Environmental Justice and Gender: Renaming the Problem, Reframing the Lens, Rethinking Solutions

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ABSTRACT

Women and children are particularly vulnerable to health risks associated with living in toxic environments. Women's position in society, their unpaid and undervalued labor, and low socio-economic status often expose them more than men to direct and harsh environmental problems. Despite their exposure to environmental problems, women tend to be under-represented in discussions and decision-making about the environment and the effects of climate change in their communities. In this paper, the author examines environmental issues from ecofeminism and environmental justice perspectives. Drawing from these perspectives, she provides examples of how interventions that are community-based, innovative, and geographically and culturally appropriate can be effective in addressing environmental problems.

Keywords: environmental health, ecofeminism, environmental justice, gender

We stand now where two roads diverge. But unlike the roads in Robert Frost's familiar poem, they are not equally fair. The road we have long been traveling is deceptively easy, a smooth superhighway on which we progress with great speed, but at its end lies disaster. The other fork of the road—the one 'less traveled by'—offers our last, our only chance to reach a destination that assures the preservation of our earth (Rachel Carson, 1962, p. 277)

RENAMING THE PROBLEM: ENVIRONMENTAL HEALTH

It has been almost 60 years since Rachel Carson, environmentalist and science journalist, penned these words about the "two roads." Yet the words still ring true today. Her research as an ecologist and in particular her book Silent Spring continue to raise awareness on how the distribution of pesticides and other toxic chemical pollutants into the environment (soil, water, air) affects plants, animals, and humans. Prior to Carson's book, scientists had been documenting the effects of pesticides and other toxic chemical pollutants on the environment. However, Carson was the first journalist to synthesize a large body of scientific research from academic journals and presentedthe research in a compelling way that was understandable to the public. The book ignited the scientific and non-scientific communities to the alarming consequences of widespread poisoning of the environment. Prior to her book, the science of ecology was largely unrecognized and not supported by other scientific disciplines. Most Americans did not even know what the word meant. But Carson's writing catapulted the discipline to become one of the most rapidly growing disciplines of conservation biology (Wilson, 2002).

The road to legitimacy and change was rocky and challenging, to say the least. Yet Carson tirelessly fought for a ban of the use of DDT, the elimination of widespread use of toxic pesticides in the U.S. and other parts of the world, and the promotion of safe alternatives to the use of toxins in the environment. Scientists and non-scientists attempted to discredit her. She had to fight the chemical industry that was intentionally spreading misinformation. She educated public officials about accepting industry claims uncritically. A pivotal event in her career was testifying before President Kennedy's Science Advisory Committee which resulted in the 1967 formation of the Environmental Defense Fund that legally defended citizens' rights to a clean environment.

Despite her achievements in science and journalism, being a woman put her at a disadvantage in the male-dominated worlds of science and politics, especially prevalent during the 1950s and 60s. She was described by her critics as a "hysterical woman" whose alarming view of the future could be ignored or silenced (Lear, 2002). According to biographer, Linda Lear, "In short, Carson was a woman out of control. She had overstepped the bounds of her gender and her science. But just in case her claims did gain an audience, the industry spent a quarter of a million dollars to discredit her research and malign her character" (Lear, 2002, p.xvii).

In addition to calling attention to the problem of the degradation of the environment, a significant impact of Carson's work was renaming the environmental problem as a human health problem. The major environmental issue was not simply protecting the environment but preventing the effects of toxins in the environment on human health. Redefining the problem to the effects of the degradation of the environment on humans had enormous consequences for our understanding of health as well as our attitudes toward environmental risk. In Silent Spring, she espoused that there are no boundaries between our bodies and the environment. "Chemical corruption of the globe affects us from conception to death. Like the rest of nature, we are vulnerable to pesticides; we too are permeable. All forms of life are more alike than different. Carson believed that human health would ultimately reflect the environment's ills" (Lear, 2002, p. xvi). Today environmentalists and activists emphasize that the goal of their work is preventing diseases such as asthma, strokes, heart disease, and cancer. Renaming or redefining the problem as a public health problem vs. an environmental protection problem (e.g., destruction of forests, wetlands, birds, fish, and endangered animals) makes the problem more relevant—and hopefully unacceptable—to humans. It also places responsibility on everyone to take care of the environment since we all depend on its condition for our health.

In her final years, Carson's mission to promote a healthy environment took on a personal fight when she battled an aggressive breast cancer, succumbing to it at the age of 56. However, her legacy lives on. During the decades after Rachel Carson's death there was an emergence of a field of environmental studies which produced hundreds of studies on the physical environment with particular focus on the quality of air, water, and soil. Carson's claims about the environment were validated and her predictions were becoming true. However, while scientists were opposed to what human beings were doing to the environment through industrial pollution, deforestation, overdevelopment, poor sanitation, and other types of degradation, the evidence was not convincing to the public that they needed to change their lifestyles. The EPA was established in 1970s but even the title of Environmental Protection Agency gave the impression that the organization was meant to protect the natural environment, namely, the forests, animals, birds, fish, and not human beings. Regardless of this public impression, much of the agency's early work enforced the Federal Insecticide, Fungicide, and Rodenticide Act and can be attributed to Carson's work.

In 1994, the Silent Spring Institute was established in Massachusetts, USA, to further Carson's work. Partnering with physicians, public health, and community advocates and other scientists, the Institute aims to identify and break the links between environmental chemicals and women's health. A major focus of the Institute's research is todiscover preventable causes of breast cancer, particularly in communities

of high risk. Cape Cod, Massachusetts, which is an area with an elevated rate of breast cancer—a significantly higher risk than the rest of Massachusetts—became the focus of one of the Institute's first research initiatives. Coincidentally, Carson lived on Cape Cod when she worked as a marine biologist at the Woods Hole Institute.

The Institute studied the women's exposure to chemicals, especially those chemicals in synthetic pesticides that were previously found to be carcinogenic. The analysis of drinking water exposure for 638 breast cancer cases and 842 controls between 1983 to 1993 revealed that exposure to drinking water contaminated by waste water runoff was likely associated with breast cancer (Brody, Tickner, & Rudel, 2005). In a subsequent study, they found the odds of breast cancer increased with longer latency and greater exposure duration with drinking water contaminated by waste water effluent (Gallagher, Webster, Aschengrau, & Vieira, 2010). Another study on self-reported chemicals exposure supported the association between the use of cleaning products and breast cancer (Zota, Aschengrau, Rudel, Brody, 2010).

Despite the progress in limiting toxic exposures made since Rachel Carson's time, in many places of the world, the health of millions of people continues to be significantly affected by toxic environments. Air pollution, in particular, has been a major cause of illness and disease. In 2018, the World Health Organization sponsored the first Global Conference on Air Pollution and Health in Geneva. On the eve of the Conference, they posted a news release with the following findings on their website (WHO, 2018):

- Daily around 93% of the world's population (including 1.8 billion children under 15 years old) breathes air at toxic levels that puts their health and development at serious risk;
- More than 40% of the world's population (including 1 billion children under 15) is exposed to high levels of household air pollution from mainly cooking with polluting technologies and fuels.
- At least 600,000 children died from acute lower respiratory infections caused by polluted air in 2016 (mostly from developed countries);
- Household air pollution and ambient air pollution together cause more than 50% of acute lower respiratory infections in children under 5 years old in low- and middle-income countries;
- Pregnant women who are exposed to polluted air are more likely to give birth prematurely, and have small, low birth-weight children.
- When exposed to high levels of air pollution, children may be at greater risk for chronic diseases such as cardiovascular disease later in life.
- Air pollution is the second leading cause of non-communicable diseases including cancer, stroke, and heart disease, which are increasing worldwide.
- Air pollution kills 7 million people annually—these are early deaths.

These statistics illustrate the global impact of toxic air on health worldwide. They also rename the problem from saving the "pristine natural environments and their non-human inhabitants" to cleaning up the toxic environments that are breeding grounds for multiple chronic diseases and deaths (Sze, 2017, p. 160). Furthermore, the research showing the connection between pollution (air, water, soil) in urban areas and health outcomes encourages public concern. As will be described in the next section, although everyone is affected, there are some geographic areas and subpopulations that carry more of the burden than others.

In sum, in order to have a positive impact in our physical environment, we need to rename the issue by calling it a health problem and focusing on the diseases, chronic illnesses, and mortality that result from unhealthy environments. By connecting the negative consequences of air pollution, chemicals in our food and personal products, and toxins in our water with our physical well-being and survival, environmental scientists, educators, and activists may have greater impact on citizens worldwide.

REFRAMING THE LENS: ECOFEMINISM
AND ENVIRONMENTAL INJUSTICE

ECOFEMINISM

To better understand how women are affected by environmental problems and their role in addressing the issues, we need to use theoretical frameworks that consider women's unique roles and status in society. Feminist scholarship can draw from numerous perspectives of feminism but this paper will describe two frameworks that may appropriately apply to environmental issues and gender. First, ecofeminism, also called Women-Environment-Development (WED), emphasizes the role of women as caretakers of the environment and places responsibility on women to fix the problem that men have created. Women-in-development projects have been particularly common in rural communities in low-middle income countries (LMIC) where the socio-economic status of a family depends on the women. Degradation of the environment can place a greater burden on communities in which there is a division of labor that assigns women to caregiver roles. For example, women in these traditional communities tend be responsible for cooking and collecting the wood for their wood-burning stoves and ovens. Deforestation can impact their ability to cook for the family. Hence, some women's groups have made it their mission to plant trees or advocate for protection of the forests. These projects not only help save the environment but also provide a livelihood for women. While women are empowered to care for their families in these environmental projects, some critics would view these women as victims. From their perspective, a consequence of this approach can be that "environmental caretaker" is added to women's already long list of caring roles (Resurrección,2010). Also, it keeps women in certain restricted and defined roles that maintain the status quo and prevent them from pursuing other opportunities. The jobs of collecting wood, cooking with fire, taking care of the water needs of the family can be barriers for young women to attend school and obtain an education that prepares them for a job or career that can improve their economic status.

There are numerous examples of how women living in LMICs have used small social enterprises to address environmental problems and benefit themselves on an individual level. Some of these have led to movements and change on a broader societal level. The Green Belt Movement (GBM) was one of the earliest examples of an environmental movement started for women. Founded by Professor Wangari Maathai in 1977, this Movement began with a local initiative to address the environmental problems of deforestation, soil erosion, and food insecurity (Maathai, 2004). Rural Kenyan women reported that their streams were drying up, their food supply was less secure, and they had to walk further and further to get firewood for fuel and fencing. Using a community-based approach, the GBM formed grassroots self-help groups of women to work together to grow seedlings and plant trees to bind the soil, store rainwater, and provide food and firewood. They received a small monetary token for their work. GBM provided seeds for the women, provided training in forestation, and purchased the seedlings from the women so that it would become income-generating. They also worked with school children by planting tree nurseries in schools to raise environmental consciousness among the youth. Since 1977, GBM communities have planted over 51 million trees in Kenya, in the watersheds of the highlands of Mt. Kenya, the Aberdares, and the Mau Complex—three of the five major mountain ecosystems in Kenya—as well as on private lands (https://www.greenbeltmovement.org/).

Similar programs to promote women's leadership in forest and environmental preservation have been developed in other countries. The Chipko project grew out of the problem of deforestation in the Himalayan valleys in northwest India. Cutting down too many trees caused ecological instability which led to disastrous floods and landslides. Mira Behn, a close follower of Gandhi, started the Chipko project with local women to address the problem. She learned that earlier forests had consisted largely of oak trees but these had been replaced by more profitable pines. It was the disappearance of the abundant forests

of oak that led to the ecological instability and economic problems of the Garhwali women who farmed in the area. The book Staying Alive: Women, Ecology, and Development (Shiva, 2016) chronicles how Mira began on a local level which ultimately led to a movement among women in hundreds of other villages. She worked with local cooperatives that supplied sawmills and resin factories with timber in educating them on the consequences of the deforestation. As one leader of the Chipko movement stated:

We must remember that the main role of the hill forests should be not to yield revenue, but to maintain a balance in the climatic conditions of the whole of northern India and the fertility of the Gangetic Plain. If we ignore their ecological importance in favour of their short-term economic utility, it will be prejudicial tothe climate of northern India and will dangerously enhance the cycle of recurring and alternating floods and droughts. (Behn quoted in Shiva, 2016, p. 71)

The local cooperatives that were run by men for commercial activity joined the Chipko project and promoted the local women's interests for sustainability activity based on forest protection. The message of the Chipko movement has spread throughout Garhwal and into other districts, primarily through leadership of local women connected to one another. The movement mobilized a ban on commercial exploitation throughout the hill districts of Uttar Pradesh, an area of hundreds of villages that faced the threat of landslides and severe erosion. "For hill women, food production begins with the forest. Disappearing forests and water are quite clearly an issue of survival for hill women" (Shiva, 2016, p. 72).

Ecofeminism sheds light on how the environmental degradation can be a greater burden, largely due to gender division of labor that disproportionately assigns women to caregiving roles. While ecofeminism and Women-Environment-Development frameworks provide solutions to address environmental issues, some feminists may argue that these frameworks are too conservative by maintaining the status quo of the gender division of labor and viewing women as caretakers of their environment rather that challenging the concept of gender and the role of men as well as women. An alternative framework, namely environmental justice, helps to further our understanding of the role of power relations in environment sustainability and incorporates the intersectionality of gender with other identities and roles.

ENVIRONMENTAL INJUSTICE

While the population of the world, as a whole, is affected by the environmental degradation and climate change in one way or another, certain subpopulations carry more of the burden of living in toxic environments. Environmental hazards and the accompanying risks for poor health are distributed unequally to subpopulations based on their gender, geographic residence, socio-economic status, age, race, and other social factors. The concept of environmental injustice is used when vulnerable communities are subject to a disproportionate burden of pollution and contamination.

The initial focus on environmental justice was a by-product of early movements focused on race, oppression, and political disenfranchisement in North America. Environmental injustice emerged as a concept in 1982 when an African-American community in Warren County, North Carolina experienced the dumping of contaminated soil in their neighborhood. Oil laced with polychlorinated biphenyl (PCB), a known carcinogen, was illegally dumped along the roadways in North Carolina. In addition to cancer, this toxin causes adverse health effects on the reproductive, immune, nervous, and endocrine systems (Cunningham, 2004). The state government of North Carolina ordered that the contaminated soil be dug up and removed to a landfill in a predominately African-American, poor neighborhood in Warren County (Bullard, 2005). At that time, African-Americans constituted 63.7% of the population of Warren County, and 24.4% of the population of North Carolina (Bullard, 2005). Benjamin Chavis, a trained chemist and social activist, called the action of dumping the contaminated soil in a predominantly African-American community "environmental racism." Environmental racism became a phrase to describe the disproportionate effects of environmental pollution on racial minorities.

It typically occurs when local or state governments build toxic dumps or allow polluting industries into communities that are predominately composed of racial minorities. Environmental injustice also occurs when there is unequal enforcement of environmental laws and the exclusion of people of color from environmental decision-making (Schlosberg and Carruthers, 2010).

Another pivotal event occurred at the 1991 First People of Color Environmental Leadership summit in the U.S. During this summit, representatives of people of color (African, Latino, Native, and Asian Americans) adopted the Principles of Environmental Justice which included 17 principles, identifying 25 different issues that went beyond class and racial discrimination (Schlosberg & Carruthers, 2010; Sze, 2017). These issues included protection from contamination and polluting industries, environmental policy based on mutual respect, demands for numerous rights, equal participation, self-determination, ethical and sustainable land use, a healthy community and work environment, and social and environmental education. Because the principles identified indigenous issues such as treaty responsibilities and relationships between culture and nature, they were widely accepted by indigenous environmental justice movements beyond North America into South America countries and New Zealand (Schlosberg & Carruthers, 2010). However, except for a reference to the "sacredness of Mother Earth," gender was excluded from the document (Sze, 2017).

Environmental racism, environmental justice, environmental inequality, and ecological justice are related terms with the common theme of disproportionate environmental impacts on certain groups based on a range of factors such as race, class/caste, gender, dis/ability, age, and immigration status, as well as the interconnections between these factors (Sze, 2017; Pellow, 2000). A key point is that women are not a monolithic group but gender intersects with these other factors and play a role in the approaches that we take in addressing environmental problems and developing solutions.

A PERFECT STORM OF ENVIRONMENTAL INJUSTICE:
THE FLINT WATER CRISIS

One of the most egregious modern-day cases of environmental injustice in recent years occurred in the city of Flint, Michigan (USA). Flint is a mid-size city in the state of Michigan that during the last three decades fell upon hardship due to the closing of automobile factories. When a major employer leaves a city, jobs go with it and all of the problems connected with unemployment, such as poverty, violence, depopulation, and disinvestment increase. Over the years, Flint had also struggled with racism, deteriorating schools, and a variety of health disparities, including a lower life expectancy (15 years below the life expectancy in a neighboring town), infant mortality, asthma, among others (Hanna-Attisha, 2018). Some of the poorest neighborhoods of Flint are located near an auto plant which produces a high level of industrial pollution.

In 2011, Flint was nearly bankrupt and the Michigan governor decided that it was time for Michigan to declare a state of "local government financial emergency." He appointed an emergency manager (EM) to replace the newly elected mayor, Dayne Walling, taking all the power away from the mayor (Hanna-Attisha, 2018). When a state takes over the management of cities, basically the people no longer have any elected representatives running their cities. Soon after the Governor appointed the manager, the manager came up with a budget-cutting idea to change the source of Flint's tap water. Prior to this decision, the Detroit Water and Sewerage Department pumped water from Lake Huron and sold it to Flint. Flint got safe, pretreated drinking water. However, a team of elected officials from Flint and the county decided to build a new parallel pipeline to Lake Huron in order to not be dependent on the Detroit utility. They thought that they could save even more money by using the Flint River as a water source until the pipeline to Lake Huron was finished. The Flint River had been a toxic industrial dumping site for decades and the water treatment from the Flint River was missing an important ingredient: corrosion

control (Hanna–Attisha, 2016).

After switching the water source from the fresh-water lake to the river, Flint residents began to complain that their tap water was brownish, smelled bad and tasted worse. The city then alerted citizens to boil the water because of bacteria and the city added chlorine to the water to kill the bacteria. "So much chlorine was added to kill the bacteria that the tap water began irritating people's skin and eyes. And it also led to a buildup of a disinfectant by-product called total trihalomethanes (TTHMs)—a carcinogen if inhaled" (Hanna–Attisha, 2018, p. 30). Ignoring violations of safe drinking water and levels of TTHMs, the city announced that the problem was cleared up.

Dr. Mona Hanna–Attisha, a passionate pediatrician who practices in a public medical center located in inner-city Flint had growing doubts about the safety of the water. Her clinic serves a poor and minority population who are on public assistance for their health care. In particular, there was concern about lead in the water due to switching the water source from Lake Huron to the Flint River. Because there were no corrosion inhibitors in the Flint River, the river water was a more corrosive source of water with a significant increase in lead leaching from the plumbing into the water (Pieper, Martin, Tan, et al., 2018). Dr. Hanna–Attisha started to investigate whether her young patients were experiencing lead poisoning and obtained data on the blood-lead levels of children at her own clinic and from other clinics and doctors in Flint. An analysis of the data showed a significantly higher amount of lead in children who were tested after the switch in water compared to their levels before the switch. Data collected from the clinic and an analysis of blood-lead levels revealed a significant increase from 1.5% to 8.5% in children under five years of age for the same duration of time pre-water switch to post-water switch (Hanna–Attisha, 2018). Lead at any level puts children at risk for disrupting brain development and is associated with ADHD, learning disabilities, and severely reduced intellectual capacity. Lead exposure has been known as a silent epidemic because there are no immediate signs of lead when it is ingested. But once it is in the body, it can adversely affect the central nervous system and still-developing brains. There can be long-term consequences as lead-poisoned kids reach their teens; they can have amore difficult time in school and are more likely to drop out (Hanna–Attisha, 2018).

Through further investigation, Dr. Hanna–Attisha exposed a scandal in which government officials were accused of covering up testing that showed high levels of lead, silencing scientists who were finding that the water was not safe, and paying no attention to residents' complaints about the water. This was a "perfect storm" for environmental injustice in which female-headed households (predominately African-American) were living in segregated poor communities with exposure to a toxic environment and had no representation among the people making the decisions.

The outcome of the long battle led by Dr. Hanna–Attisha included switching the water back to the lake water, testifying about the Flint water crisis to a joint committee of Congress in Washington, DC, and the appointment of a Flint water task force by the governor. Unfortunately, the task force had no women on it but the committee did write a 112-page report blaming the failure of government—the Department of Environmental Quality, governor, and emergency managers. "The report stated very clearly that the demographics of a community—in particular, race—had played a role in creating this environmental crisis." (Hanna–Attisha, 2018, p. 308). The intersection of race with gender likely played a major role in not only creating the environmental crisis but maintaining it. The community most affected by the water were female-headed households, there was no representation of women among the politicians who made the bad decision, and it took a woman to blow the whistle and uncover the scandal. (And it is likely that the responsibility is falling on the women to clean up the mess.)

RETHINKING SOLUTIONS:
STRATEGIES TO EMPOWER WOMEN

An overarching theme that has emerged from the cases and research that have been presented in this paper relates to the need for women to have a louder and more powerful voice in decision-making about the environment on all levels—local, national, and global. We began this journey about gender and the environment with one woman speaking out on a national level about the chemicals that were polluting the soil and water. We saw on a local level, how one woman became an advocate for safe drinking water for citizens in a city being managed by the state government. We also saw the results of a woman taking on the commercial exploitation of forests in northwest India and protecting sustainable forests and the ecological stability in hundreds of villages. The list can go on. But the common challenge that these women faced were the patriarchal domination of their country and citizens. When you have a majority group of authoritarian men who are elected or appointed to positions of power, the voices of women are likely be drowned out.

There is a growing body of literature that supports the idea that women are much more likely to express concerns about the environment and the health risks of the environment than men. One U.S. study examined multiple factors (income, education, religiosity, employment, parenthood, political ideology, party identification, etc.) on worry about health-related environmental problems and worry about global environmental problems. The analysis was based on data from the Gallup Organization's annual environment survey, conducted over six years (2001–2008), with samples of over 1000 adults. While there were no gender differences in worry about global environmental problems, women were more worried than men about local environmental problems that pose significant health and safety risks. Moreover, there was evidence that white males in the United States are the group that tends to express the least concern about climate change effects (McCright, 2010; McCright and Dunlap, 2008). When leadership—nationally or locally—has no diversity regarding gender, race, or socio-economic status, the leaders are likely to rule in their own best interests which often do not reflect those interests of other people living in a different situation—in many cases, a world apart from their own environment. Real sustainable change will not occur until we challenge patriarchal leadership and social injustices. Those in power will use and abuse the environment to their advantage; they may not even see the problems.

I propose that a political approach, such as Feminist Political Ecology (FPE), is needed to strategize for change. Simply stated, this perspective focuses on the inequitable forms of power and resource access that can be found in most countries and addresses discrimination that is built into the structure of society. From this perspective, in order to solve environmental problems such as climate change and disaster risk, systems or social structures need to be transformed so that the resources and power are not controlled by one particular group. As stated eloquently by Resurrección (2017), "Understanding how women and men, as embodied emotional beings, have complex and shifting relationships to the natural world that are embedded in place and shaped by intersections of gender, race, class, caste, culture, age (and so on) is central to the search for environmental and social justice. An FPE lens provides tools for envisioning transformative changes that are much needed in these troubling times" (pp. 71–72).

Women can play a critical role in addressing the degradation of the environment. By looking through the lenses of ecofeminism, environmental justice, and feminist political ecology, women can begin addressing the degradation of the environment by the following:

1) Promoting education about the environment across disciplines in our secondary schools and colleges. Education is a critical first step in social change. Environmental education should be mandatory in our educational institutions, beginning with elementary students. Universities can offer programs that teach professors from any discipline how to include content about the environment in their curriculum. In particular, professors from political science, business, public health, social work, psychology among

others should teach students how to be activists for environmental justice.

2) Building the capabilities of women, especially in LMICs, to start small social enterprises that not only provide them with a livelihood but contribute to the sustainability of their communities. Many women activists, EJ organizers, and indigenous leaders from around the world have proposed initiatives to reduce emissions and build community-based sustainability, including these suggested by Di Chiro (2017):

- Innovations in small-scale agriculture, collective organic farming, and agro-forestry;
- community-controlled renewable energy—solar and wind power;
- anti-gentrification urban greening initiatives;
- community-based flood management and water catchment systems;
- free public transportation (with alternatives to fossil fuels) and urban bike paths;
- affordable universal health care; and
- enforcement of indigenous land rights and cultural heritage related to fossil fuel extraction.

3) Promoting social change through grassroots movements. Rachel Carson's work had a powerful impact on the environmental movement. Silent Spring, in particular, was a rallying point for social movements in the 1960s. There are dozens (probably hundreds) of environmental movements such as the Green Belt Movement and the Chipko Movement that emerged from groups of women networking and together addressing environmental issues specific to vulnerable populations and regions. Movements can garner power to elect women to positions on local and national levels, empowering them to reorganize power and authority and make systemic changes that will support cleaner and healthier environments.

4) Working toward peace and conflict resolution between nations. Countries will need to work together, especially in addressing climate change. The problems that result from the degradation of the planet's environment—food insecurity, droughts, flooding, deforestation—are problems without national borders. Nations will be competing for scarce resources and countries that cannot work together on solutions may possibly resort to military action.

TRANSFORMING ENVIRONMENT:
IMPLICATIONS FOR THE ANTHROPOCENE

While the exact date of the beginning of the period of humankind called Anthropocene is somewhat debatable, it is well known that humans over the last century have been playing a major role in altering the planet—its landscapes, oceans, and climate. While this period in the history of humankind holds many potentials for the future, it is also a time when our responsibility to care for the environment is critical. While we have the capabilities to improve our environment for human sustenance and survival, if we do not use our power, resources, and capabilities to alleviate the degradation of the environment while meeting our survival needs, we are doomed as a civilization. Ecofeminism and environmental-justice approaches will help us in ensuring that the power over the environment will not be held by a small percentage of the planet's population who are only looking out for their own greedy self-interests. Feminists take a "power with" approach vs. a "power over" approach to the environment, thus ensuring that vulnerable groups (including humans and animals) are not exploited for the sake of those in powerful positions. Finally, a feminist approach will take into account the strengths, talents, and capabilities of women to lead in addressing the toxicities of the environment.

We have before us two paths as Rachel Carson told us: The road we have long been traveling is deceptively easy, a smooth superhighway on which we progress with great speed, but at its end lies disaster. The other fork of the road—the one 'less traveled by'—offers our last, our only chance to reach a destination that assures the preservation of our earth. (Carson, 1962, p. 277).

It is no longer the option to travel the first road—the deceptively easy, smooth superhighway. To

take the less traveled road requires us to rename the problem as environmental health, to reframe the lens to a feminist and environmental justice perspective, and to rethink the solution to be the empowerment of women. If we are able to achieve these aims on our journey, we may have a chance to reach our destination.

REFERENCES

Behn, S. (1980). A blue print for survival of the hills, supplement to *Himalaya: Man and nature.* Himalaya Seva Sangh.

Brody, J.G., Tickner, J., & Rudel, R. (2005). Community-initiated breast cancer and environment studies and the precautionary principle. *Environmental Health Perspectives*, 113(8), pp. 920–925.

Bullard, R. (1994). *Unequal protection: Environmental justice and communities of color.* Sierra Club Books.

Carson, R. (1962). *Silent Spring.* Mariner Books (Houghton Mifflin Harcourt).

Cunningham, A. (2004). Understanding the health effects of PCB. Retrieved Dec. 30, 2018; https://www.epa.gov/sites/production/files/documents/213061.pdf

Di Chiro, G. (2017). Welcome to the white (m)Anthropocene? A feminist-environmentalist critique. In S. MacGregor (Ed.), *Routledge handbook of gender and environment.* (pp. 487–505). Routledge.

Gallagher, L.G., Webster, T.F., Aschengrau, A., & Vieira, V.M. (2010). Using residential history and groundwater modeling to examine drinking water exposure and breast cancer. *Environmental Health Perspectives*, 118 (6), pp. 749–755.

Hanna-Attisha, M. (2018). *What the eyes don't see: A story of crisis, resistance, and hope in an American city.* One World.

Hanna-Attisha, M. (2016). *Flint's fight for America's children.* TedMed talk retrieved December 20, 2018, https://www.tedmed.com/talks/show?id=627338

Lear, L. (2002). Introduction. In R. Carson, *Silent Spring* (pp. x–xix). Mariner Books (Houghton Mifflin Harcourt).

Maathai, W. (2004). *The Green Belt Movement: Sharing the approach & the experience.* Lantern Books.

McCright, A.M. (2010). The effects of gender on climate change knowledge and concern in the American public. *Population and Environment,* 32, pp. 66–87.

McCright, A.M. & Dunlap R. E. (2008). Belief systems and social movement identity: An examination of the consistency of beliefs about environmental problems within the American public. *Public Opinion Quarterly,* 72(4), pp. 651–676.

Pieper, K.J., Martin, R., Tang, M., Walters, L., Parks, Roy, S., Devine, C., & Edwards, M.A. (2018). Evaluating water lead levels during the Flint water crisis. *Environmental Science & Technology*, 52 (15), pp. 8124–8132.

Pellow, D. (2000). Environmental inequality formation: Toward a theory of environmental injustice. *American Behavioral Scientist*, 43(4), pp. 581–601.

Resurrección, B.P. (2017). Gender and environment in the Global South: from 'women, environment, and development' to feminist political ecology. In S. MacGregor (Ed.), *Routledge handbook of gender and environment* (pp. 71–85). Routledge.

Schlosberg, D. & Carruthers, D. (2010). Indigenous struggles, environmental justice, and community capabilities. *Global Environmental Politics,* 10(4), pp. 12–35.

Shiva, V. (2016). *Staying alive: Women, ecology, and development.* North Atlantic Books.

Sze, J. (2017). Gender and environmental justice. In S. MacGregor (Ed.), *Routledge handbook of gender and environment* (pp. 159–168). Routledge.

WHO (World Health Organization). First WHO Global Conference on Air Pollution and Health, Oct. 30–Nov. 1, 2018. https://www.who.int/airpollution/events/conference/en/

Wilson, E.O. (2002). Afterword. In R. Carson, *Silent Spring (*pp. 356–363). Mariner Books (Houghton Mifflin Harcourt).

Zota, A.R., Aschengrau, A., Rudel, R.A., & Brody, J.G. (2010). *BioMed Central*, 9:40, http://www.ehjournal.net/content/9/1/40

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