the complex and multifactorial risks for human trafficking. These findings add to the priority for health professionals to embrace efforts to prevent and to mitigate the effects of climate change and to take account of these risk factors in screening and identifying trafficked persons.

Key Words: Human trafficking, climate change, global warming, migration

(*J Nerv Ment Dis* 2021;209: 324–329)

Human trafficking is a grave global human rights violation and issue that concerns public health, affecting almost all aspects of communities and societies throughout the world. According to the United Nations' Palermo Protocol, trafficking is defined by three constituent elements as the act of “recruitment, transportation, transfer, harboring, or receipt of persons” by various means such as “threat or use of force, coercion, [and] abduction” for the purpose of “exploitation” (Greenbaum et al., 2018; United Nations, 2000; United Nations Office on Drugs and Crime: Human Trafficking, 2020). This definition includes exploitation of others by forced prostitution, forced labor, slavery, or other similar practices (United Nations, 2000; United Nations Office on Drugs and Crime: Human Trafficking, 2020). Global data collected from 2016 show that, at any given time in that year alone, approximately 40.3 million people were victims of modern-day slavery (MDS), as defined by the International Labour Organization, which is a different but similar concept to human trafficking (International Labour Organization, 2017). Of the 40.3 million victims of MDS, 24.9 million are in forced labor, with 4.1 million in state-imposed labor, 16 million in forced labor exploitation, and 4.8 million in forced sexual exploitation of adults and commercial sexual exploitation of children. Forced labor is prevalent in multiple industries, including domestic servitude, construction sites, farming and fishing industry, clandestine factories, and the sex industry (International Labour Organization, 2017). Although all persons are vulnerable (Hepburn and Simon, 2010), women and girls account for 71% of the overall total, and one in four victims are children (International Labour Organization, 2017).

Climate change is a public health threat that will greatly affect vulnerable populations, especially the poor (Costello et al., 2009; Crowley, 2016; Intergovernmental Panel on Climate Change, 2014; Watts et al., 2019, 2018). Current research suggests that groups at risk,

such as the poor, are particularly vulnerable to human trafficking. However, the impact of climate change on risks for becoming trafficked has received limited scholarly attention (International Organization for Migration, 2017). Human trafficking has been shown to have serious consequences not only on physical health, with symptoms such as headaches and back or stomach pain (Ottisova et al., 2016), but also on mental health, including causing depression, posttraumatic stress disorder, and anxiety, so it is important to further understand the connection between climate change and human trafficking (Abas et al., 2013; Levine, 2017). We searched PubMed and PsycInfo using the terms climate change, global warming, and human trafficking, and found no reviews of different contributing factors potentially linking climate change to human trafficking.

Given this dearth of information linking climate change to human trafficking, we set out to explore this topic area in some detail. One goal is to consider the potential impact of climate change on each of the following well-established risk factors for becoming trafficked: 1) poverty, 2) gender inequality, 3) political instability, 4) migration or forced displacement, and 5) weather disasters. Although risks for becoming trafficked are complex, overlapping, and multifactorial, we will consider these selected and major risk factors independently. This is not intended to be an exhaustive review. By these methods, however, we aim to bring attention to climate change as a potentially important risk factor for human trafficking and, imperatively, to better understand this association. A secondary goal is to inform on the critical importance of developing interventions that take account of climate change in preventing and responding to human trafficking.

ASSOCIATION OF POVERTY WITH CLIMATE CHANGE

A major risk factor for human trafficking is poverty and economic instability (Sheffield and Landrigan, 2011; Turek et al., 2017). To date, more than 1 billion people live in extreme poverty, earning less than US \$1 a day, with women representing two thirds of impoverished persons (Abeygunawardena et al., 2009). Climate change disproportionately impacts poorer populations, especially those vulnerable in developing countries with the least amount of available resources and whose economies are dependent on the weather (Abeygunawardena et al., 2009; Intergovernmental Panel on Climate Change, 2014). For example, 40% of the entire population of Sub-Saharan Africa is poor, and because most work is in the agricultural industry, they are at risk from a loss of crops because of climate change (Fischer et al., 2002). Because of climate change, temperature changes in the ocean are impacting the coastal marine agricultural fishing market (Lam et al., 2016), whereas sea level rises and coastal erosion will harm coastal communities (Zhang et al., 2004). Agriculture's importance to a struggling economy is reflected by its effect on a country's gross domestic product; growth in agriculture is 2.2 times as effective at alleviating poverty as other nonagricultural industries, such as technology or oil industries (Christiaensen et al., 2006).

Adverse environmental factors may exacerbate existing resource discrepancies and inequalities between rich and poor populations, which already may be a factor in feelings of hopelessness and

*Baylor College of Medicine; and †Menninger Department of Psychiatry, Baylor College of Medicine, Houston, Texas.

Send reprint requests to Jessica C. Sheu, BA, Baylor College of Medicine, 1 Baylor Plaza, Houston, TX 77030. E-mail: jcsheu@bcm.edu.

Copyright © 2021 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 0022-3018/21/20905-0324

DOI: 10.1097/NMD.0000000000001312

desperation in poorer communities (Intergovernmental Panel on Climate Change, 2014; Stott, 2007). The negative effects of a changing global landscape have already become evident, from drought or desertification in Africa, to floods, droughts, and storms in East Asia, South Asia, and Pacific regions (Bauer and Thant, 2010; Johannessen, 2013). Because of its effect on agriculture, climate change is projected to create price instability with an approximate 30% to 50% increase in prices overall. Price instability can have negative consequences, especially on poor households, further continuing the cycle of poverty (Bauer and Thant, 2010; Johannessen, 2013). In Africa alone, approximately 25% of the population is already constrained by limitations in access to water, whereas wheat production may cease entirely by the year 2080 (Boko et al., 2007). Although the wealthy may more easily adapt to food shortages or water constraints, the poor will not have the same opportunities, especially given that a majority of their yearly income are allocated toward purchasing food (Brainard et al., 2009).

Poverty, therefore, and the associated circumstances of hopelessness, desperation, and economic destitution may lead to unsafe choices (Adepoju, 2005; Bales, 2012; Logan et al., 2009). People in economically disadvantaged situations may have limited access to health care or become homeless, which are vulnerabilities that attract traffickers (Braveman, 2006) and are risk factors for becoming trafficked (Ahmed et al., 2001; Braveman, 2006). Poverty and economic desperation can create an opportunity for a “supply” of people willing to take on work outside of their comfort zone and a “demand” from nefarious individuals to take advantage of those vulnerable people in offering opportunities that may eventually prove to be fraudulent (Kerr, 2016). People may also accept jobs not knowing that they are fronts for human trafficking and from which they cannot easily escape (Bales, 2012).

ASSOCIATION OF GENDER INEQUALITY WITH CLIMATE CHANGE

Women and girls currently constitute the majority of trafficked persons (International Labour Organization, 2017). Women are particularly vulnerable to climate change, often because of an underlying social and cultural structure that may stem from gender inequality (Dankelman, 2012; Turek et al., 2017). Women constitute the majority of the globe's poor and vulnerable populations as a whole, which places them at a uniquely disadvantageous position, and climate change may severely worsen these disparities (Lambrou and Piana, 2006; Women's Environment & Development Organization, 2007). Gender disparities are especially evident in the aftermath of many weather disasters, in which studies have shown higher rates of mortality in female subjects than in male subjects (Neumayer and Plümper, 2007). Women, especially those in charge of their households, also have a more difficult time coping with and recovering from climate-related disasters, because of an average lower level of schooling and training or a lack of available resources compared with men (Abeygunawardena et al., 2009; Dankelman, 2012).

Many societies tend to be patriarchal and male-dominated, so decision-making power is still reserved for men, leaving female subjects with little control over their circumstances (Lambrou and Piana, 2006; Leth, 2005). In societies with traditional gender roles and unprogressive views of women, prostitution may be more accepted, increasing risks of becoming sex trafficked (Leth, 2005). In addition, daughters are more likely than sons to be sold by a poor family to traffickers during monetary hardships, and women are more likely to be falsely promised employment opportunities as a hostess or waitress but then lured into trafficking conditions (Turek et al., 2017). During times of environmental crises, such as a drought, girls are more likely to withdraw from school not only to help with domestic work but also because of early marriage or childbearing (Eldridge, 2002). Poor African-American women experienced from deeper levels of poverty and endured the most difficult recovery after Hurricane Katrina in

2005 (Women's Environment & Development Organization, 2007). In addition, women in the United States who are low-wage earners, immigrants, or part of minority racial groups are projected to continue to be the most affected by future weather crises (Dankelman, 2012).

The gendered aspects of climate change are important considerations that enrich our understanding of human trafficking. As shown in the 2003 documentary *Trading Women*, young Thai girls and women were particularly vulnerable to sex traffickers after environmental changes in Thailand devastated its agricultural industry (Feingold, 2003). Therefore, the “push” toward trafficking may include women needing to migrate to find work to take care of their families, and the “pull” is living in an economy with available low-wage work for feminized tasks, including domestic jobs, service work, care work, and sex work (Ruchti, 2017). In all, climate change has impacts that reach far beyond the environment and can especially affect female subjects living in agriculturally dominant areas.

ASSOCIATION OF POLITICAL INSTABILITY WITH CLIMATE CHANGE

Political instability is a major risk factor for human trafficking (Dalby, 2018; Huntjens and Nachbar, 2015; Kerr, 2016; Turek et al., 2017). Climate change has the potential to cause adverse environmental impacts on natural resources, ecosystems, and access to water, as well as social impacts on jobs and community resources. These in turn eventually cause a wide range of responses, including societal instability, weak institutions, crime or urban violence, and armed rebellions (Forsyth and Schomerus, 2013). Any negative decline in income compensation caused by climate change can contribute to social unrest (Gleick, 2014; Keidel, 2005; Schmidhuber and Tubiello, 2007; Syrian Arab Republic, 2012; The Center for Climate & Security, 2012).

The effectiveness and swiftness of a government's reaction to respond during times of environmental disasters are vital. If the populace perceives the government as unfit, there could be efforts to replace those in power. A government experiencing underlying instability may be less equipped to properly gather resources to ameliorate a disaster, which could lead to public unrest and calls for new leadership (Dalby, 2018). In addition, climate change causing droughts, disease, and famine can lead to conflict within and between countries (Dankelman, 2012). The risk of human conflict can be substantially influenced by changes in normal levels of rain and rising temperatures systematically (Hsiang et al., 2013). It is also anticipated that the negative consequences created by climate change will be experienced primarily by poor countries, because of infrastructure and technology deficiencies (Sofuoğlu and Ay, 2020).

Climate change, therefore, has been regarded a “threat multiplier” (Price, 2017). According to the 2010 US Quadrennial Defense Review, climate change is projected to significantly burden governments with preexisting fragilities and inadequate systems of administration and leadership (Daggett, 2010). This is why analysts in the United States are particularly concerned about African and Asian political unrest, where a connection between climate change and political volatility has already been observed (Dalby, 2018). In Latin America, poor rural communities who rely on agriculture for a living often have limited to no influence in the political realm to lobby any governmental support for updated infrastructure developments (Reyer et al., 2017).

The effect of climate change on political instability has been demonstrated by various historical and current reports (Châtel, 2014; Maia, 2018; Scheffran et al., 2012). By reviewing trends in rain, food prices, and droughts, climate change has been found to have played an important role in exacerbating political and social unrest in countries experiencing the Arab Spring, especially in places that were already sensitive to economic instability (Johnstone and Mazo, 2011; Selby et al., 2017). The number of people displaced from climate change is the highest in the Sub-Saharan African region, whereas other countries

are also at risk, including the Asian countries of China and Bangladesh (Đurková et al., 2012). About three fourths of the countries in Sub-Saharan African will experience significant climate changes by 2050, changes which are projected to bring great challenges to those regions that have been politically unstable and economically weak (Gwahirisa and Manderson, 2012). In the Middle Eastern and North African areas, climate change creates a strain on available resources, such as food, water, energy, and transportation, in a region that already is experiencing political instability (Price, 2017). Therefore, stress caused by climate change can have negative implications on human security, especially without a stable government or political infrastructure to ameliorate its effects (Price, 2017).

Given these examples, it is evident that climate change plays an important role among the many factors that can contribute to political instability (Sofuoğlu and Ay, 2020). Political unrest and government corruption can be the “push” for populations to become more vulnerable to human trafficking, especially in times of war (Turek et al., 2017). War-torn areas can displace populations, leaving children in particular to become especially vulnerable (Bales, 2005). In addition, government officials and/or agencies may be involved in bribery to overlook policies created in place to combat trafficking, or worse, they may be directly involved with the illegal trade, even by designating travel paths for traffickers (Cullen-DuPont, 2009; United States Department of State, 2020). In light of such corruption, which has been especially evident in developing countries, many victims are afraid to come forward and seek assistance (Turek et al., 2017).

ASSOCIATION OF MIGRATION WITH CLIMATE CHANGE

Displacement from natural habitats because of climate change is a risk factor for becoming exploited and trafficked (Migration and Climate Change, 2008). Migration has a cascading effect on the region in that those who have the means to move away in hopes of finding better opportunities elsewhere leave behind an even more destitute population (Barnett, 2003). In addition, migrant workers may be subjected to unsafe work practices in a foreign land that can place them at risk for becoming exploited and trafficked (Kaur, 2010). The Intergovernmental Panel on Climate Change predicted that climate change would cause the displacement of millions because of agricultural disturbances, shoreline disruptions, and coastal flooding (Migration and Climate Change, 2008). By the mid-1990s, approximately 25 million people became displaced because of many different serious environmental causes, from weather disasters and droughts to pollution and land deterioration (Migration and Climate Change, 2008). The latest prediction is climate-induced migration of 200 million people by the year 2050 (Migration and Climate Change, 2008). Despite the great severity of climate-induced migration, individuals displaced by climate are not recognized as “refugees,” because they do not fulfill the requirement of “fleeing persecution”; this definition has not been adjusted since the 1951 Refugee Convention (United Nations High Commissioner for Refugees, 2011). Not expanding the definition of “refugee” to include those who have been displaced by climate change has the potential to limit their access to food or financial aid (Migration and Climate Change, 2008).

As of the end of 2018, approximately 70.8 million people were forcibly displaced worldwide (United Nations High Commissioner for Refugees, 2019), and in 2017, 41.3 million of those people were internally displaced because of violence, armed conflict, or human rights violations (United Nations High Commissioner for Refugees, 2019). It was formerly believed that devastating climate events would only cause displacement temporarily, with the expectation that people would return home given resolution of the key environmental problems; however, a significant percentage of those displaced by Hurricane Katrina have yet to do so (Gemenne, 2010). Although agricultural setbacks and drought contribute to displacement, scientists now predict that rising

sea levels alone will displace approximately 150 million people by 2050 (Kulp and Strauss, 2019; Lustgarten, 2020).

We need to better understand climate-related displacement. Establishing a cause-and-effect relationship of climate change and displacement is highly complex, requiring a deeper understanding of all of the social, economic, and environmental factors at play (International Organization for Migration, 2019; Migration and Climate Change, 2008). Historically, migration has been seen as a natural adjustment to a changing environment (Lustgarten, 2020). Evidently, climate change can lead to displacement through various mechanisms, although it is often difficult to distinguish migration and coerced displacement from other causes (McAdam, 2011).

AFTERMATH OF WEATHER DISASTERS WITH HUMAN TRAFFICKING

Weather disasters are a risk factor for human trafficking. According to the United Nations Environment Programme, trafficking during disasters may increase by 20% to 30% (United Nations Environment Programme, 2011). In addition, cheap labor is often in demand in the aftermath of weather disasters, which creates a “perfect storm” for human trafficking (Gurung and Clark, 2018; Hepburn and Simon, 2010). According to the World Bank Group, there is strong empirical evidence from South and Southeast Asia, Central America, and East Africa that families send their children and younger adults to find wage or labor opportunities after extreme weather events, such as droughts or floods (Rigaud et al., 2018). This adds to their vulnerability to labor trafficking and exploitation in times of desperation and despair after a weather disaster. In all, weather disasters are expected to become increasingly more frequent and severe (Helmer and Hilhorst, 2006; Sauerborn and Ebi, 2012; Thomas, 2017), which will likely add to the risk of becoming trafficked.

Illustrative examples include the Indian Ocean tsunami and earthquake and Typhoon Haiyan. The Indian Ocean tsunami and earthquake in 2004 was an important factor in bringing the problem of human trafficking to global attention. After the storm devastated the region, leaving millions of people homeless and at risk, and despite government efforts to prevent human trafficking, the United Nations Children's Fund reported the first case of child trafficking merely 2 weeks into its aftermath (Nishiyama, 2005). Less than 10 years later, Typhoon Haiyan hit the Asian region in the Philippines in 2013 and displaced 4.4 million people (Tesfaq, 2015). The weather devastated an area that was already one of the poorest and the most prone to trafficking. After the storm, traffickers took advantage of uprooted and vulnerable men, women, and children (Tesfaq, 2015).

Such a calamity is not foreign to the United States. Hurricane Katrina in 2005 caused extensive damage throughout the Gulf Coast. In New Orleans alone, 600,000 households were displaced and nearly 1000 people died (Hepburn, 2017). The damage throughout this area created an acute demand for cheap labor in the midst of a stressed economy and overwhelmed governing bodies. During this time, the federal government suspended various employee protections in the region for reasons that are unclear (Hepburn, 2017). Perpetrators took advantage of this gap to traffic migrant workers, including those with H-2A, H-1B, and H-2B visas. One example concerned Thai nationals who were brought for forced labor to New Orleans and who were forced to work and stay in mold-filled and hurricane-damaged housing where they were eventually discovered (Hepburn and Simon, 2010). Their visas, return tickets to their country of origin, as well as their passports were held in ransom while they were coerced into unpaid work (Hepburn and Simon, 2010).

DISCUSSION

Our review establishes the critical importance of climate change as a risk factor for becoming trafficked and as one that is potentially more far reaching than previously realized. Climate change can

exacerbate well-established and major risk factors for human trafficking including poverty, gender equality, political instability, migration, and weather disasters. More data are needed to better understand these complex relationships.

There are three main implications for mental health and general health professionals of our findings. First, health care providers and their academic leaders should advocate for and embrace initiatives and policies aimed at addressing global warming (Coverdale et al., 2018; Crowley, 2016; Watts et al., 2019). Starting in 1990, there has been a statistically significant long-term increase in disasters related to storms and floods, in regions of Asia, Africa, and the Americas (Watts et al., 2019). Climate change problems are projected to continue on an upward trend, and many associated impacts of climate change are projected to continue for centuries (Intergovernmental Panel on Climate Change, 2014; Watts et al., 2019). A study of 700 residents from an earthquake-susceptible region of Chile found that 64% of those surveyed felt that the effects of climate change were having a negative impact on their own health and daily lives because of its impact on transportation, accessibility to energy resources, and the spread of disease (Hernández and Breña, 2016). The study also found a general consensus that the scientific community and international governing bodies had a responsibility to solve the problems resulting from climate change (Hernández and Breña, 2016). Our review, by linking climate change to risks of human trafficking, adds to priorities to address climate change.

Second, the mental health professions should plan to manage the anticipated impacts of climate change on poverty, gender equality, political instability, migration, and weather disasters to mitigate those effects. Mental health clinicians have a vital role to play in advocacy toward reducing food insecurity, providing housing, and addressing socioeconomic and other basic needs to prevent the exploitation of those impacted by climate change. These are responsibilities that are within psychiatry's professional roles (Gardner and Kleinman, 2019) but which have sometimes been relegated to other disciplines and "demedicalized" (Braslow and Messac, 2018). Human trafficking is a major concern for the psychiatric profession as mental illness and trafficking have been shown to be connected, and therefore, ameliorating negative environmental effects and decreasing potential exposure to stress can positively benefit public health (Levine, 2017).

Third, recognizing how climate change impacts vulnerabilities to become trafficked should facilitate the identification of trafficked persons. Being vigilant and screening and identifying trafficked persons are necessary steps to setting them on a pathway to treatment and freedom (Coverdale et al., 2020). Existing knowledge gaps among mental and general health professionals should be rectified (Viergever et al., 2015), work is needed to validate clinical screening tools (Greenbaum et al., 2015; Institute of Medicine; National Research Council, 2013; Smith et al., 2009), and information brochures and fact sheets (US Department of Health & Human Services, 2020) should be updated to reflect the potential impact of climate change on populations at risk.

In conclusion, climate change is a critically important consideration in understanding the complex and multifactorial risks for human trafficking. This recognition should enable greater attention and effort across the globe to evaluate how climate change impacts human trafficking. This information will inform on the priority for preventing and mitigating the effects of climate change, and on efforts to identify and assist trafficked persons.

DISCLOSURE

The authors declare no conflict of interest.

REFERENCES

Abas M, Ostrovski NV, Prince M, Gorceag VI, Trigub C, Oram S (2013) Risk factors for mental disorders in women survivors of human trafficking: A historical cohort study. *BMC Psychiatry*. 13:204.

Abeygunawardena P, Vyas Y, Knill P, Foy T, Harrold M, Steele P, Tanner T, Hirsch D, Oosterman M, Rooimans J, Debois M, Lamin M, Liptow H, Mausolf E, Verheyen R, Agrawala S, Caspary G, Paris R, Kashyap A, Sharma A, Mathur A, Sharma M, Sperling F (2009) *Poverty and climate change: Reducing the vulnerability of the poor through adaptation (English)*. Washington: World Bank Group. Available at: <http://documents.worldbank.org/curated/en/534871468155709473/Poverty-and-climate-change-reducing-the-vulnerability-of-the-poor-through-adaptation>. Accessed June 29, 2020.

Adepoju A (2005) Review of research and data on human trafficking in Sub-Saharan Africa. Human trafficking search. Available at: <https://humantraffickingsearch.org/resource/review-of-research-and-data-on-human-trafficking-in-sub-saharan-africa/>. Accessed June 29, 2020.

Ahmed SM, Lemkau JP, Nealeigh N, Mann B (2001) Barriers to healthcare access in a non-elderly urban poor American population. *Health Soc Care Community*. 9: 445–453.

Bales K (2005) *Understanding global slavery: A reader*. Berkeley: University of California Press.

Bales K (2012) *Disposable people: New slavery in the global economy* (3rd ed). Berkeley: University of California Press.

Barnett J (2003) Security and climate change. *Glob Environ Chang*. 13:7–17.

Bauer A, Thant M (Eds) (2010) *Poverty and sustainable development in Asia: Impacts and responses to the global economic crisis*. Mandaluyong: Asian Development Bank.

Boko M, Niang I, Nyong A, Vogel C, Githeko A, Medany M, Osman-Elasha B, Tabo R, Yanda P (2007) 2007: Africa. In Parry ML, Canziani OF, Palutikof JP, van der Linden PJ, Hanson CE (Eds), *Climate change 2007: Impacts, adaptation and vulnerability: Contribution of working group II to the fourth assessment report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press.

Brainard L, Jones A, Purvis N (2009) *Climate change and global poverty: A billion lives in the balance?* Washington: Brookings Institution Press.

Braslow JT, Messac L (2018) Medicalization and demedicalization—A gravely disabled homeless man with psychiatric illness. *N Engl J Med*. 379:1885–1888.

Braveman P (2006) Health disparities and health equity: Concepts and measurement. *Annu Rev Public Health*. 27:167–194.

Châtel FD (2014) The role of drought and climate change in the Syrian uprising: Untangling the triggers of the revolution. *Middle East Stud*. 50:521–535.

Christiansen L, Demery L, Kuhl J (2006) *The role of agriculture in poverty reduction: An empirical perspective. Policy research working papers; No. 4013*. Washington: World Bank. Available at: <https://openknowledge.worldbank.org/handle/10986/9306>. Accessed June 29, 2020.

Costello A, Abbas M, Allen A, Ball S, Bell S, Bellamy R, Friel S, Groce N, Johnson A, Kett M, Lee M, Levy C, Maslin M, McCoy D, McGuire B, Montgomery H, Napier D, Pagel C, Patel J, de Oliveira JAP, Redclift N, Rees H, Rogger D, Scott J, Stephenson J, Twigg J, Wolff J, Patterson C (2009) Managing the health effects of climate change: Lancet and University College London Institute for Global Health Commission. *Lancet*. 373:1693–1733.

Coverdale JH, Balon R, Beresin EV, Brenner AM, Guerrero APS, Louie AK, Roberts LW (2018) Climate change: A call to action for the psychiatric profession. *Acad Psychiatry*. 42:317–323.

Coverdale JH, Gordon MR, Nguyen PT (2020) *Human trafficking: A treatment guide for mental health professionals*. Washington, DC: American Psychiatric Pub.

Crowley RA (2016) Climate change and health: A position paper of the American College of Physicians. *Ann Intern Med*. 164:608–610.

Cullen-DuPont K (2009) *Human trafficking*. New York: Infobase Publishing.

Daggett S (2010) *Quadrennial defense review 2010: Overview and implications for national security planning*. Washington: Congressional Research Service.

Dalby S (2018) Climate change and political instability. In Dellasala DA, Goldstein MI (Eds), *Encyclopedia of the anthropocene* (pp 511–515). Oxford: Elsevier. doi:10.1016/B978-0-12-809665-9.09749-4.

Dankelman I (2012) *Gender and climate change: An introduction*. London: Routledge. doi:10.4324/9781849775274.

- Đurková P, Gromilova A, Kiss B, Plaku M (2012) *Climate refugees in the 21st century*. Regional Academy on the United Nations. Available at: <https://acuns.org/wp-content/uploads/2013/01/Climate-Refugees-1.pdf>. Accessed June 29, 2020.
- Eldridge C (2002) Why was there no famine following the 1992 Southern African drought? The contributions and consequences of household responses. *IDS Bulletin*. 33:79–87.
- Feingold DA (2003) *Trading Women* | Kanopy. [Documentary, filmed on location at Burma]. Massachusetts: Documentary Educational Resources.
- Fischer G, Shah M, van Velthuisen H (2002) *Climate change and agricultural vulnerability (no. 1113)*. Vienna: International Institute for Applied Systems Analysis.
- Forsyth T, Schomerus M (2013) Climate change and conflict: A systematic evidence review. Available at: http://eprints.lse.ac.uk/56352/1/JSRP_Paper8_Climate_change_and_conflict_Forsyth_Schomerus_2013.pdf. Accessed June 29, 2020.
- Gardner C, Kleinman A (2019) Medicine and the mind—The consequences of psychiatry's identity crisis. *N Engl J Med*. 381:1697–1699.
- Gemenne F (2010) What's in a name: Social vulnerabilities and the refugee controversy in the wake of Hurricane Katrina. In Afifi T, Jäger J (Eds), *Environment, forced migration and social vulnerability* (pp 29–40). Berlin, Heidelberg: Springer. doi:10.1007/978-3-642-12416-7_3.
- Gleick PH (2014) Water, drought, climate change, and conflict in Syria. *Wea Climate Soc*. 6:331–340.
- Greenbaum J, Crawford-Jakubiak JE, Committee on Child Abuse and Neglect (2015) Child sex trafficking and commercial sexual exploitation: Health care needs of victims. *Pediatrics*. 135:566–574.
- Greenbaum VJ, Titchen K, Walker-Descartes I, Feifer A, Rood CJ, Fong H-F (2018) Multi-level prevention of human trafficking: The role of health care professionals. *Prev Med*. 114:164–167.
- Gurung A, Clark AD (2018) The perfect storm: The impact of disaster severity on internal human trafficking. *Int Area Stud Rev*. 21:223386591879338.
- Gwatirisa P, Manderson L (2012) “Living from day to day”: Food insecurity, complexity, and coping in Mutare, Zimbabwe. *Ecol Food Nutr*. 51:97–113.
- Helmer M, Hilhorst D (2006) Natural disasters and climate change. *Disasters*. 30:1–4.
- Hepburn S (2017) *Hurricanes Harvey, Irma, Maria: Will these natural disasters increase human trafficking?* Alexandria: National Association of State Mental Health Program Directors.
- Hepburn S, Simon RJ (2010) Hidden in plain sight: Human trafficking in the United States. *Gen Issues*. 27:1–26.
- Hernández JR, Breña MO (2016) Society, environment, vulnerability, and climate change in Latin America: Challenges of the twenty-first century. *Latin Am Perspect*. 43:29–42.
- Hsiang SM, Burke M, Miguel E (2013) Quantifying the influence of climate on human conflict. *Science*. 341:1235367.
- Huntjens P, Nachbar K (2015) *Climate change as a threat multiplier for human disaster and conflict*. The Hague Institute for Global Justice. Available at: <https://www.thehagueinstituteforglobaljustice.org/information-for-policy-makers/working-paper/working-paper-9-climate-change-as-a-threat-multiplier-for-human-disaster-and-conflict/>. Accessed June 29, 2020.
- Institute of Medicine; National Research Council (2013) *Confronting commercial sexual exploitation and sex trafficking of minors in the United States: A guide for providers of victim and support services*. Washington: National Academies Press.
- Intergovernmental Panel on Climate Change (2014) *Climate change 2014: Synthesis report. Contribution of working groups I, II and III to the fifth assessment report of the Intergovernmental Panel on Climate Change*. Geneva: Intergovernmental Panel on Climate Change.
- International Labour Organization (2017) *Global estimates of modern slavery: Forced labour and forced marriage (report)*. Geneva: International Labour Organization.
- International Organization for Migration (2017) The Climate Change–Human Trafficking Nexus - | IOM Online Bookstore. Available at: <https://publications.iom.int/books/climate-change-human-trafficking-nexus>. Accessed April 13, 2020.
- International Organization for Migration (2019) *World migration report 2020*. Geneva: International Organization for Migration.
- Johannessen J (2013) Climate change, poverty and climate justice in South African media: The case of Cop17. *S Afr J Hum Rights*. 29:32–60.
- Johnstone S, Mazo J (2011) Global warming and the Arab spring. *Dent Surv*. 53:11–17.
- Kaur A (2010) Labour migration in Southeast Asia: Migration policies, labour exploitation and regulation. *J Asia Pac Econ*. 15:6–19.
- Keidel A (2005) *The economic basis for social unrest in China*. Washington: The George Washington University.
- Kerr PL (2016) Treating trauma in the context of human trafficking: Intersections of psychological, social, and cultural factors. In Smith SF, Ghafoori B, Caspi Y (Eds), *International perspectives on traumatic stress* (pp 199–221). Hauppauge: Nova Science Publishers.
- Kulp SA, Strauss BH (2019) New elevation data triple estimates of global vulnerability to sea-level rise and coastal flooding. *Nat Commun*. 10:4844.
- Lam VWY, Cheung WWL, Reygondeau G, Sumaila UR (2016) Projected change in global fisheries revenues under climate change. *Sci Rep*. 6:32607.
- Lambrou Y, Piana G (2006) *Gender: The missing component of the response to climate change*. Food and Agriculture Organization of the United Nations. Available at: <http://www.fao.org/3/i0170e/i0170e00.htm>. Accessed June 29, 2020.
- Leth I (2005) Child sexual exploitation from a global perspective. In Cooper S, Estes R, Giardino A, Kellog N, Vieth V (Eds), *Medical, legal & social science aspects of child sexual exploitation: A comprehensive review of pornography, prostitution, and Internet crimes*. St. Louis: GW Medical Publishing.
- Levine JA (2017) Mental health issues in survivors of sex trafficking. *Cogent Medicine*. 4:1278841.
- Logan T, Walker R, Hunt G (2009) Understanding human trafficking in the United States. *Trauma Violence Abuse*. 10:3–30.
- Lustgarten A (2020) The great climate migration has begun. *The New York Times*. Available at: <https://www.nytimes.com/interactive/2020/07/23/magazine/climate-migration.html>. Accessed August 3, 2020.
- Maia R (2018) *Climate change brews conflict*. Climate Action Business Association (CABA). Available at: <https://cabaus.org/2018/05/21/climate-change-brews-conflict/>. Accessed June 29, 2020.
- McAdam J (2011) *Climate change and displacement. Multidisciplinary perspectives*. Oxford: Hart Publishing.
- Migration and Climate Change (2008) *IOM migration research series*. Geneva: International Organization for Migration.
- Neumayer E, Plümper T (2007) The gendered nature of natural disasters: The impact of catastrophic events on the gender gap in life expectancy, 1981–2002. *Ann Assoc Am Geographers*. 97:551–566.
- Nishiyama G (2005) Indonesia: UNICEF confirms tsunami child trafficking case. *Reuters*. Available at: <https://reliefweb.int/report/indonesia/indonesia-unicef-confirms-tsunami-child-trafficking-case>. Accessed April 13, 2020.
- Ottisova L, Hemmings S, Howard LM, Zimmerman C, Oram S (2016) Prevalence and risk of violence and the mental, physical and sexual health problems associated with human trafficking: An updated systematic review. *Epidemiol Psychiatr Sci*. 25:317–341.
- Price R (2017) *Climate change and stability in North Africa*. UK Department of International Development. Available at: <https://www.gov.uk/research-for-development-outputs/climate-change-and-stability-in-north-africa>. Accessed June 29, 2020.
- Reyer CPO, Adams S, Albrecht T, Baarsch F, Boit A, Canales Trujillo N, Carlsburg M, Coumou D, Eden A, Fernandes E, Langerwisch F, Marcus R, Mengel M, Mira-Salama D, Perette M, Pereznielo P, Rammig A, Reinhardt J, Robinson A, Rocha M, Sakschewski B, Schaeffer M, Schleussner C-F, Serdeczny O, Thonicke K (2017) Climate change impacts in Latin America and the Caribbean and their implications for development. *Reg Environ Change*. 17:1601–1621.
- Rigaud KK, de Sherbinin A, Jones B, Bergmann J, Clement V, Ober K, Scewe J, Adamo S, McCusker B, Heuser S, Midgley A (2018) *Groundswell: Preparing for internal climate migration*. Washington: World Bank.
- Ruchti LC (2017) Fear, fraud, and frank complexities: The influence of gender on human trafficking. In Burke MC (Ed), *Human trafficking: Interdisciplinary perspectives*. London: Routledge. doi:10.4324/9781315679990-4.

- Sauerborn R, Ebi K (2012) Climate change and natural disasters: Integrating science and practice to protect health. *Glob Health Action*. 5:1–7.
- Scheffran J, Brzoska M, Brauch HG, Link PM, Schilling J (Eds) (2012) *Climate change, human security and violent conflict: Challenges for societal stability, hexagon series on human and environmental security and peace*. Berlin, Heidelberg: Springer-Verlag. doi:10.1007/978-3-642-28626-1.
- Schmidhuber J, Tubiello FN (2007) Global food security under climate change. *Proc Natl Acad Sci U S A*. 104:19703–19708.
- Selby J, Dahi OS, Fröhlich C, Hulme M (2017) Climate change and the Syrian civil war revisited. *Polit Geogr*. 60:232–244.
- Sheffield PE, Landrigan PJ (2011) Global climate change and children's health: Threats and strategies for prevention. *Environ Health Perspect*. 119:291–298.
- Smith L, Vardaman SH, Snow M (2009) *The national report on domestic minor sex trafficking: America's prostituted children*. Vancouver: Shared Hope International.
- Sofuoğlu E, Ay A (2020) The relationship between climate change and political instability: The case of MENA countries (1985:01–2016:12). *Environ Sci Pollut Res*. 27:14033–14043.
- Stott R (2007) Climate change, poverty and war. *J R Soc Med*. 100:399–402.
- Syrian Arab Republic (2012) Joint Rapid Food Security Needs Assessment (JRFNSA) June 2012. Available at: <https://reliefweb.int/report/syrian-arab-republic/joint-rapid-food-security-needs-assessment-jrfnsa-june-2012>. Accessed June 29, 2020.
- Tesfaq N (2015) *Impact of livelihood recovery initiatives on reducing vulnerability to human trafficking and illegal recruitment: Lessons from Typhoon Haiyan*. Geneva: International Organization for Migration.
- The Center for Climate & Security (2012) Syria: Climate change, drought and social unrest. Available at: <https://climateandsecurity.org/2012/02/29/syria-climate-change-drought-and-social-unrest/>. Accessed June 29, 2020.
- Thomas V (2017) *Climate change and natural disasters: Transforming economies and policies for a sustainable future*. London: Routledge. doi:10.4324/9781315081045.
- Turek JM, Clott L (2017) International development issues and other push factors that contribute to human trafficking. In Burke MC (Ed), *Human trafficking: Interdisciplinary perspectives*. London: Routledge. doi:10.4324/9781315679990-10.
- United Nations (2000) Protocol to prevent, suppress and punish trafficking in persons especially women and children, supplementing the United Nations convention against transnational organized crime. Available at: <https://www.ohchr.org/en/professionalinterest/pages/protocoltraffickinginpersons.aspx>. Accessed April 13, 2020.
- United Nations Environment Programme (2011) *Women at the frontline of climate change: Gender risks and hopes*. Nairobi: United Nations Environment Programme.
- United Nations High Commissioner for Refugees (2011) *The 1951 convention and its 1967 protocol: Relating to the status of refugees*. Geneva: United Nations High Commissioner for Refugees.
- United Nations High Commissioner for Refugees (2019) *Global trends—Forced displacement in 2018*. Geneva: United Nations High Commissioner for Refugees.
- United Nations Office on Drugs and Crime: Human Trafficking (2020) *Global report on trafficking in persons*. United Nations: Office on Drugs and Crime. Available at: <https://www.unodc.org/unodc/en/data-and-analysis/glotip.html>. Accessed April 12, 2020.
- United States Department of State (2020) Trafficking in persons report. Available at: <https://www.state.gov/trafficking-in-persons-report-2020/>. Accessed June 28, 2020.
- US Department of Health & Human Services (2020) Fact sheets. *Administration for children and families*. Available at: <https://www.acf.hhs.gov/fact-sheets>. Accessed August 19, 2020.
- Viergever RE, West H, Borland R, Zimmerman C (2015) Health care providers and human trafficking: What do they know, what do they need to know? Findings from the Middle East, the Caribbean, and Central America. *Front*. 3:6.
- Watts N, Amann M, Arnell N, Ayeb-Karlsson S, Belesova K, Berry H, Bouley T, Boykoff M, Byass P, Cai W, Campbell-Lendrum D, Chambers J, Daly M, Dasandi N, Davies M, Depoux A, Dominguez-Salas P, Drummond P, Ebi KL, Ekins P, Montoya LF, Fischer H, Georgeson L, Grace D, Graham H, Hamilton I, Hartinger S, Hess J, Kelman I, Kieseewetter G, Kjellstrom T, Kniveton D, Lemke B, Liang L, Lott M, Lowe R, Sewe MO, Martinez-Urtaza J, Maslin M, McAllister L, Mikhaylov SJ, Milner J, Moradi-Lakeh M, Morrissey K, Murray K, Nilsson M, Neville T, Oreszczyn T, Owfi F, Pearman O, Pencheon D, Pye S, Rabbaniha M, Robinson E, Rocklöv J, Saxer O, Schütte S, Semenza JC, Shumake-Guillemot J, Steinbach R, Tabatabaei M, Tomei J, Trinanes J, Wheeler N, Wilkinson P, Gong P, Montgomery H, Costello A (2018) The 2018 report of the lancet countdown on health and climate change: Shaping the health of nations for centuries to come. *Lancet*. 392:2479–2514.
- Watts N, Amann M, Arnell N, Ayeb-Karlsson S, Belesova K, Boykoff M, Byass P, Cai W, Campbell-Lendrum D, Capstick S, Chambers J, Dalin C, Daly M, Dasandi N, Davies M, Drummond P, Dubrow R, Ebi KL, Eckelman M, Ekins P, Escobar LE, Fernandez Montoya L, Georgeson L, Graham H, Haggart P, Hamilton I, Hartinger S, Hess J, Kelman I, Kieseewetter G, Kjellstrom T, Kniveton D, Lemke B, Liu Y, Lott M, Lowe R, Sewe MO, Martinez-Urtaza J, Maslin M, McAllister L, McGushin A, Jankin Mikhaylov S, Milner J, Moradi-Lakeh M, Morrissey K, Murray K, Munzert S, Nilsson M, Neville T, Oreszczyn T, Owfi F, Pearman O, Pencheon D, Phung D, Pye S, Quinn R, Rabbaniha M, Robinson E, Rocklöv J, Semenza JC, Sherman J, Shumake-Guillemot J, Tabatabaei M, Taylor J, Trinanes J, Wilkinson P, Costello A, Gong P, Montgomery H (2019) The 2019 report of the Lancet countdown on health and climate change: Ensuring that the health of a child born today is not defined by a changing climate. *Lancet*. 394:1836–1878.
- Women's Environment & Development Organization (2007) Changing the climate: Why women's perspectives matter. Available at: <https://wedo.org/changing-the-climate-why-womens-perspectives-matter/>. Accessed June 29, 2020.
- Zhang K, Douglas BC, Leatherman SP (2004) Global warming and coastal erosion. *Clim Change*. 64:41–58.