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**Abstract**

Environmental benefits and risks are not distributed equally. All around the world, marginalized social groups are disproportionately exposed to environmental hazards that significantly degrade their health, limit their socioeconomic opportunities, and reinforce their marginal social positions. While many solutions have been proposed to rectify these dynamics, none have been as influential as Environmental Justice. Environmental Justice, or EJ, is both a body of research and a social movement that seeks to identify environmental discrimination, draw attention to it, and work through a number of political and community channels to restore equitability when necessary. In this sense, EJ plays a vital role in improving the environmental experiences for the world's most vulnerable social groups. This chapter will discuss theoretical and conceptual foundations of EJ and related concepts, discoveries resulting from EJ-oriented studies in the US and other world regions, new fields relying on EJ methodologies, and both the global and local implications of working toward EJ. While no chapter can fully summarize the entire body of EJ research, this chapter provides a comprehensive overview that emphasizes the vital role that EJ plays in restoring justice and equity for those who need it most.

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# 1 Chapter 9 2 Environmental Justice in the US 3 and Beyond: Frameworks, Evidence, 4 and Social Action



5 Shawna Nadybal, Sara Grineski, Timothy Collins, Alyssa Castor,  
6 Aaron Flores, Angel Griego, Casey Mullen and Ricardo Rubio

## 7 9.1 Introduction

8 Our definition of the environment has greatly expanded through time. No longer  
9 simply understood as abstract ecosystems or impersonal terrains, the environment  
10 has come to represent the quality of the areas in which we live, grow, and define  
11 ourselves as human beings. In this sense, the environment is better exemplified by  
12 terms such as “home,” or “community;” displaying the intimate relationship  
13 between the environment and every resident of this planet. But what happens when  
14 the environment, this home that we all collectively share, is experienced inequitably  
15 by marginalized social groups? As countless studies have showed, environmental  
16 risks and benefits are not distributed equally; some of the world’s most vulnerable  
17 social groups experience disproportionate exposure to environmental hazards while  
18 simultaneously lacking the political and economic tools necessary to restructure

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Alyssa Castor, Aaron Flores, Angel Griego, Casey Mullen, Ricardo Rubio—are equally contributed.

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19 their experiences. This means that, despite the fact we each relate to the environment  
20 in very personal ways, the nature of that relation is dependent on the privileges  
21 and oppressions we experience as members of our respective societies. Quite  
22 simply, some disproportionately enjoy the benefits of the environment, while others  
23 are unequally exposed to risks.

24 Existing as both a body of research and a political movement, environmental  
25 justice (EJ) has sought to amplify the voices and experiences of  
26 environmentally-oppressed social groups and incite meaningful change for them;  
27 change that will improve their circumstances and allow them to reach their highest  
28 potential as human beings (Bryant 1995). It is clear that the field of EJ does not  
29 simply exist to expand scientific knowledge, but to fundamentally rectify the  
30 injustices present in contemporary societies. As such, EJ is a work of great magnitude  
31 and importance to our world today. The purpose of this chapter is to provide  
32 an integrated discussion of theoretical and conceptual issues of EJ, its substantive  
33 concerns, global perspectives on EJ, Green Crime as a new derivative of EJ, and  
34 social action to promote EJ.

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## 35 **9.2 Theoretical and Conceptual Issues**

### 36 **9.2.1 Definitions of Environmental Justice**

37 While multiple definitions of EJ exist, Bryant (1995, p. 6) defines it as “cultural  
38 norms and values, rules, regulations, behaviors, policies, and decisions to support  
39 sustainable communities where people can interact with confidence that the environment  
40 is safe, nurturing, and productive. EJ is served when people can realize  
41 their highest potential.” This definition encompasses the core of EJ: all communities,  
42 regardless of their demographics, should receive equal treatment and be able  
43 to participate in environmental-decision making practices. He (1995, p. 6) continues,  
44 “EJ is supported by decent paying safe jobs; quality schools and recreation;  
45 decent housing and adequate health care; democratic decision-making and personal  
46 empowerment; and communities free of violence, drugs and poverty.”

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47 While the definition provided by Bryant (1995) is helpful, what EJ means to a  
48 particular community is dependent upon its cultural history, associated movements,  
49 and specific desires for justice (Schlosberg 2009). Cultural aspects matter because  
50 there is variation in the characteristics of the people that are impacted, as well as  
51 *how* they have been impacted. Movements are also important to examine, as they  
52 show how a community has chosen to deal with environmental issues; specifically,  
53 whether they seek federal assistance, work apart from the government through  
54 community-based organizing, or engage in a combination of both (Schlosberg  
55 2009). It is also important to evaluate the degree of resistance exhibited by affected  
56 communities and to understand the solutions that the community prefers for the EJ  
57 issue at hand. In sum, it is crucial that environmental decision-makers (and EJ  
58 scholars) who seek to understand and assist in ameliorating community EJ issues  
59 consider the characteristics, values, and preferred actions of the community.

### 60 **9.2.2 Types of Justice**

61 When thinking about EJ, there are three important types of justice that are relevant  
62 to communities seeking environmental equity. The first is distributive justice, which  
63 is centered on the belief that social benefits and burdens should be distributed  
64 equally among varying communities (Bell and Carrick 2018). Distributive injustice,  
65 as such, occurs when these benefits and burdens are apportioned unequally along  
66 lines of social positioning. In relation to the environment specifically, distributive  
67 injustice could be exemplified by a community of color being disproportionately  
68 exposed to pollution from local hazardous waste incinerators. The second is form of  
69 justice is procedural justice; this is achieved when state/institutional  
70 decision-making processes are performed equitably with respect to the interests  
71 and values of diverse stakeholders. When processes are inequitably implemented,  
72 stakeholder groups differ in their level of participation according to their social  
73 positioning. An exemplar of the resulting procedural injustices could be the  
74 exclusion of non-English speaking communities in environmental decision-making  
75 processes conducted only in English. Intergenerational justice, another form of  
76 justice, reflects both distributive and procedural justice. Specifically, intergenera-  
77 tional justice is action enacted across generations to prevent contemporary injus-  
78 tices from replicating themselves in the future (Schlosberg 2009). In the context of  
79 EJ, this could be exemplified by a community receiving effective, long-term  
80 solutions to regional water pollution, thereby preventing future residents from  
81 experiencing those particular environmental burdens.

AQ3



## 82 9.3 Environmental Racism

83 Environmental racism is a specific case of environmental injustice (Pellow 2000).  
84 “Environmental racism refers to any environmental policy, practice, or directive  
85 that differentially affects or disadvantages (whether intended or unintended) indi-  
86 viduals, groups, or communities based on race, [ethnicity,] or color” (Bullard and  
87 Johnson 2000, p. 559). Environmental racism occurs in the US due to the entren-  
88 ched power structure, whereby whites have historically controlled social institu-  
89 tions, enabling ideologies of white privilege and white supremacy to  
90 environmentally marginalize particular groups based on racial constructions. White  
91 privilege relates to how the whites continue to dominate many segments of social  
92 life; it is this power that enables them to monopolize opportunities (Pulido 2015).  
93 This oppressive reality has been “justified” through white supremacy, or the belief  
94 that whites are superior and therefore entitled to complete ownership of all  
95 resources (Pulido 2015). The monopolization of the opportunity structure by  
96 whites, often in the forms of educational and economic empowerment, results in  
97 substantial race-based inequalities (Pulido 2015). As a result, environmental racism  
98 becomes the visible outcomes of these dynamics.

## 99 9.4 Development of Environmental Injustices

100 Environmental racism and injustices emerge through complex processes that Pellow  
101 (2000) relates to linkages between socio-historical process and multi-stakeholder  
102 negotiations. Socio-historical processes have shaped environmental injustices  
103 (Pellow 2000). In US history, race has served as the most influential factor in  
104 environmental injustices. In regard to how and why race operates, historical rela-  
105 tions have profoundly influenced how marginalized groups have settled and lived.  
106 For example, the experience of slavery for African-Americans ultimately lead to  
107 segregation, which affected not only their housing situations, but also their levels of  
108 education, economic resources, and social power. While this is only one example, it  
109 nonetheless suggests how certain racial groups (particularly whites) have histori-  
110 cally benefited from the structural oppression of other demographics (Pellow 2000).

111 Fights for EJ involve multiple stakeholders with shifting interests and alle-  
112 giances that do not conform to the traditional one victim-one perpetrator scenario.  
113 When thinking of EJ issues, it is easy to assume that targeted communities are  
114 monolithic and simply overpowered, but this is rarely the case. Opening a toxic  
115 waste facility, for example, typically requires negotiation with stakeholders and  
116 members of the affected community (Pellow 2000). Desires within the community  
117 may be complex and multifaceted and it is often not possible to effectuate  
118 broad-based resistance due to the distribution of power both within and beyond the  
119 community. Stakeholder interests may also change over time, further complicating  
120 decision-making (Pellow 2000).



121 **9.5 Substantive Concerns**

122 Those conceptual underpinnings have been substantiated and further developed  
123 through more than 35 years of empirical research on distributive EJ. This section  
124 provides an overview of the substantive contributions to knowledge made by dis-  
125 tributive EJ research in the US and other world regions, as well as new knowledge  
126 of EJ flowing from the emerging field of green criminology.

127 **9.5.1 US Perspectives**

128 **9.5.1.1 Race and Ethnicity**

129 The United Church of Christ (UCC 1987) sponsored the first study to identify race  
130 as the strongest predictor of location for hazardous and toxic waste facilities in the  
131 United States. It established an important relationship between race and toxic  
132 pollution—one indicating unequal environmental burdens for communities of color  
133 —that has been subsequently found across a multitude of other studies. Soon  
134 thereafter, for example, Bullard's (1994) classic work highlighted how racial/ethnic  
135 minority communities were disproportionately affected by locally unwanted land  
136 uses (LULUs), including energy production facilities, toxic waste facilities, and  
137 landfills. In the ensuing decades, other researchers have documented that air pol-  
138 lution, soil pollution, lead poisoning, water contamination, and the location of  
139 landfills, toxic and solid waste facilities, and incinerators disproportionately burden  
140 African American populations (Ash and Boyce 2018; Brulle and Pellow 2005a, b;  
141 Bullard 1993; Bullard and Johnson 2000; Mohai et al. 2009).

142 African Americans were the initial focus in EJ literature, but the scope has since  
143 expanded to document similar discriminatory patterns for Hispanics and Asian  
144 Americans (Grineski et al. 2013, 2017). For example, in US census tracts, an  
145 increase in the proportion of Hispanic and Asian American residents relative to the  
146 proportion of white residents is associated with a significantly higher lifetime  
147 cancer risk from hazardous air pollutants (Grineski et al. 2017). Native Americans  
148 have been also been of focus in studies documenting their disproportionate expo-  
149 sure to contamination of food and water supplies (Gochfeld and Burger 2011;  
150 Harris and Harper 1997, 2011).

151 **9.5.1.2 Socioeconomic Status (SES)**

152 Though race is most important in the US context, socioeconomic status (SES; often  
153 measured by income, educational attainment, occupational status, and housing  
154 tenure) is also a strong correlate for the distribution of environmental hazards. For  
155 example, a statewide study in North Carolina found that increases in household



income were associated with lower concentrations of particulate matter less than 2.5  $\mu\text{m}$  in diameter (PM<sub>2.5</sub>), a type of air pollutant which poses well-known risks to human health, at the census tract-scale (Gray et al. 2013). Higher concentrations of PM<sub>2.5</sub> were also associated with increases in the percent of the population in poverty and percent with less than a high school education (Gray et al. 2013). Noise from road traffic, air traffic, and industry also have documented associations with SES, as researchers have found that census block groups in the contiguous U.S. with higher proportions of renters, impoverished people, unemployed residents, and residents with less than a high school education are disproportionately exposed to noise pollution (Casey et al. 2017). In a national study, researchers found that renter status, lower income and lower education were associated with greater exposure to pollution from Toxics Release Inventory (TRI) facilities (Pais et al. 2014), which include of large industrial point sources of pollution. Apart from residential exposure, people of low SES are also more likely to work jobs that may increase their exposure to hazardous chemicals (Evans and Kantrowitz 2002). In Phoenix, Arizona, where extreme heat is a locally relevant hazard, low-income neighborhoods contain less green vegetation, increasing their exposure to extreme surface temperatures and heat stress (Harlan et al. 2006; Jenerette et al. 2007).

#### 9.5.1.3 Gender and Sexual Orientation

While studied less often than race and SES, gender and sexual orientation are also predictive of disproportionate hazard exposure and therefore important to include in the conversation. In terms of gender, single-mother households are overrepresented in US census tracts that are located near industrial facilities; and controlling for other variables including race and SES, tracts with higher percentages of single mother households (relative to other types of family groups) were also exposed to greater concentrations of toxic chemicals (Downey and Hawkins 2008). Census block groups in El Paso county (Texas) with high proportions of female-headed households (with or without children) were found to be more exposed to hazardous air pollutants as compared to census block groups with low proportions of female-headed households (Collins et al. 2011).

Building off this earlier focus on gender, recent EJ research has examined associations between sexual orientation and the degree of hazard exposure. The first study to examine this found that census tracts in the Houston Metropolitan Statistical Area (MSA) with clusters of same-sex partner households were predictive of exposure and cancer risks from hazardous air pollutants (Collins et al. 2017a). A national follow-up study found that same-sex partner enclaves in the US experience disproportionately high exposure to hazardous air pollutants, and that the associations were stronger than they were for the proportion black and Hispanic resident variables. The same-sex partner finding is largely driven by the presence of gay male partners, as they were associated with greater residential air pollutant risks than was lesbian partnering (Collins et al. 2017b). This pattern has resulted from the social stigmatization of sexual minorities and their spatial exclusion with other



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198 marginalized people and LULUs in inner-city spaces across many US cities  
199 (Collins et al. 2017b); this process has been more acute for men as lesbian women  
200 have a more dispersed pattern of residence (Spring 2013).

### 201 9.5.1.4 Immigrant Status

202 Though less often examined in EJ literature, immigrant status is an important  
203 variable to consider. The foreign-born population is rapidly growing in the US and  
204 is projected to reach 42 million by 2025 (Cunningham et al. 2008), this indicates a  
205 need to better understand how immigrant populations are affected by environmental  
206 hazards. Immigrants tend to reside in urban areas where employment opportunities  
207 are abundant, where housing is cheaper, and where public transportation is suffi-  
208 cient (Massey 1985). US counties with large proportions of hazardous waste  
209 facilities and Superfund sites are more likely to have high percentages of immigrant  
210 populations (Hunter 2006). Superfund sites are designated by the US EPA as  
211 needing long-term cleanup of hazardous waste. In El Paso county (Texas), census  
212 block groups with the highest proportions of residents who were not born in the US  
213 and who were not citizens of the US were found to be disproportionately exposed to  
214 carcinogenic air pollution relative to block groups with the lowest proportions of  
215 those two variables (Collins et al. 2011). A qualitative interview-based study with  
216 local Hispanic householders in Greater Houston, Texas offers potential explanations  
217 for why immigrant households have greater exposure than other households. While  
218 both immigrant and non-immigrant Hispanic households in the study were con-  
219 strained economically from accessing less polluted environments, immigrant  
220 households were attracted to the sociocultural benefits of living in co-ethnic  
221 enclaves, e.g., proximity to work opportunities and family members feeling more  
222 comfortable and secure in their communities, which led them to environmentally  
223 riskier neighborhoods (Hernandez et al. 2015).

### 224 9.5.1.5 Intracategorical Studies

225 Without dismissing the studies noted above, analyses focused on racial/ethnic  
226 differences in hazard exposure have typically used monolithic race and ethnicity  
227 variables when assessing environmental inequalities (such as percentage of census  
228 tract residents who are Black or Hispanic) (Ard 2015; Chakraborty 2009; Downey  
229 and Hawkins 2008). This approach to categorizing race/ethnicity fails to account for  
230 complex differences within racial/ethnic groups. A consideration of within-group  
231 differences can be achieved through an intracategorical approach, first introduced  
232 by McCall (2005) in her influential work on “intersectionality.” This method  
233 “[focuses] on particular social groups at neglected points of intersection...in order  
234 to reveal the complexity of lived experience within such groups” (McCall 2005,  
235 p. 1773).



236 Intracategorical approaches for examining differences within racial/ethnic groups  
237 were first introduced to EJ research by Collins et al. (2011). Specifically, they  
238 applied an intracategorical lens to study unequal risk to hazardous air pollutants in  
239 El Paso, Texas, which identified several risk factors within the Hispanic population  
240 (e.g., lack of English proficiency, foreign-birth, age over 65, and low social class).  
241 This initial effort led to subsequent intracategorical studies (e.g., Grineski et al.  
242 2013, 2015; Chakraborty et al. 2017), which applied the approach to Latino/a  
243 populations in several US cities.

244 For example, several studies were conducted in Miami due to its large and  
245 diverse Hispanic population. An individual-level study found that people of Cuban  
246 descent were more likely to reside in Miami neighborhoods disproportionately  
247 exposed to traffic pollution than non-Hispanic Whites and members of other  
248 Hispanic ancestral groups (i.e., Colombian, Mexican and Puerto Rican)  
249 (Chakraborty et al. 2017). The same study also found increased risks for unem-  
250 ployed versus employed Hispanics and foreign-born versus US-born Hispanics.  
251 A census tract level study also found that Miami neighborhoods with higher per-  
252 centages of people of Cuban and Colombian ancestry (relative to non-Hispanic  
253 Whites) had higher levels of traffic pollution, but those with high percentages of  
254 people of Mexican descent had lower levels (Grineski et al. 2013).

255 While the majority of intracategorical EJ studies have focused on Hispanic  
256 populations, other recent research efforts have expanded this approach to other  
257 social groups. Within Asian populations, for example, a national study found  
258 intra-ethnic differences in relation to cancer risk from hazardous air pollutants.  
259 Specifically, neighborhoods with higher percentages of Chinese, Korean, and South  
260 Asians (relative to the percentage of whites) had significantly higher risk. Tracts  
261 with higher concentrations of Asians speaking a non-English language (vs. those  
262 speaking English) and Asians that are US-born (vs. those that are foreign-born) also  
263 had significantly greater risks from hazardous air pollutants (Grineski et al. 2017).  
264 On a smaller spatial scale, women of Japanese and Korean ancestry in California  
265 had significantly higher exposure to carcinogens linked to breast cancer than white  
266 women; this was otherwise masked by considering Asians alone (Quach et al.  
267 2014). Similar results have also been found for Black Americans living in  
268 economically-deprived census tracts (Liévanos 2015). These studies reinforce the  
269 importance and value of intracategorical perspectives in US EJ studies.

### 270 9.5.2 *Global Perspective*

271 In analyzing the influence of these variables on hazard exposure and risk, it is clear  
272 that environmental injustices are well documented in the US. This makes sense, as  
273 both the EJ movement and research field originated in the United States. However,  
274 research has revealed that other world regions exhibit patterns of environmental  
275 injustice. Research efforts such as the EJ Atlas, which documents global social  
276 conflicts as they exist in relation to the environment, help contextualize the



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widespread dynamics of environmental injustice (Temper et al. 2015). In addition, the work of other leading EJ researchers can draw attention to the globalized political economic processes that are often responsible for these situations and their tendency to marginalize the world's most vulnerable populations (Bullard and Lewis 1996; Cutter 1995; Pellow 2007).

In the following section, we discuss specific world regions on an individual basis to clarify their specific dynamics of environmental injustice. We focus on environmental injustices in Europe, Latin America, and Asia. While the still-generating nature of EJ research limits our ability to adequately cover other major world regions such as Africa, the Middle East, and Oceania, we include brief descriptions of well-documented cases. Our review is primarily limited to the English language literature.

### 9.5.2.1 Europe

Like other developed world regions, efforts towards economic prosperity have coincided with the creation of disproportionate hazard exposure in Europe (Laurent 2011). This is particularly true along lines of SES, which has been examined more often than race in European EJ studies. For example, a study of the European Union in its entirety showed a correlation between lower levels of income and employment (both of which are major indicators for economic marginalization) and higher levels of refinery emissions (Gouldson 2006). A study in Germany, for example, found such a pattern, as toxic release facilities in the city of Hamburg were disproportionately located within impoverished neighborhoods (Raddatz and Mennis 2013).

Apart from SES, immigrant status has also been associated with exposures in Europe. For example, the Hamburg study also found that the facilities were disproportionately situated in communities with higher immigrant concentrations. Similarly, French towns with higher proportions of foreign-born residents were more likely to house hazardous waste facilities than those with larger French-born populations (Laurian 2008). Such patterns were also replicated in Italy, where agricultural migrant workers face serious health risks from toxic pesticides and harsh working conditions (Perrotta 2016). In this sense, there are clear disparities along the lines of immigrant status in Europe.

While studied less often, there are racial/ethnic patterns of inequality in Europe too. Roma communities are perhaps one of the most important examples of this, as their experiences as an ethnic minority in multiple European countries can shed light on the EJ dynamics of the region at large. Several studies have found that landfills or illegal waste dumps are often concentrated in Roma communities, alongside limited access to clean water, and communal green spaces, and other important environmental resources (Harper et al. 2009; Steger and Filčák 2008). While these patterns of ethnic and racial discrimination do not always present themselves in other European contexts (see Jones et al. 2009), their widespread



318 presence in Roma communities nonetheless indicates the influence of race/ethnicity  
319 in regional environmental injustices.

320 **9.5.2.2 Latin American: The Global South**

321 While still developing, EJ research efforts in Latin America are generally oriented  
322 toward the repercussions of economic development. These studies have mainly  
323 focused on the urbanization patterns present in the continent and Caribbean, as an  
324 estimated 80% of residents now live in urban settings (United Nations 2014). Due  
325 to the rapid nature of this demographic shift, it has been difficult for respective  
326 governments to prevent the construction of informal shanty towns along urban  
327 peripheries (Jiménez 2015). These settlements, generally comprised of  
328 socioeconomically-marginalized citizens, tend to be disproportionately affected by  
329 natural hazards, industrial pollutants, and lack access to both clean water and  
330 effective waste management (Vasquez et al. 2018). In this sense, they experience  
331 significant environmental injustices as a result of economic endeavors present in the  
332 region.

333 Similar dynamics have also presented themselves along the US-Mexico border.  
334 As the maquiladora (export processing) economic sector has grown, hazardous  
335 methods of production have generally been exported to American-owned factories  
336 in Mexico (Grineski and Juárez-Carrillo 2012). This has led to disproportionate  
337 degrees of pollution and environmental degradation in Mexican territories, though  
338 specifically in impoverished areas without stable infrastructure, waste management,  
339 and piped water (Grineski and Collins 2010). Because the maquiladora sector offers  
340 employment opportunities that are inaccessible in other locations, migrants from  
341 more marginal parts of Mexico continue to come to the border region and expe-  
342 rience the health repercussions of these environmental injustices (Grineski et al.  
343 2012).

344 Research in Chile has demonstrated major environmental injustices, specifically  
345 in relation to its neoliberal political structure, intense urbanization, and geographic  
346 susceptibility to natural hazards. For example, the country is home to several  
347 moderately-sized cities labeled “sacrifice zones” due to their high levels of indus-  
348 trial pollutants (Vasquez et al. 2018). These areas suffer from high rates of poverty,  
349 limited access to clean water, and insufficient public services (Fundacion Terram  
350 2014). Though some efforts are being made to correct these issues by local gov-  
351 ernments, distributional and procedural environmental injustices persist in Latin  
352 America.

353 **9.5.2.3 Asia**

354 Though Asia is also a relatively new region for EJ research, several influential  
355 studies in China have uncovered disproportionate exposure to environmental haz-  
356 ards. This is best summarized by the cancer village phenomenon present in



357 mainland regions, where the number of cancer patients in certain territories is  
358 abnormally high (Liu 2010). This disparity is thought to be the result of water  
359 pollution resulting from economic development and is generally more concentrated  
360 in impoverished villages (Liu 2010). Similarly, economically-marginalized resi-  
361 dents of Hong Kong have been exposed to higher concentrations of vehicular air  
362 pollution than their wealthier counterparts (Fan et al. 2012). These findings suggest  
363 that socioeconomic status is an influential variable for environmental inequalities in  
364 China.

365 Residents of South and Southeast Asia also experience patterns of environmental  
366 discrimination and the documented cases are mainly associated with resource  
367 extraction and utilization. These patterns of injustice are mainly due to the levels of  
368 economic marginalization present in these regions, as poverty creates both a  
369 dependency on natural resources and a vulnerability to their economic exploitation.  
370 In Bangladesh, for example, some subsistence-based Indigenous groups have  
371 experienced decreased access to vital resources as a result of the non-Indigenous  
372 population's economic ventures, social privileges, and nonobservance of  
373 subsistence-based lifestyles (Cha 2006). Similarly, the growth of Thailand's  
374 economy and subsequent electricity demands have led to the exportation of power  
375 projects to marginalized communities in both Laos and Myanmar (Middleton  
376 2012). While economic disenfranchisement is partially to blame for these dispari-  
377 ties, both Laos and Myanmar exhibit serious restrictions to community organization  
378 and media freedom that can be important tools of resistance (a reality that has been  
379 proven by Thai communities' own success with environmental protest and  
380 forced-relocation of energy projects) (Middleton 2012). What this means, then, is  
381 that vulnerable Lao and Myanmarese people are bearing the social and environ-  
382 mental costs that come with such endeavors without receiving many benefits. The  
383 costs include pollution, increased likelihood of hazard, and decreased access to the  
384 natural resources upon which rural communities are dependent.

385 In discussing EJ research in South Asia, it is important to focus on India  
386 specifically due to its identification as one of the major emerging economies of the  
387 world. As other examples have indicated, economic development is often associ-  
388 ated with the presence of environmental injustices for vulnerable communities.  
389 Chakraborty and Basu (2019) found evidence of this in relation to the placement of  
390 industrial facilities known as major accident hazard (MAH) units. It was found that  
391 socially-disadvantaged communities such as those with high concentrations of  
392 people from Scheduled Castes and Scheduled Tribes house higher densities of  
393 non-publicly funded MAHs. Additionally, variables representing economic  
394 marginalization (e.g. higher urbanization and lower home ownership) were also  
395 predictive of MAH density (Chakraborty and Basu 2019). This pattern of envi-  
396 ronmental injustice was similar to that found in a national level study, which found  
397 that districts in India with higher proportions of socioeconomically-marginalized  
398 people were more likely to be large generators of hazardous waste (Basu and  
399 Chakraborty 2016).

400 **9.5.2.4 Africa, the Middle East and Oceania**

401 Though the EJ literature is not as well developed, it is important to briefly discuss  
402 environmental injustices as they exist in Africa, the Middle East, and Oceania; this  
403 will allow for a more comprehensive analysis of EJ issues from a global perspec-  
404 tive. Beginning first with Africa, most EJ research has been oriented in South Africa  
405 due to the repercussions of its apartheid system (Leonard 2018). The institution of  
406 apartheid, along with its promotion of systemic racism, led to a situation in which  
407 regional mining companies often acted without regulation; in this sense, corpora-  
408 tions often influenced the construction and application of governmental policies.  
409 When apartheid was disbanded, the political influence of mining companies still  
410 remained; this has led to a decrease in decision-making opportunities for socially  
411 marginalized communities and, subsequently, the disproportionate placement of  
412 pollutant mines in their communities (Leonard 2018). Similar dynamics have  
413 presented themselves in the sub-Saharan countries of Nigeria, Ghana, and Uganda.  
414 Because people in these countries typically lack technical skills and access to  
415 capital as a result of marginalization, they have essentially been forced to rely on  
416 multinational enterprises (MNEs) to utilize and export their natural resources  
417 (Aldinger 2013). These industries, often located in the poorest, most isolated  
418 communities in the country, include energy projects that are responsible for major  
419 water and air pollution, denial of access to traditional lands, and deforestation  
420 (Aldinger 2013).

421 The Middle East also houses environmental injustices, though these have only  
422 been briefly examined when compared to other world regions like the Global North  
423 and the Global South. Regardless, the literature that does exist generally indicates  
424 major disparities based on lines of race/ethnicity and economy status in Israel. For  
425 example, a study found that green spaces in mixed-race cities (e.g. where both Arab  
426 and Israelis inhabit the city, rather than abide in ethnic enclaves) are substantially  
427 less accessible to the Arab population and economically-marginalized demo-  
428 graphics (Omer and Or 2005). Similarly, Shmueli found that Arab populations  
429 experience the hazards of industrial parks located within neighboring Jewish  
430 communities while gaining none of the revenues generated by the facilities (2008).  
431 This is not surprising when coupled with other contributions to the literature, which  
432 have indicated that Arab-identifying residents of Israel receive poorer forms of  
433 waste management than their Israeli counterparts (Tal 2002), and also earn less  
434 income (Omer and Or 2005). Similar patterns of environmental injustice are also  
435 present in Iraq and Afghanistan. For example, US military efforts that have fre-  
436 quented these areas often burn their solid waste in open pits near civilian popula-  
437 tions, leading to their exposure to hazardous emissions (Bonds 2016). This is  
438 essentially exclusionary environmental decision-making, which, as discussed, is a  
439 fundamental basis for environmental injustice.

440 Most of the EJ literature for Oceania is oriented toward Australia; specifically,  
441 within the country's Indigenous communities. This can be predominately attributed  
442 to Australia's colonial past, which has led to the racial and economic marginal-  
443 ization of Native peoples on a systemic basis. The heavy presence of asbestos



444 mining in Australia's history is a strong testament to this dynamic. Due to a lack of  
445 economic power and environmental decision-making opportunities, Indigenous  
446 communities often housed asbestos mines in their communities, and were even  
447 specifically recruited to work in the mines (Webster 2005; Maloney 2014). This is a  
448 particularly pernicious environmental injustice due to asbestos' linkages with  
449 mesothelioma, a deadly form of lung cancer. The first Australian national study of  
450 industrial air pollution found that communities with greater proportions of  
451 Indigenous and economically-marginalized residents contain larger numbers of  
452 polluting sites and emit higher volumes of pollutants (Chakraborty and Green  
453 2014). Native communities in Australia have also had to fight vigilantly to prevent  
454 the disproportionate placement of nuclear facilities in their communities (Maloney  
455 2014); as such, the patterns of environmental injustice in Australia are quite clear.

456 In discussing Oceania, it is important to include environmental injustices that  
457 occur in the Carteret Islands, Cook Islands, Kiribati, Tokelau, the Federated States  
458 of Micronesia, and other oceanic regions as a result of climate change and sea level  
459 rise (Brindal 2007). It is estimated that in one hundred years' time, many of these  
460 nations will be inundated with ocean water and rendered uninhabitable to the  
461 Indigenous and socioeconomically marginalized communities that reside there.  
462 Despite the fact that regions such as these contribute the least to global emissions  
463 and rising sea levels, they disproportionately experience the effects of climate  
464 change and its harmful repercussions (Brindal 2007).

### 465 9.5.3 *Green Criminology*

466 As reviewed in the previous section, environmental injustices transcend interna-  
467 tional boundaries and influence various social groups around the world. This raises  
468 a question about what broader dynamics are at play that encourage the development  
469 of socioenvironmental disparities. Green criminology, which is a blend of crimi-  
470 nology and EJ research, seeks to answer this question (Lynch and Stretesky 2014).  
471 Green crime is defined as actions or behaviors from corporations and individuals  
472 that have the potential to cause harm to the environment, humans, and non-human  
473 species (Lynch and Barrett 2018; Stretesky et al. 2014; Lynch and Stretesky 2013).  
474 Green criminology is an emerging field that studies green crime with a particular  
475 focus on understanding the economic drivers of environmental injustices. While  
476 this review focuses on negative impacts on humans (particularly those in disad-  
477 vantaged communities), it is important to note that there are subfields within green  
478 criminology that analyze the negative impacts of industrial production on ecological  
479 systems, rates of extinction, and animal rights.

480 An important factor in green criminology that has delayed the field's progression  
481 has been the criminological tradition of narrowly defining crimes from an exclu-  
482 sively legal standpoint (Lynch and Barrett 2018; Lynch 1990). Crimes committed  
483 by corporations are often considered legal even if they significantly degrade the  
484 environment. Green criminology, in contrast, defines crime as the point at which the



485 environment and its inhabitants are negatively affected by industrial activities  
486 (Lynch and Barrett 2018). This definition is important when considering the  
487 influence that powerful corporations have on constructing the extent of legality, as  
488 they often encourage the separation of crime from the environment so as to absolve  
489 themselves of responsibility for their contributions to environmental degradation.

490 This has major implications to the environment, especially for marginalized  
491 communities who, as EJ literature teaches us, often bear the burdens of these  
492 crimes. Lynch and Barrett (2018) highlight this in citing evidence that petro-  
493 chemical refineries in Black, Hispanic and low SES communities receive lesser  
494 punishments for environmental violations. Their privileged legal treatment allows  
495 refineries to focus their production processes exclusively on maximizing profit,  
496 despite the serious health ailments they cause in surrounding communities (Mohai  
497 et al. 2009). By fusing EJ and criminology, green criminology facilitates under-  
498 standing of how minority populations' health and wellbeing are disproportionately  
499 impacted when environmental regulations are disregarded.

500 Green criminology also sheds light on how capitalism negatively influences  
501 corporate interests and industrial production in relation to the environment. The  
502 primary focus of capitalism is expansion and production of goods for accumulation.  
503 When accumulation of capital is at the epicenter of what markets deem necessary  
504 for success, green crime abounds. The globalization of capitalistic trade creates  
505 demands for profitability and productivity across world regions, and global capi-  
506 talism's emphasis on profitability creates socioenvironmental predicaments (Lynch  
507 and Stretesky 2013). Green criminology places the reduction and elimination of  
508 environmental harm above all else as it seeks to challenge the structures from which  
509 many green crimes and environmental injustices derive.

510 For green criminologists, heavy exposure to toxic substances such as lead,  
511 mercury, and cadmium reflects a notable form of green crime; this due to the  
512 association of these substances with severe infirmities such as loss of brain matter,  
513 inhibition and disruption of cognitive development, and gliosis (i.e. scarring of the  
514 brain) (Lynch and Stretesky 2013). The Love Canal landfill disaster, widely con-  
515 sidered one of the first documented cases of green crime, is an important example of  
516 this green criminology emphasis (Ruggiero and South 2010). In the 1940s, thou-  
517 sands of barrels of toxic chemical waste were dumped into an abandoned canal by  
518 the Hooker Chemical company in Niagara Falls, New York. The site was eventually  
519 covered in the 1950s, where it was then purchased by the Niagara Falls Board of  
520 Education. This occurred without full knowledge of the area's chemical history,  
521 meaning both homes and a school were built there, despite the risk this posed to  
522 residents. It was only when heavy rains brought these toxic chemicals to the surface  
523 that residents became aware of the environmental degradation of their community  
524 (Ruggiero and South 2010); injustices that were created by through corporate green  
525 crimes and later left for vulnerable populations to resolve. The understanding of  
526 such cases paves the way for environmental justice advocates to better recognize  
527 green crime and develop approaches to support affected communities.

528 In discussing inequitable chemical exposure, it is instructive to focus on lead  
529 specifically. Excessive lead exposure is associated with higher rates of aggravated



530 assault (Lersch and Hart 2014); as such, lead has a known capacity to influence  
531 behavior within exposed communities. This is of particular importance for racial  
532 and ethnic minorities, since they are disproportionately exposed (Stretesky 2003),  
533 and thus more susceptible to lead-induced behavioral changes (e.g., engagement in  
534 violent crime). Behavioral changes flowing from their unjust lead exposures may  
535 result in their being criminalized (i.e., stigmatized as hyper-violent), further rein-  
536 forcing their social, economic, and environmental marginalization. Such a dynamic  
537 demonstrates how corporate disregard for the environment can translate into the  
538 deepening of inequitable social structures for racial and ethnic minorities. This  
539 example illustrates the complex effects that environmental injustice can have on  
540 communities.

541 Green criminology research points toward the influence of capitalism in shaping  
542 behavior in the corporate realm, which negatively impacts the health and wellness  
543 of racial/ethnic minority and lower SES populations. Without laws to govern cor-  
544 porate interests, organized green crime will continue to degrade both the health and  
545 wellness of minority communities. In some cases, this has led to community  
546 organizing and social activism, which has been central to EJ since its inception.

## 547 9.6 Taking Action

548 EJ is not simply an academic field; it is also a social movement for change. The  
549 Environmental Justice Movement (EJM) combines Civil Rights Movement con-  
550 cerns about inequality and racism with the Environmental Movement of the 1950s  
551 and 1960s (Bryant and Hockman 2005; Cole and Foster 2009). The EJM is largely  
552 comprised of grassroots organizations whose members belong to aggrieved parties  
553 facing environmental injustices that are occurring within their communities, and  
554 who are often working class, impoverished, and from minority backgrounds (Cable  
555 et al. 2005). These organizations seek to instill in their members the  
556 self-determination and power that groups and communities need in order to obtain  
557 access to resources, fairness, and justice (Agyeman et al. 2016). The EJM is not  
558 primarily concerned with achieving an equitable societal distribution of environ-  
559 mental risks and benefits; instead, the movement focuses on pursuing safe, healthy,  
560 and equitable living environments for all, in the present as well as in the future,  
561 through clean jobs, a sustainable economy, affordable housing, and social justice  
562 for diverse people (Cole and Foster 2009).

563 Many trace the start of the EJM to 1982 in Warren County, NC. This case  
564 involved distributional injustice wherein the predominantly black community of  
565 Afton was targeted with a landfill for polychlorinated biphenyl (PCB)-contaminated  
566 soil (created through illegal dumping) that threatened the health and quality of life  
567 for surrounding communities (Agyeman et al. 2016; Pulido 2017; Bryant and  
568 Hockman 2005). The aggrieved residents of Warren County, NC mobilized and  
569 protested the siting of the landfill, with support from key political and religious  
570 figures. The landfill was created in Warren County despite the strong resistance.



571 Consequently, the US federal government requested an analysis of the correlation  
572 between the siting of toxic waste facilities and the racial and sociodemographic  
573 makeup of surrounding communities (GAO 1983). Findings from this analysis of  
574 Warren County and three additional communities containing hazardous waste  
575 landfills showed that there were higher levels of black and low-income residents  
576 living in the same zip codes as the toxic dump sites. This study fueled the devel-  
577 opment of the EJM and subsequent distributive EJ research.

578 Since the EJM's inception, the movement has enhanced the definition of envi-  
579 ronment to include where people live, work, eat, play, and pray (as opposed to  
580 being limited to wilderness preservation) while prioritizing the environmental  
581 concerns of predominantly urban, poor, and racial/ethnic minority communities  
582 (Sicotte and Brulle 2017; Agyeman et al. 2016). The EJM has evolved since its  
583 initial focus on stopping the proliferation of incinerators and landfills. Today, the  
584 EJM includes various areas of concern like air pollution, clean water, food justice,  
585 indigenous rights, energy justice, just sustainability, climate justice, as well as  
586 place-making and sense of community (Agyeman et al. 2016; Sicotte and Brulle  
587 2017; Pellow 2017). This expansion is reflected in the USEPA's (2019) current  
588 definition of EJ:

589 Environmental justice is the fair treatment and meaningful involvement of all people  
590 regardless of race, color, national origin, or income, with respect to the development,  
591 implementation, and enforcement of environmental laws, regulations, and policies. This  
592 goal will be achieved when everyone enjoys the same degree of protection from envi-  
593 ronmental and health hazards, and equal access to the decision-making process to have a  
594 healthy environment in which to live, learn, and work.

595 The reach of the EJM has spread from local and US national scales to global  
596 scales (Agyeman et al. 2016). Leaders of the EJM have united across the globe as a  
597 result of economic globalization and transnational movement of industrial pollution  
598 from the Global North to the Global South (Pellow and Brulle 2005; Brulle and  
599 Pellow 2005a, b). Also, global expansion of the EJM has involved the inclusion of  
600 social movement leaders in international conferences where they have been able to  
601 connect environmental struggles at the local scale to those of other people under-  
602 going environmental injustice at the global scale (Bryant and Hockman 2005).  
603 Though international progress has been made by governing bodies and influential  
604 EJM organizations, there is still more work to be done in terms of increasing civil  
605 society's access to international environmental decision-making (Ciplet et al. 2015;  
606 Sicotte and Brulle 2017; Brulle and Essoka 2005).

AQ4

### 607 9.6.1 *Policy and Legislative Action*

608 Central to the EJM is the demand for equal decision-making opportunities for all  
609 communities (Bell and Carrick 2017; Schlosberg 2009). As we have discussed,  
610 procedural injustices tied to the lack of political influence can often lead to



611 significant environmental injustices and poor health outcomes for marginalized  
612 communities. This can be corrected by recognizing and including marginalized  
613 people in decision-making that affects their health, communities, and livelihoods  
614 (Bell and Carrick 2017). In this context, procedural environmental justice involves  
615 marginalized populations “speaking for [themselves],” having a “seat at the table,”  
616 and demanding “equal, informed, respectful participation” in all environmental  
617 decision-making (Schlosberg 2007, p. 66; Bell and Carrick 2017; Cole and Foster  
618 2009; Bryant and Hockman 2005).

619 The EJM has also pressured the federal government to create equitable envi-  
620 ronmental legislature. In 1986, for example, the Reagan administration passed the  
621 Emergency Planning and Community Right-to-Know Act (EPCRA). This requires  
622 industries to report on the storage, use, and release of hazardous chemicals to all  
623 levels of government, mainly in efforts to increase public health and access to  
624 critical information in times of emergency (USEPA 2017). The Clinton adminis-  
625 tration implemented the Executive Order (EO) 12898 in 1994 to encourage federal  
626 agencies to consider their disparate environmental impacts on minority and  
627 low-income communities. While this serves as an important moment in the EJM, it  
628 nonetheless exists as a recommended responsibility rather than a policy remedy;  
629 that is to say, there are no mechanisms inherent to EO 12898 that can facilitate the  
630 resolution of environmental injustices (Abel and Stephan 2017; Gordon and Harley  
631 2005). Hundreds of complaints relating to disparate environmental impacts of  
632 federal actions are filed each year, but none have been successfully acted upon due  
633 to the lack of any binding requirements associated with EO 12898 (Foster 2017;  
634 Gordon and Harley 2005).

635 US federal priorities to achieve EJ are highly sensitive to administrative changes.  
636 During the Obama administration, EJ issues dramatically rose in importance within  
637 the EPA. This was influenced by Lisa Jackson’s appointment as EPA Administrator  
638 under President Obama. As the first female, black person ever appointed as EPA  
639 Administrator, Jackson advocated for legislation to limit carbon emissions and  
640 greenhouse gases, thereby attempting to address major sources of contemporary  
641 environmental inequities (Nealy 2009). During her term, the EPA itself aimed to  
642 integrate EJ into its political programs through efforts Plan EJ 2014, Plan EJ 2020,  
643 and various EPA funding grants; it also created environmental policy for federally  
644 recognized Indigenous tribes, an EJ screening and mapping tool for statistical and  
645 spatial analysis, and two guidance documents for regulatory actions (Abel and  
646 Stephan 2017). Many of those steps forward have been undone by the Trump  
647 administration, which, since 2017, has sought to deregulate polluting industries and  
648 increase fossil fuel production (Pulido et al. 2019). This transition has the potential  
649 to deepen US environmental injustices. As such, it is important for the EJM to  
650 continue advocating for procedural justice and thereby challenge the current  
651 administration.

652 

## 9.7 Conclusion

653 In summary, environmental benefits and risks are inequitably distributed throughout  
654 our societies. Social position—including race, ethnicity, socioeconomic status,  
655 gender, and other aspects of identity—greatly influences the degree to which people  
656 are exposed to environmental hazards. When hazards become disproportionately  
657 concentrated in marginalized communities, it constitutes environmental injustice.  
658 Environmental injustices typically degrade the health and opportunities of those  
659 affected, reinforcing the marginalization that they experience. In no place is this  
660 pattern of environmental injustice better documented than the United States, where  
661 ample evidence indicates that racial and ethnic minorities, people of low socioe-  
662 conomic status, immigrants, and other underrepresented communities have been  
663 inequitably environmentally burdened. As the scope of environmental justice  
664 research and practice has expanded, similar disparities have been discovered in  
665 Europe, Latin America, and Asia, among other world regions. Thus, the social  
666 processes and structures responsible for environmental injustices, such as institu-  
667 tional racism, green crime, and the prioritization of capital above human welfare,  
668 are by no means limited to the United States.

669 Within this context, the pursuit of environmental justice research is of utmost  
670 importance. All people, regardless of their social positioning, are entitled to safe  
671 environments, economic opportunities, and equitable access to the decision-making  
672 processes that affect their communities. Ongoing innovation in environmental  
673 justice research has the potential to inform social action to address environmental  
674 injustices on the ground. In the United States, for example, social actions to address  
675 environmental injustice should recognize recent findings that have documented  
676 environmental inequities within broad racial-ethnic groups (e.g., for foreign-born  
677 Hispanic Americans), and environmental injustices faced by previously ignored  
678 groups (e.g., Asian Americans, same-sex partners, or people with disabilities). Such  
679 advances could help inform new policies that are more specifically attuned to the  
680 varied injustices that affect diverse communities. In the near term, environmental  
681 justice analysts should examine how the Trump administration’s environmentally-  
682 and socially-unconscionable actions have influenced environmental injustices in  
683 United States. The new field of green crime may provide particularly useful per-  
684 spectives for such analyses.

685 To foster a global perspective, it will be important to expand the focus of  
686 environmental justice to additional world regions. While studies have been  
687 advanced in Latin America, Europe, and Asia, the global body of knowledge  
688 remains limited when compared to the United States. The underdevelopment of  
689 environmental justice research worldwide may stymie the creation of equitable,  
690 regionally-specific policies that could more effectively redress environmental  
691 injustices (Foster 2018; Abel 2008; O’Neill 2000). Developing regionally-specific  
692 policies that focus on the needs of particular communities, coupled with



693 mechanisms to incentivize environmental responsibility on behalf of corporations  
694 and states, might serve to promote environmental justice across the world. Given  
695 the current state of environmental governance, achieving environmental justice will  
696 necessitate deeper integration of research with political advocacy.

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