Getting to the Root of Environmental Injustice: Evaluating Claims, Causes, and Solutions

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Abstract

The Environmental Justice (EJ) Movement fights to remedy the disproportionate toxic exposure experienced by low-income and minority communities. This Note investigates three questions arising from the EJ Movement's basic claim: (I) What empirical research, if any, evidences environmental injustice; (II) What causal theories are most supported by empirical research; and (III) How can society remedy environmental injustice without further harming low-income and minority communities? Part I reviews the literature evaluating claims of environmental injustice, concluding that there is broad support for the EJ Movement narrative. Part II evaluates potential causes of environmental injustice, finding that the research most supports discriminatory siting of toxic facilities, unequal regulatory enforcement, and unequal political power as the major culprits. Part III reckons with some unintended consequences of environmental cleanup projects, such as job loss for working class people and displacement resulting from increased property values. Finally, considering the causes already discussed, this Note examines some potential solutions to environmental injustice and makes recommendations for success.

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INTRODUCTION

In the United States, people of lower income and people of color experience higher cancer rates,[1] higher asthma rates,[2] higher mortality rates,[3] and overall poorer health than their affluent and white counterparts.[4] The Environmental

1. Elizabeth Ward et al., *Cancer Disparities by Race/Ethnicity and Socioeconomic Status*, 54 CA: CANCER J. CLINICIANS 78, 78 (2004) (finding, "[R]esidents of poorer counties . . . have 13% higher death rates from cancer in men and 3% higher rates in women compared with more affluent counties . . . . Even when census tract poverty rate is accounted for . . . African American, American Indian/Alaskan Native, and Asian/ Pacific Islander men and African American and American Indian/Alaskan Native women have lower five-year survival than non-Hispanic Whites.").

2. Lolita D. Gray & Glenn S. Johnson, *A Study of Asthma as a Socio-Economic Health Disparity Among Minority Communities*, 22 RACE, GENDER, & CLASS 337, 337 (2015).

3. Diane K. McLaughlin & C. Shannon Stokes, *Income Inequality and Mortality in US Counties: Does Minority Racial Concentration Matter?*, 92 AM. J. PUB. HEALTH 99, 99 (2002) ("Higher income inequality at the county level was significantly associated with higher total mortality. Higher minority racial concentration also was significantly related to higher mortality and interacted with income inequality.").

4. *See, e.g.*, Pamela A. Meyer et al., *CDC Health Disparities and Inequalities Report—United States, 2013*, 62 MORBIDITY & MORTALITY WKLY REP. 1, 1 (2013).

Justice (EJ) Movement asserts that these health disparities are caused, in part, by a higher concentration of hazardous facilities and environmental harms in these communities.[5] The disproportionate exposure to these risks is understood as "environmental injustice."[6]

Part I of this Note reviews the scholarship evaluating claims of environmental injustice and concludes that, despite some inconsistency, the empirical evidence largely supports the EJ Movement's claims. Part II turns to the potential causes of this type of injustice. The research in this area reveals that disamenity-producing firms, structural inequality, and even the residents themselves play a role in creating incidents of environmental injustice. Then, Part III of this Note describes how efforts to combat environmental injustice may exacerbate, rather than ameliorate, the stress that low-income and minority communities face. Ultimately, this Note concludes that any environmental cleanup initiatives must include a thorough, context-specific risk assessment that is discussed by regulators and stakeholders. Decision-makers should reserve a seat at the table for a designated community advocate to ensure meaningful participation for those affected and reduce the chance of regulatory capture.

I. EVALUATING THE CLAIMS OF THE ENVIRONMENTAL JUSTICE MOVEMENT

Before discussing solutions to environmental injustice, it is necessary to establish the validity of the EJ Movement's central claim: environmental harm disproportionately affects people of lower income and people of color. To evaluate this claim, researchers have examined the distribution of environmental harms by looking at demographics in various regions at various times. While some disagreement exists in the scholarship discussed in Section A, Section B includes a meta-analysis of studies that provides convincing empirical evidence in support of the EJ Movement's underlying premise.

A. COMPILING THE MIXED EMPIRICAL EVIDENCE

Many researchers have used empirical evidence to try to uncover an actual correlation between race, class, and the likelihood of experiencing environmental harm. Their studies often focus on a particular type of environmental harm or hazard and trace its prevalence across a particular geographical scope. Here, the studies are discussed in two groups: (1) those that support claims of environmental inequity and (2) those that do not.

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5. DORCETA E. TAYLOR, TOXIC COMMUNITIES: ENVIRONMENTAL RACISM, INDUSTRIAL POLLUTION, AND RESIDENTIAL MOBILITY 1 (2014).

6. David N. Pellow, *Environmental Inequality Formation: Toward a Theory of Environmental Injustice*, 43 AM. BEHAV. SCI. 581, 582 (2002).

1. Evidence Supporting Claims of Environmental Injustice

Table 1 provides several studies supporting the EJ Movement's claims. This table is not intended to be comprehensive; rather, it displays examples of research completed over time and by a variety of different authors. These findings add support to the anecdotal evidence often cited by the EJ Movement.

TABLE 1.
STUDIES FINDING INEQUITABLE DISTRIBUTION OF ENVIRONMENTAL HAZARDS BY INCOME AND/OR RACE

Study	Subject of Study	Scope of Study	Distribution Equitable[7] by Income?	Distribution Equitable by Race?
CEQ (1971)[8]	Air Pollution	Urban Area	No	n/a
Asch & Seneca (1978)[9]	Air Pollution	Urban Area	No	No
Bullard (1983)[10]	Solid Waste	Urban Area	n/a	No
United Church of Christ (1987)[11]	Hazardous Waste	Nation	No	No
U.S. Department of Health and Human Services (1988)[12]	Lead Exposure	Nation	No	No

7. For the purpose of this table, the term "equitable" is shorthand for a finding that the studied hazard is not distributed in such a way as to disadvantage poor people or people of color. A study may be characterized as finding equitable distribution where it finds that a hazard disadvantages whites or moderate-to-high income individuals.

8. WHITE HOUSE COUNCIL ON ENVIRONMENTAL QUALITY, THE SECOND ANNUAL REPORT OF THE COUNCIL ON ENVIRONMENTAL QUALITY 3, 189 (1971).

9. Peter Asch & Joseph J. Seneca, *Some Evidence on the Distribution of Air Quality*, 54 LAND ECON. 278, 287–88 (1978) (reporting a study of Cleveland, Chicago, and Nashville that showed poorer census tracts to be exposed to consistently higher pollution levels than more affluent tracts; people of color have higher pollution levels than whites in Chicago and Nashville; a study of urban areas in twenty-three states that found particulate pollution was higher in cities with low-income characteristics and in communities of color).

10. Robert D. Bullard, *Solid Waste Sites and the Houston Black Community*, 53 SOC. INQUIRY 273, 273–88 (1983).

11. UNITED CHURCH OF CHRIST, TOXIC WASTES AND RACE IN THE UNITED STATES: A NATIONAL REPORT ON THE RACIAL AND SOCIO-ECONOMIC CHARACTERISTICS OF COMMUNITIES WITH HAZARDOUS WASTE CITES (1987).

12. AGENCY FOR TOXIC SUBSTANCES DISEASE REGISTRY, U.S. DEP'T OF HEALTH AND HUM. SERVS., THE NATURE AND EXTENT OF LEAD POISONING IN CHILDREN IN THE UNITED STATES: A REPORT TO CONGRESS, 1-11 (1988) (finding that childhood lead levels have disproportionate impact by race and income, with race independent of class).

Study	Subject of Study	Scope of Study	Distribution Equitable[7] by Income?	Distribution Equitable by Race?
Costner & Thornton (1990)[13]	Incinerator	Nation	n/a	No
African American Environmentalist Ass'n et al. (1994)[14]	Toxic Waste	Urban Area	n/a	No
Been & Gupta (1997)[15]	Hazardous Waste	Nation	Yes	No
Ringquist (2005)[16]	Meta-analysis, Multiple Types of Pollution	Nation	No	No
Clark et al. (2014)[17]	Air Pollution	Nation	No	No

These studies, and others, provide substantial evidence supporting the claim that environmental burdens are borne disproportionately by people of lower income and people of color. Indeed, the weight of the evidence led environmental justice scholar Cooper Bailey to assert, "[t]here is no doubt that risks associated with environmental hazards disproportionately affect minority populations that are least able to defend themselves due to poverty and political powerlessness."[18]

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13. PAT COSTNER & JOE THORNTON, PLAYING WITH FIRE: HAZARDOUS WASTE INCINERATION, A GREENPEACE REPORT 3 (1990) (finding that the percentage of minorities in U.S. communities with existing and proposed incinerators was sixty to eighty-nine percent higher than the national average).

14. AFRICAN AM. ENVIRONMENTALIST ASS'N ET AL., OUR UNFAIR SHARE: A SURVEY OF POLLUTION SOURCES IN OUR NATION'S CAPITAL 6 (1994) (finding that the cleanest area in Washington, D.C. is Ward 3, eighty-eight percent of whose residents are white, whereas sixty-five percent of the overall population of the city is black).

15. Vicki Been & Francis Gupta, *Coming to the Nuisance or Going to the Barrios? A Longitudinal Analysis of Environmental Justice Claims*, 24 ECOLOGY L. Q. 1, 33–34 (1997) (In 1990, the percentage of African Americans and Hispanics in a census tract was a significant predictor of whether or not that tract hosts a polluting facility).

16. Evan J. Ringquist, *Assessing Evidence of Environmental Inequalities: A Meta-Analysis*, 24 J. POL'Y ANALYSIS & MGMT. 223 (2005).

17. Lara P. Clark et al., *National Patterns in Environmental Injustice and Inequality: Outdoor NO_2 Air Pollution in the United States*, 9 PLOS ONE 1, 1 (2014) (finding "Low-income nonwhite young children and elderly people are disproportionately exposed to residential outdoor NO_2.").

18. Conner Bailey et al., *Environmental Justice and the Professional*, *in* ENVIRONMENTAL JUSTICE: ISSUES, POLICIES, AND SOLUTIONS 35, 35 (Bunyan Bryant ed., 1995).

2. Evidence Contradicting Claims of Environmental Injustice

On the other hand, some studies cast doubt on the correlation between disparate environmental harm and race, income, or both. The following table provides a summary of these studies:

TABLE 2.
STUDIES FINDING EQUITABLE DISTRIBUTION OF ENVIRONMENTAL HAZARDS BY INCOME AND/OR RACE

Study	Subject of Study	Scope of Study	Distribution Equitable by Income?	Distribution Equitable by Race?
Gray and Shadbegian (2004)[19]	Pollution	Nation	No	Yes
Anderton et al. (1994)[20]	Hazardous Waste	Nation	n/a	Yes
Hird (1993)[21]	EPA Hazardous Waste Cleanup	Nation	Yes	Yes
Cutter, Holm, & Clark (1996)[22]	Hazardous Waste	State	Yes	Yes
Wartenberg (2010)[23]	HVTL	State	Yes	Yes

In fact, some research has found that higher-income whites are more vulnerable to certain types of environmental harm. A recent study evaluating the possible adverse health effects of living near high-voltage electric power transmis-

19. Wayne B. Gray & Ronald J. Shadbegian, *'Optimal' Pollution Abatement—Whose Benefits Matter, and How Much?*, 47 J. ENVTL. ECON. & MGMT. 510, 532 (2004) ("The percentage nonwhite near the plant, expected to reduce regulatory attention in the Environmental Justice model, is often associated with more regulatory activity and lower emissions.").

20. Douglas L. Anderton et al., *Hazardous Waste Facilities: 'Environmental Equity' Issues in Metropolitan Areas*, 18 EVALUATION REV. 123, 135–36 (1994).

21. John A. Hird, *Environmental Policy and Equity: The Case of Superfund*, 12 J. POL'Y ANALYSIS & MGMT. 323, 334 (1993).

22. Susan L. Cutter, Danika Holm & Lloyd Clark, *The Role of Geographic Scale in Monitoring Environmental Justice*, 16 RISK ANALYSIS 517 (1996).

23. Daniel Wartenberg et al., *Environmental Justice: A Contrary Finding for the Case of High-Voltage Electric Power Transmission Lines*, 20 J. EXPOSURE SCI. & ENVTL. EPIDEMIOLOGY 237, 239 (2010).

sion lines (HVTL) found that the population living closest to the HVTL (and therefore in the more dangerous area) was comprised of more whites than those living farther away.[24] The houses within the zone of potential harm tended to be "owner-occupied" and "of greater value," indicating that the residents were of a higher income.[25] These findings show that minority and low-income status is not always a predictor of proximity to potential harm. The researchers posit that because HVTL are typically contained in rural areas, HVTL avoid established minority or low-income communities, which tend to be concentrated in urban areas.[26] The implications of this research on the EJ Movement's claims are limited because of the unique set of circumstances it investigates. Nevertheless, there is some evidence contradicting the EJ Movement's claim that low income and minority populations bear a disproportionate burden of society's environmental harms.

B. UNDERSTANDING CONFLICTING RESULTS

Why do the results of some studies contradict the claims of the EJ Movement? The answer may lie in methodological choices that obscure equity issues. One scholar has suggested some methodological factors that may make a difference: (1) the environmental threat chosen for analysis, (2) the geographic scale or area unit chosen for measurement, (3) the subpopulation selected, and (4) the time frame.[27] If researchers adjust one of these four factors in their study design, the study's EJ implications may change.[28] For example, one study that appeared to refute the EJ Movement's claims was later undermined after being examined through the lens of the second factor: the study did not follow the convention of controlling for population density.[29] The fact that evidence of environmental injustice can appear or disappear based on researchers' methodological choices calls for a rethinking of how this phenomenon can be more accurately and uniformly studied.

In addition to methodology, there are other explanations for the findings that seem to contradict the EJ Movement's claims. For example, the results of the HVTL study may be explained by public perception of the hazard at issue. While some perceive HVTL to be a health risk because of the magnetic fields they generate,[30] the magnitude of the negative health effects of power lines are unclear.[31] If HVTL are not actually harmful to health, then they are not a

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24. *Id.*
25. *Id.*
26. *Id.* at 241.
27. SUSAN L. CUTTER, HAZARDS, VULNERABILITY, AND ENVIRONMENTAL JUSTICE 253 (2006).
28. *Id.*
29. *Id.* at 254.
30. Wartenberg, *supra* note 23, at 237.
31. *See, e.g.*, Shari McMahan, Kim Witte & Jon'a Meyer, *The Perception of Risk Messages Regarding Electromagnetic Fields: Extending the Extended Parallel Process Model to an Unknown Risk*, 10 HEALTH

disamenity-producing source with effects that ought to be equitably distributed. Even if HVTL are harmful in some way, the general public would likely *perceive* any effects of HVTL on health or aesthetics to be less severe than those posed by, say, a toxic waste facility. Individuals would likely respond differently to the potential dangers of HVTL than they would to more obviously hazardous sources.[32] In either case, if the public does not perceive HVTL to be toxic or dangerous, then individuals with the means to avoid HVTL will not attempt to do so.

While these alternative explanations may be attractive to EJ Movement activists, they do little to lend additional empirical credibility to the movement's claims. After all, there are alternative explanations for the findings that *support* the EJ Movement's claims as well. For example, the oft-cited United Church of Christ Study has been criticized for its use of zip codes as an appropriate unit of analysis.[33] Vicki Been, a prominent EJ scholar, suggested that the zip code analysis is flawed due to the varying size of zip code areas used for comparison and the arbitrary boundaries created by zip codes.[34] This critique is equally as convincing as the previous critique put forward to discredit the HVTL study. Therefore, stand-alone criticisms of studies' methodologies or baseline assumptions are indeterminate with regard to whether environmental injustice really exists and, if so, where and to what extent.

Tables 1 and 2 *supra* include EJ studies at state and national levels, on a variety of environmental hazards, and with varying conclusions as to whether environmental harm is distributed fairly based on race and income. Evan J. Rinquist, a prominent environmental scholar, attempted to resolve the conflicting data using a statistical technique called meta-analytic regression.[35] Ringquist compiled and analyzed data from books, articles, dissertations, theses, and government documents studying EJ. He found strong empirical evidence for race-based environmental inequity,[36] as well as some evidence for class-based environmental inequity, though that evidence is not generalizable across different geographic

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COMM. 247 (1998) (describing the health risk of electromagnetic fields, like those surrounding HVTL, as unknown).

32. *See* Bella Berezansky et al., *Objective vs. Perceived Air Pollution as a Factor of Housing Pricing: A Case Study of the Greater Haifa Metropolitan Area*, 18 J. REAL EST. LITERATURE 99, 99 (2010).

33. Colin Crawford, *Analyzing Evidence of Environmental Justice: A Suggestion for Professor Been*, 12 J. LAND USE & ENVTL. L. 103, 104 (1996) (citing an unpublished study by Rae Zimmerman that argues that the focus should be on the entire municipality).

34. *Id.* at 105 (citing Vicki Been, *What's Fairness Got to Do With It? Environmental Justice and the Citing of Locally Undesirable Land Uses*, 78 CORNELL L. REV. 1001, 1015 n. 75 (1993) ("Zip code areas, for example, may vary significantly in the land area included, and those variations limit the usefulness of comparisons between zip code areas."); Vicki Been, *Analyzing Evidence of Environmental Justice*, 11 J. LAND USE & ENVTL. L. 1, 5 (1995) ("Zip codes . . . are constructed only for the convenience of the postal service, and do not necessarily coincide with neighborhoods.")).

35. Ringquist, *supra* note 16, at 241.

36. *Id.*

areas and types of hazards.[37] Ringquist used data aggregation and sophisticated statistics to evaluate a large body of research on environmental inequity, rather than simply picking apart each study individually, and produced compelling results.

Regardless of whether the phenomenon of environmental injustice manifests in all places, at all times, and for all pollutants, the evidence shows that low-income people and minorities bear a disproportionate burden of environmental hazards in at least some instances. This evidence is bolstered by Ringquist's meta-analysis. Thus, despite the need for further research, this Note accepts the EJ Movement's central claim and proceeds with an examination of the potential causes of environmental injustice.

II. CAUSES OF ENVIRONMENTAL INJUSTICE

If low-income or minority status is correlated with proximity to environmental hazards, what factors or outside circumstances are responsible? First-wave EJ Movement activists largely blamed corporations, arguing that firms make decisions about where pollution sources will be placed so as to discriminate against racial minorities.[38] More recently, however, the EJ Movement has acknowledged that more complex phenomena cause environmental injustice.[39]

Disentangling the causes of environmental injustice has presented social scientists with an empirical challenge: the difficulty of isolating causal variables that explain human phenomena. To address this problem, researchers have developed innovative methods to test causal theories of environmental injustice. Here, this Note will evaluate six often cited causes of environmental injustice: (A) intentional discrimination in siting; (B) enforcement principles singling out specific communities; (C) unequal enforcement of environmental laws and regulations; (D) lack of political power in affected communities; (E) market dynamics driving both parties to low-cost real-estate; and (F) residential homophily. Each cause has the potential to provide a justification for different environmental justice policy solutions.

A. INTENTIONAL DISCRIMINATION IN SITING

Of the many theories for why people of lower income and people of color are more likely to experience environmental harm, the most alarming is that corporations actively target these communities. One piece of evidence frequently cited to support this theory is the "Cerrell Report," a document produced by a consulting firm, Cerrell Associates, which advises the California Waste Manage-

37. *Id*.

38. ROBERT D. BULLARD, CONFRONTING ENVIRONMENTAL RACISM 18 (1993).

39. Gordon Walker, *Beyond Distribution and Proximity*, 41 ANTIPODE 614, 616 (2009).

ment Board on strategic placement for trash incinerators.[40] The report states: "All socioeconomic groupings tend to resent the nearby siting of major facilities, but middle and upper socioeconomic strata possess better resources to effectuate their opposition. Middle and higher socioeconomic strata neighborhoods should not fall within the one-mile and five-mile radius of the proposed site."[41]

The recommendation that logically follows from this report is sinister: firms producing environmental disamenities should *target* the communities with the least amount of political and financial capital. Even though the Cerrell Report was produced over thirty years ago, it continues to be held up as an illustration of polluters committing environmental racism.[42] While the report's tone is callous, its transparent objective of finding the easiest and cheapest places to install incinerators is not equivalent to intentional racism. Rather than being the cause of environmental injustice, the analysis in the report is merely a function of other circumstances that drive the phenomenon.[43] Environmental injustice is not simply the result of "PIBBY" ("put it in Blacks' backyards") politicking.[44] As demonstrated in the following sections, facially neutral environmental enforcement principles, unequal enforcement of environmental regulations, lack of political power, market dynamics, and residential similarity preference each play a role in driving polluters and low-income minorities to the same geographic locales.

B. ENFORCEMENT PRINCIPLES MAY UNINTENTIONALLY CONTRIBUTE TO ENVIRONMENTAL INJUSTICE

While regulatory agencies are frequently blamed for environmental injustice, there is little research on the topic as to whether well-intended enforcement strategies create the phenomenon. As the theory goes, policymakers seek to place noxious facilities in areas with low population density in order to manage the risk associated with such facilities.[45] While this "makes good sense as a means of minimizing public health risks," this criterion increases the number of facilities in rural areas that are highly correlated with poverty.[46] Thus, the policy may have the unintended consequence of targeting certain communities "to act as hosts to

40. BULLARD, *supra* note 38, at 18.

41. CERRELL ASSOCIATES, INC., POLITICAL DIFFICULTIES FACING WASTE-TO-ENERGY CONVERSION PLANT SITING 29 (1984).

42. An Energy Justice Network presentation in Washington, D.C. on November 12, 2015 made much of this report.

43. Contrast this idea with the characterization of the causes of environmental injustice as *either* racism *or* market dynamics. *See* Yushim Kim et al., *Residential Choice Constraints and Environmental Justice*, SOC. SCI. Q. 40, 41 (2013) (citing ROBERT D. BULLARD, DUMPING IN DIXIE: RACE, CLASS, AND ENVIRONMENTAL QUALITY (1990)).

44. Crawford, *supra* note 33.

45. Bailey, *supra* note 18, at 37.

46. *Id.*

solid and hazardous waste landfills."[47] A close examination of the principles that guide regulatory enforcement is needed as a prerequisite to evaluating the application of enforcement goals. As discussed *infra*, the EPA may be able to use its regulatory authority to clarify enforcement principles and reduce the chance that well-intended principles will lead to environmental injustice.[48]

C. UNEQUAL ENFORCEMENT

In addition to using principles that may themselves create environmental injustice, regulators may contribute to environmental injustice through inequitable enforcement. EJ Movement advocates often allege that low-income communities of color experience disproportionate environmental harm because of unequal enforcement of environmental protection laws and regulations.[49] Some believe that regulatory capture has resulted in lackluster detection and penalty.[50] Many blame the regulators themselves for being corrupted by greed. For example, politicians in the southern United States have been accused of failing to adequately enforce environmental regulations in order to attract industry to their jurisdictions.[51]

The scholarship provides empirical evidence for the assertion that low-income areas are not subject to the same level of enforcement as more affluent areas.[52] However, it is less clear if race is a factor independent of income in enforcement decisions. Enforcement may ultimately be a function of other factors often associated with income and race, such as political power. Regardless of the causal factors, unequal enforcement comes in two varieties: (1) unequal detection speed and penalties for noncompliance and (2) unequal enforcement resulting from compliance bias.

Some research has found that regulators detect violations in vulnerable communities at a slower rate and impose lighter penalties. Lavelle and Coyle found that the U.S. Environmental Protection Agency (EPA) discriminated against minority communities with respect to cleanup decisions and enforcement of existing environmental laws.[53] The study found that financial penalties were

47. *Id.*

48. *See infra* Part III, subpart B.1.

49. Bullard, *supra* note 38, at 17 ("Agencies at all levels of government, including the federal EPA, have done a poor job protecting people of color from the ravages of pollution and industrial encroachment.").

50. Beverly Wright, *Environmental Equity Justice Centers: A Response to Inequity*, *in* ENVIRONMENTAL JUSTICE: ISSUES, POLICIES, AND SOLUTIONS 63 (Bryant ed., 1995) ("[G]overnment agencies responsible for regulating industry are seen as inappropriately biased in favor of particular industry risk management policies or approaches.").

51. Robert D. Bullard & Glenn S. Johnson, *Environmental Justice: Grassroots Activism and Its Impact on Public Policy Decision Making*, 56 J. SOC. ISSUES 555, 565 (2000).

52. *See supra* at Table Part I, subpart A.1.

53. Marianne Lavelle & Marcia Coyle, *Unequal Protection: The Racial Divide in Environmental Law*, 21 NAT. L. J. supplement 1, 1 (1992).

around five hundred percent higher for violations affecting predominately white communities as opposed to minority ones.[54] Moreover, it took twenty percent longer to get hazardous waste sites listed on the federal priority system for cleanup when those sites were hosted by minority communities (independent of income).[55] Similarly, another study found that regulators issued fewer administrative orders and smaller monetary penalties in high-percent minority areas compared to low-percent minority areas.[56] Furthermore, penalties for environmental noncompliance vary based on the economic situation of the community surrounding the violator: when the surrounding community was deemed "affluent," an offending plant was more likely to face a shutdown.[57] Gambling on a regulatory violation may therefore pay off for firms sited in low-income communities and communities of color. If the bad behavior is profitable enough, low penalties will not deter future violations in these communities—these penalties will simply be a cost of doing business.

Unequal enforcement also manifests through the systematic *non-detection* of violations, also known as "compliance bias."[58] One study found that the likelihood of inspection increases with the percentage of employment in the surrounding population because plants in highly employed areas are more "visible."[59] If low employment is an indicator of poverty or lack of political power, then this study adds support to the EJ Movement's claim of unequal enforcement in society's marginalized communities. When controlling for income, however, the research on compliance bias is mixed. On one hand, research shows disparities in detection in low-income communities, but not in minority communities in particular.[60] On the other hand, some research does show that the percentage of minority residents is a factor in detecting violations. For example, one study found that compliance bias is more likely in Hispanic (but not in African American) communities.[61] Another study found inspections to be negatively associated with the percentage of African-American and Hispanic residents.[62] Some research has even found modest evidence for race-based disparities in both

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54. *Id.* at 2.

55. *Id.*

56. Jeremy L. Mennis, *The Distribution and Enforcement of Air Polluting Facilities in New Jersey*, 57 PROF. GEOGRAPHER 441, 411–22 (2005).

57. Eric Hellend, *The Enforcement of Pollution Control Laws: Inspections, Violations, and Self-Reporting*, 80 REV. ECON. & STAT. 141, 152 (1998).

58. David M. Koninsky & Christopher Reenock, *Compliance Bias and Environmental (In)Justice*, 75 J. POL. 506, 507 (2013).

59. Catherine Dion et al., *Monitoring of Pollution Regulation: Do Local Conditions Matter?*, 13 J. REG. ECON. 5, 15 (1998).

60. David M. Koninsky, *Inequities in Enforcement? Environmental Justice and Government Performance*, 28 J. POL'Y ANAL. & MGMT. 102, 102–21 (2009).

61. Koninsky & Reenock, *supra* note 58.

62. John T. Scholz & Cheng-Lung Wang, *Cooptation or Transformation? Local Policy Networks and Federal Regulatory Enforcement*, 50 AM. J. POL. SCI. 81, 93 (2006).

inspections and punitive actions taken in response to noncompliant behavior.[63] If enforcement decisions are influenced by a community's income level, political power, or racial makeup, facilities will be able to systematically predict the communities in which they can most effectively skirt regulation.

These findings support the EJ Movement's claim that enforcement is less vigilant in minority and low-income communities, even if this claim is far from a universal truth. More research is required to determine if there is any pattern in enforcement decisions specifically along racial lines. Future research should seek to test this phenomenon by evaluating agencies at different bureaucratic levels and their implementation of a variety of regulatory initiatives. Part III of this Note will discuss how combating unequal enforcement can be a means of eradicating environmental injustice.

D. LOW POLITICAL POWER IN AFFECTED COMMUNITIES

Both the EJ Movement and disamenity-producing firms assume that low-income people are less able to effectively oppose the siting of toxic facilities in their communities. While political power comes from numerous places, research shows that both low-income communities and communities composed of racial minorities often have less political power than high-income communities or those composed of racial majorities. Recall the Cerrell Report, which advises firms of this conventional wisdom: "[M]iddle and upper socioeconomic strata possess better resources to effectuate their opposition."[64] Indeed, some researchers take it as a given that determining "which groups hold the political power" is a factor "inherent in land use decisions."[65] If this is true, low political capital could explain both discriminatory siting decisions and poor regulatory enforcement.

Whatever the cause, the claim that racial majorities are far more politically active than minorities is not new.[66] Often, firms place facilities in high minority areas,[67] perhaps in order to avoid negative publicity brought about by the forces of NIMBYism in white areas.[68] Not surprisingly, median income,[69] education,[70]

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63. David M. Koninsky & Tyler S. Schario, *Examining Environmental Justice in Facility-Level Regulatory Enforcement*, 91 SOC. SCI. Q. 835, 835–55 (2010).

64. CERRELL ASSOCIATES, *supra* note 41, at 26.

65. Patricia E. Salkin, *Intersection Between Environmental Justice and Land Use Planning*, 58 AM. PLANNING ASS'N PLANNING & ENVTL. LAW 3, 3 (2006).

66. Seema Arora & Timothy Cason, *Do Community Characteristics Influence Environmental Outcomes? Evidence from the Toxics Release Inventory*, 65 S. ECON. J. 691–716 (1999).

67. Eric Helland & Andrew Whitford, *Pollution Incidence and Political Jurisdiction: Evidence from the TRI*, 46 J. ENVTL. ECON. & MGMT. 403, 403–24 (2003).

68. *NIMBY,* ENCYCLOPEDIA BRITANICA, https://www.britannica.com/topic/Not-in-My-Backyard-Phenomenon (last visited Nov. 8, 2017) (describing the acronym for "Not In My Backyard," as a colloquialism for someone opposing the location of something undesirable in one's neighborhood).

69. Hilary Sigman, *The Pace of Progress at Superfund Sites: Policy Goals and Interest Group Influence*, 44 J. L. & ECON. 315, 325 (2001).

70. Been & Gupta, *supra* note 15, at 23 (finding that the percentage of residents who possess a high school

and employment[71] indicators are also predictive of a community's ability to influence decision-makers. High voter turnout is also positively correlated with the ability to influence.[72] Activists' ability to influence decision-makers is also a function of existing state politics: in states that are already aligned with pro-environmental politics, less political power is needed for the EJ Movement activists to succeed.[73] By examining each of these indicators of political power, regulators can test for community vulnerability in a nuanced way instead of simply looking at income and minority status. Indeed, some research shows the compliance bias described in Part I can be mitigated by increased political mobilization in affected communities.[74]

Polluters may also be able to avoid political opposition by siting facilities on the edges of multiple jurisdictions. Plants sited in one state but primarily polluting other states tend to emit more pollution than plants that pollute communities in their home state.[75] In these situations, multiple communities and local governments must come together to successfully oppose the plant. By siting facilities in such a way as to harm only a minority of each affected jurisdiction, firms may minimize the potential for any one community to gain political traction within their local system.[76]

Low political capital in affected communities creates an incentive for firms to continue discriminatory siting practices exemplified by the Cerrell Report.[77] This explanation may be more attractive to policymakers who understand environmental injustice as a market outcome rather than the product of intentional discrimination against vulnerable populations. Through an economic lens, the population's low political capital is just another market force driving the distribution of environmental harms.

E. MARKET DYNAMICS THEORY: BUILD THE HARM AND THE VULNERABLE WILL COME?

As the EJ Movement gained political momentum in the 1990s, scholars began to question the traditional explanations put forth by the movement. Evidence for the EJ Movement's claims is often based on a "snapshot in time" and does little to

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diploma and the percentage of residents who are employed are both positively correlated with political power).

71. *See id.*

72. W. Kip Viscusi & James T. Hamilton, *Are Risk Regulators Rational? Evidence from Hazardous Waste Cleanup Decisions*, 89 AMER. ECON. REV. 1010, 1021–22 (1999); *see also* James T. Hamilton, *Testing for Environmental Racism: Prejudice, Profits, and Political Power?*, 14 J. POL'Y ANAL. & MGMT. 107, 107–32 (1995).

73. Viscusi & Hamilton, *supra* note 72; Gray & Shadbegian, *supra* note 19, at 531–32.

74. Koninsky & Reenock, *supra* note 58.

75. Gray & Shadbegian, *supra* note 19, at 530.

76. *See id.* at 520 (discussing the finding that state regulators will care less about plants with pollution that "spills over" into another state or nation).

77. *See* CERRELL ASSOCIATES, *supra* note 41.

explain the causal relationship between environmental harm and the demographic characteristic of affected communities.[78] Eschewing the characterization of corporations as racist villains and affected communities as powerless victims, some advocate for the theory of market dynamics as an alternative explanation.[79] This theory is described by researchers Been and Gupta:

> Under [the theory of Market Dynamics], the presence of a polluting facility makes the host neighborhood less desirable because of the nuisance and risks the facility poses. Property values therefore fall, and those who move into the neighborhood are likely to be less wealthy and have fewer housing choices than those who leave the neighborhood. The siting of the facilities results, then, in a neighborhood with lower housing values, lower incomes, and higher percentages of those who face discrimination in the housing market—primarily racial and ethnic minorities—than the neighborhood had before the siting.[80]

Been and Gupta tested this theory by comparing the demographic characteristics of host and non-host neighborhoods as of each relevant decennial census pre-siting and again as of the 1990 census.[81] By one statistical measure, they found that the value of property grew significantly more slowly in areas hosting toxic facilities.[82] This suggests that relative property values decrease after polluting facilities move in.[83] The researchers also found that the percentages of African Americans and Hispanics increased at a slightly higher rate in host areas, but this finding was not statistically significant.[84] Ultimately, Been and Gupta found *no statistical support* for the theory that introducing a polluting facility into a neighborhood causes the neighborhood to become poorer and increasingly populated by racial minorities.[85]

Another study also found little evidence to support market dynamics as the primary cause of environmental injustice.[86] The study used numerous statistical analyses to find that "disproportionate siting matters more than disproportionate minority move-in."[87] Controlling for other variables, the study found that while "minorities attract toxic storage and disposal facilities . . . [these facilities] do not attract minorities."[88] At least in California, where this study was conducted, the

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78. Manual Pastor, Jr. et al., *Which Came First? Toxic Facilities, Minority Move-in, and Environmental Justice*, 23 J. URB. AFF. 1, 2 (2001).
79. *See, e.g.*, Gray &. Shadbegian, *supra* note 19, at 532.
80. Been & Gupta, *supra* note 15, at 27–28.
81. *Id.* at 28.
82. *Id*.
83. *Id*.
84. *Id.*
85. *Id.* at 34.
86. Pastor et al., *supra* note 78, at 1–22.
87. *Id.* at 1.
88. *Id.* at 18.

theory of market dynamics does not explain why environmental injustice occurs.[89]

If the theory of market dynamics did correctly explain the EJ Movement's claims, some may suggest that "individuals are simply choosing to trade increased neighborhood health risks for slightly larger or better (in other ways) housing."[90] However, because race is still a predictor independent of income, the theory of market dynamics cannot even theoretically explain all findings of environmental injustice.[91] There is little empirical evidence that the theory can even partially explain the disparate impact of environmental harm on low-income and minority communities. Minority and low-income move-in is not a viable explanation for the EJ Movement's claims.

F. RESIDENTIAL SIMILARITY PREFERENCE

Independent of any market dynamics that could affect the distribution of environmental quality across social groups, other social constraints on residential choice (like a preference for living in communities of the same racial group) play a role. After all, the location of disamenity-producing sites does not occur in a static world—individuals make their own residential choices that are informed and motivated by a variety of factors.[92] The Coase Theorem suggests that acknowledging the role both sides play in environmental justice outcomes is a prerequisite to an efficient policy solution.[93]

In 1978, Thomas Schelling suggested that micro motives (or preferences) of individuals could lead to unexpected and unintended macro patterns of organization in neighborhoods.[94] Under Schelling's theory, people move around until a location satisfies their preference, and they stop moving when they are satisfied by the percentage of people living near them that have similar preferences to them.[95] Shelling showed segregation is dramatically increased when residents have even modest preferences for living in proximity to people similar to themselves.[96]

Nearly forty years later, researchers have tested Shelling's results for an effect on environmental justice outcomes. In an effort to "disentangle the many elements that may cause environmental injustice" and to pay attention to "the complex social conceptions of race and racism," Kim et al. performed simulation experiments to test the effect of varying degrees of residential similarity prefer-

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89. *Id.*

90. *Id.*

91. *Id.* at 3.

92. Adam Eckerd et al., *Helping Those Like Us or Harming Those Unlike Us: Illuminating Social Processes Leading to Environmental Injustice*, 39 ENV'T & PLAN. B: PLAN. & DESIGN 945, 946 (2012).

93. Ronald H. Coase, *The Problem of Social Cost*, 3 J. L. & ECON. 1, 2 (1960) ("We are dealing with a problem of a reciprocal nature.").

94. THOMAS C. SCHELLING, MICROMOTIVES AND MACROBEHAVIOR 7 (1978).

95. *Id.*

96. Eckerd et al., *supra* note 92, at 953.

ence.[97] Their modeling experiments have demonstrated that the phenomenon of racial homophily, regarding residential choice, may be at least partially responsible for environmental injustice.[98]

By using a research method known as agent-based modeling (ABM) to create a virtual experiment, Kim et al. were able to test causal theories of EJ that are impossible to evaluate through true social experimentation.[99] ABM is a computational method that allows the simulation of complex social processes by defining simple, artificial agents and allowing them to interact with each other in a virtual landscape.[100] This technique allows for investigations into the types of social behavior that could lead to the minority-disproportionate outcomes described in Part I.[101] This research holds all other potential factors constant in order to create three worlds: (1) "a perfectly competitive world in which firms maximize utility by minimizing costs;" (2) "a more politically unequal world in which polluting firms prefer to benefit majority residents (by not harming them);" and (3) "a discriminatory world in which firms prefer to locate near clusters of minority populations."[102] Within each world, the researchers manipulate virtual residents' tendencies to prioritize racial homophily.[103]

The results of the ABM trials support Schelling's findings and demonstrate that the degree of similarity preference is even more determinative than the degree to which firms target minority areas. Where residents had no similarity preference and firms were purely economically motivated (as in the first, perfectly competitive world), there was no significant difference in environmental quality between minority and majority groups.[104] Even when firms were motivated to avoid majority residents, there still was no statistically significant difference where individuals expressed no residential homophily.[105] The largest environmental injustice outcomes predictably occurred where (a) residents had a high preference for similarity, and (b) firms aimed to place facilities in areas near high percentages of minority residents.[106] This modeling study illustrates that environmental quality differences widen over time where there is any similarity preference amongst the residents.[107]

Kim et al. explain why homophily limits minority residents uniquely.[108] "Precisely because they are in the minority," individuals with a preference for

97. Kim et al., *supra* note 43, at 40.
98. *Id.*; Eckerd et al., *supra* note 92.
99. Eckerd et al., *supra* note 92, at 946.
100. *Id.*
101. *Id.* at 948.
102. *Id.*
103. *Id.*
104. *Id.* at 955.
105. *Id.*
106. *Id.*
107. *Id.* at 956.
108. Kim et al., *supra* note 43, at 43.

living near others in their same group automatically have "far fewer alternatives than their majority counterparts."[109]

Therefore, even if minority residents have the same level of similarity preference as majority residents, slots in minority neighborhoods are more limited because *by definition* they make up a smaller portion of the available housing slots.[110] The theory of residential homophily does not blame minority residents for environmental injustice; instead, it shows how *both* majority *and* minority residents preferring to live near like individuals creates a landscape that is likely to result in environmental injustice.

Because it is difficult to isolate variables that affect environmental quality in the real world, advanced modeling research techniques offer a unique perspective that can inform policy making. While anecdotal evidence like that exemplified by the Cerrell Report tempts EJ Movement activists to blame discriminatory facility siting processes, research shows that residential homophily is also a contributing factor to environmental injustice.[111] Regardless of the underlying causes of racial homophily, racial homophily does not justify the infliction of disproportionate environmental harm on racial minorities. Those posing solutions to environmental injustice should accept residential similarity preference as a baseline or investigate this preference as they determine potential remedies. Part III of this Note contemplates whether decreasing residential similarity preference is a viable and worthwhile means of eradicating environmental injustice.

G. COMPILING THE CAUSES OF ENVIRONMENTAL INJUSTICE

As the empirical evidence shows, environmental injustice is caused by many factors, including discriminatory siting, misguided regulatory policy, unequal regulatory enforcement, unequal political power, market dynamics, and residential similarity preference. Of these factors, social science research most supports discriminatory siting, unequal enforcement, and unequal political power as the major culprits for environmental injustice. While the theory of market dynamics lacks substantial support, residential similarity preferences offer a relatively new explanation for disparate environmental harm. This analysis of causal factors demonstrates that policymakers have multiple avenues through which they can combat environmental injustice, some of which are not prominently discussed by EJ Movement activists.

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109. *Id.*
110. *Id.*
111. *Id.*

III. EJ SOLUTIONS: CAN WE COMBAT ENVIRONMENTAL INJUSTICE WITHOUT HURTING THE VERY PEOPLE WE AIM TO HELP?

If our society disproportionately imposes costs of environmental harm on vulnerable populations, policymakers should aim to solve this problem. However, good intentions alone do not make good policy. Potential solutions to environmental injustice should be evaluated in light of any negative unintended effects they may have on the communities they aim to help. Section A describes some potential negative outcomes that could result from efforts to address environmental injustice, and Section B evaluates some existing policy solutions. Ultimately, policymakers should conduct extensive research to balance the potential benefit of each proposed solution against any new harm it may create.

A. ACCOUNTING FOR POTENTIAL NEGATIVE CONSEQUENCES OF EJ INITIATIVES

A number of bad things could theoretically happen when implementing solutions to environmental injustice, and policymakers should keep these risks in mind when evaluating solutions. This Note will discuss two potential negative outcomes of environmental cleanup: (1) job loss and (2) environmental gentrification. While these outcomes are certainly possible, the research shows they are not inevitable. Policymakers have the power to prevent these outcomes by conducting careful analysis and allowing for meaningful stakeholder participation.

1. Job Loss Among Community Members

While nearby residents may have their long-term health harmed by toxic waste plants and similar facilities,[112] the residents may also benefit from the jobs these facilities create.[113] Indeed, removing or regulating these facilities could result in an increase in unemployment and poverty.[114] However, economic costs "can be offset as companies develop cheaper ways to clean up pollutants," and other outside factors also contribute to job loss.[115] Some fears that environmental regulation led to job loss in the past have turned out to be unfounded—for example, the Clean Air Act "has been a modest net creator of jobs through industry spending on technology to comply with it."[116] However, many environ-

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112. *See* Martine Vrijheid, *Health Effects of Residence Near Hazardous Waste Landfill Sites: A Review of Epidemiologic Literature*, 108 ENVTL. HEALTH PERSP. 101, 101 (2000) ("The disposal of wastes in landfill sites has increasingly caused concern about possible adverse health effects for populations living nearby, particularly in relation to those sites where hazardous waste is dumped.").

113. Eckerd et al., *supra* note 92, at 951.

114. *See, e.g.*, Motoko Rich & John Broder, *A Debate Arises on Job Creation and Environment*, N.Y. TIMES (Sept. 4, 2011), http://www.nytimes.com/2011/09/05/business/economy/a-debate-arises-on-job-creation-vs-environmental-regulation.html.

115. *Id.*

116. *Id.*

mental regulations have not been subject to a systematic impact study after implementation, so no comprehensive evaluation of the effect of environmental regulations on job loss exists.[117]

This question has been the subject of some research, leading to mixed results. British researchers Cole and Elliot summarized the contradictory findings from the United States:

> [S]tudies by Morgenstern et al. (2002)[118] and Berman and Bui (2001)[119] find *no evidence* to suggest that regulations have adversely affected industrial employment with the former actually finding weak evidence that regulations may have resulted in a small *net increase in employment*. However, studies by Henderson (1996),[120] Kahn (1997)[121] and Greenstone (2002),[122] again for the US, indicate that industries located in *counties with stringent regulations* have experienced job losses, or at the very least lower employment growth rates, relative to industries in less regulated counties.[123]

These mixed findings show that the effect of environmental regulations on jobs depends on context. While job loss is not inevitable, policymakers should analyze any proposed cleanup project for potential economic ramifications so that these projects do not hurt the very people they intend to help.

2. Environmental Gentrification

Another potential consequence of environmental cleanup is increased property values resulting in the displacement of residents who can no longer afford to live in the improved neighborhood. This phenomenon is called "environmental gentrification."[124] In an ethnographic study describing this pattern in Harlem, New York, Melissa Checker describes the theory that city developers use EJ Movement rhetoric to promote economic development at the expense of those the movement is trying to help:

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117. *Id.*

118. Richard D. Morgenstern et al., *Jobs Versus the Environment: An Industry-Level Perspective*, 43 J. ENVTL. ECON. & MGMT. 412, 413–30 (2002).

119. Eli Berman & Linda T.M. Bui, *Environmental Regulation and Labor Demand: Evidence from the South Coast Air Basin*, 79 J. PUB. ECON. 265, 265–95 (2001).

120. J. Vernon Henderson, *Effects of Air Quality Regulation*, 86 AM. ECON. REV. 789, 789–813 (1996).

121. Matthew E. Kahn, *Particulate Pollution Trends in the United States*, 27 J. REG'L SCI. & URB. ECON. 87, 87–107 (1997).

122. Michael Greenstone, *The Impact of Environmental Regulations on Industrial Activity: Evidence from the 1970 and 1977 Clean Air Act Amendments and the Census of Manufactures*, 110 J. POL. ECON. 1175, 1175–1219 (2002).

123. Matthew A. Cole and Rob J. Elliot, *Do Environmental Regulations Cost Jobs? An Industry Level Analysis of the UK*, 7 B.E. J. Econ. Anal. & Poly. 1, 4 (2007) (emphasis and internal footnotes added).

124. Melissa Checker, *Wiped Out by the "Greenwave": Environmental Gentrification and the Paradoxical Politics of Urban Sustainability*, 23 CITY & SOC'Y 210, 212 (2011).

> Environmental Gentrification describes the convergence of urban redevelopment, ecologically-minded initiatives and environmental justice activism in an era of advanced capitalism. Operating under the seemingly a-political rubric of sustainability, environmental gentrification builds on the material and discursive success of the urban environmental justice movement and appropriates them to serve high-end redevelopment that displaces low-income residents. Materially, the efforts of environmental justice activists to improve their neighborhoods (i.e. the removal of environmental burdens and the installation of environmental benefits) now help those neighborhoods attract an influx of affluent residents.[125]

If true, this phenomenon may give rise to additional environmental harm. Furthermore, by driving the poor out of the cities in which they work, policies could indirectly increase pollution and toxins created through increased commuting needs. While this theory is compelling, the research is mixed as to whether or not environmental gentrification really results from cleanup projects.

Nevertheless, the concern about displacement is not wholly unfounded. Among all of the potential "unintended consequences" of addressing environmental injustice, environmental gentrification has received the most attention in research. Checker's study operates under the assumption that environmental gentrification is a real threat, but does not provide empirical evidence that the phenomenon actually occurs.[126] However, other studies do tackle this issue with mixed results.

Four recent studies from 2009 and 2010 found that cleanup projects such as brownfield revitalization[127] lead to a decrease in minority demographics and an increase in housing costs.[128] Gamper-Rabindran and Timmins compared neighborhoods close to sites that were cleaned up with neighborhoods not subject to cleanup projects.[129] They found that cleanup was associated with increases in population density, housing-unit density, mean household income, the percentage of college-educated residents, and the percentages of Blacks and Hispanics.[130]

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125. *Id.*

126. *Id.*

127. *Overview of the Brownfields Program*, EPA, https://www.epa.gov/brownfields/overview-brownfields-program (last visited Sept. 20, 2017).

128. Winifred Curran & Trina Hamilton, *Just Green Enough: Contesting Environmental Gentrification in Greenpoint, Brooklyn*, 17 LOCAL ENV'T 1027, 1031 (2012) (citing Jonathan D. Essoka, *The Gentrifying Effects of Brownfields Redevelopment*, 34 W. J. BLACK STUD. 229, 299–315 (2010); Hamil Pearsall, *Linking the Stressors and Stressing the Linkages: Human-Environment Vulnerability and Brownfield Redevelopment in New York City*, 8 ENVTL. HAZARDS 117, 117–32 (2009); Hamil Pearsall, *From Brown to Green? Assessing Social Vulnerability to Environmental Gentrification in New York City*, 28 ENV'T & PLAN. C. 872, 872–86 (2010); Ann Dale & Lenore L. Newman, *Sustainable Development for Some: Green Urban Development and Affordability*, 14 LOCAL ENV'T 669, 669–81 (2009)).

129. TAYLOR, *supra* note 5, at 87.

130. *Id.*

Housing values also increased after the cleanup.[131] However, another study found no relationship between the extent of gentrification a neighborhood experienced and the perceived or actual environmental improvement that preceded it.[132] This contrary finding can be reconciled with the theory that communities may experience a lag time in between clean-up and displacement if they are able to absorb some gentrifiers into the existing housing market.[133]

The EPA commissioned a study by the National Environmental Justice Advisory Council (NEJAC) to research the unintended impacts, including environmental gentrification, of its own Environmental Justice initiatives.[134] While this study provided recommendations to address the perceived problem of environmental gentrification, it did not determine whether environmental gentrification actually occurred after the cleanup projects because it lacked demographic data at the neighborhood level.[135]

Environmental gentrification has the potential to inflict various kinds of harm on those who are affected. Community members may face displacement pressure from landlords, challenges in obtaining new housing in a market requiring them to pay a disproportionately high percentage of income for housing, and the loss of community culture.[136] Initial research shows that there is indeed cause for concern, and any environmental justice policy must be assessed for its potential contribution to displacement.

B. DESIGNING POLICY SOLUTIONS TO REMEDY CAUSES OF ENVIRONMENTAL INJUSTICE

Keeping the potential for unintended consequences and the complexity of the goals associated with environmental justice in mind, policymakers should look to the causes of racial and income disparities to develop effective solutions. The research has shown that factors like facially neutral enforcement principles, unequal enforcement, low political power, and residential similarity preference contribute to environmental injustice.[137] Research supporting the theory of market dynamics is lacking, but the theory has not been definitively disproven. Among the solutions available to each of these factors, reforming enforcement structures and increasing political power through meaningful community involvement appear to be the most reasonable approaches. The best solutions will vary on a case-by-case basis, in response to rigorously collected data. This Note

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131. *Id.*

132. Adam Eckerd, *Cleaning Up Without Clearing Out? A Spatial Assessment of Environmental Gentrification*, 47 URB. AFF. REV. 31, 31 (2011).

133. TAYLOR, *supra* note 5, at 87.

134. NAT'L ENVTL. JUSTICE ADVISORY COUNCIL, UNINTENDED IMPACTS OF REDEVELOPMENT AND EFFORTS IN FIVE ENVIRONMENTAL JUSTICE COMMUNITIES 2 (2006) [hereinafter NEJAC].

135. *Id*. at 16.

136. *Id.* at 2.

137. *See supra* Part II.

examines the potential success of six solutions: (1) revising enforcement principles, (2) ensuring equality in enforcement, (3) promoting meaningful involvement, (4) reducing similarity preference, (5) reducing information costs, and (6) expanding existing programs.

1. Revising Environmental Enforcement Principles

Part II, Section B describes how risk-reduction strategies at regulatory agencies that place toxic facilities in rural areas may disproportionately burden low-income and/or minority populations. Regulatory authorities at the local, state, and national level should examine their policies to understand how they contribute to environmental injustice. The EPA created a toolkit that advises regulators of suggested environmental-justice-ensuring actions to take when enforcing major environmental statutes.[138] The table below provides an example of how the toolkit reads EJ principles into statutes like the Clean Air Act:

TABLE 3.
INFORMATION EXCERPTED FROM EPA'S *TOOLKIT FOR ASSESSING POTENTIAL ALLEGATIONS OF ENVIRONMENTAL INJUSTICE*[139]

Activity	Statutory Provision	Implementation Action
Establishing Incinerator Siting Requirements	Standards for new solid waste incinerators must include "siting requirements that minimize, on a site-specific basis, to the maximum extent practicable, potential risks to public health or the environment." Clean Air Act §129(a)(3)	Ensure that siting requirements consider environmental justice concerns.

This EPA guidance adds an extra step in the siting decision process: in addition to minimizing risk generally, decision makers must also consider environmental justice concerns.

By explicitly mentioning EJ, this guidance helps to eliminate the problem of facially neutral regulations that may have an unintended, unjust impact on low-income or minority populations. On the other hand, this toolkit lacks specific guidance as to the definition of "environmental justice concerns," even describing these concerns as "infinitely variable."[140] Without more specificity in its

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138. *Toolkit for Assessing Potential Environmental Justice Claims*, EPA 1 (Nov. 2004), https://www.epa.gov/sites/production/files/2015-04/documents/toolkitej.pdf.

139. *Id.* at A-13, B-9.

140. *Id.* at 2.

"implementation actions," this toolkit may just be an exercise in lip service to the EJ Movement rather than a workable solution to its claims. Agencies have the capacity to create guidance that resolves ambiguous statutory mandates in such a way as to prevent policies that lead to a disparate impact on certain race or class groups.[141] The EPA should put forth *specific* descriptions of EJ concerns to help reduce any unintended inequitable distributions of polluting sources.

2. Ensuring Equal Environmental Enforcement

The research supports the EJ Movement's claim that, in at least some circumstances, there is unequal environmental regulation enforcement along socioeconomic and racial lines.[142] Because compliance bias partially explains environmental injustice, policymakers should take note of the enforcement characteristics across industries that make this problem more or less likely. Compliance bias may indeed be the result of corrupt politicians, as many EJ Movement activists allege; however, certain organizational schemes and circumstances are more likely than others to result in unequal enforcement.

a. Establishing Policies to Prevent Regulatory Capture

Certainly some degree of regulatory capture is inevitable, but researchers should examine the relative influence of different types of stakeholders to evaluate whether the regulatory process has become unbalanced in favor of industry influence.[143] In the wake of the 2008 financial crisis, much research was conducted to assess regulations, analyze financial accountability, and track enforcement of financial laws.[144] Lawrence Baxter suggests five characteristics for evaluating the potential for agency capture with respect to the financial sector: (1) adequate regulatory capacity, (2) meaningful transparency, (3) meaningful access by stakeholders, (4) external checks on industry, and (5) internal checks on industry.[145] The EJ Movement can borrow from this research in financial regulation to make its own demands for fair enforcement.

For example, Baxter's first characteristic, adequate regulatory capacity, is just as applicable to environmental regulation as it is to financial regulation. Baxter argues that inadequate regulatory funding leads to undue industry influence.[146] The EPA and local environmental regulators are subject to the same politically

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141. Olatunde C.A. Johnson, *The Agency Roots of Disparate Impact*, 49 HARV. C.R.-C.L. L. REV. 125, 127 (2014).

142. *See supra* Part II A-C.

143. Lawrence G. Baxter, *Understanding Regulatory Capture: An Academic Perspective from the United States*, *in* MAKING GOOD FINANCIAL REGULATION 53, 59 (Stefano Pagliari ed., 2012).

144. *See, e.g.,* Dominic Albino et al., *Corporations and Regulators: The Game of Influence in Regulatory Capture,* NEW ENGLAND COMPLEX SYSTEMS INSTITUTE (2013).

145. Baxter, *supra* note 143, at 60.

146. *Id.* at 61.

popular budget cuts as financial regulators.[147] Inadequate funding may be the underlying cause of compliance bias in environmental regulation, just as it contributed to the capture of financial regulation. Where regulators look to private industry to bridge funding gaps, regulatory schemes may be less likely to be enforced against industry players in areas that are already low in political capital.

b. Spreading out Authority

Spreading out the regulatory authority among more individuals may reduce compliance bias and unequal enforcement. When enforcement authority is centralized near the top of an agency's chain of command, the detection of noncompliance wanes, particularly in Hispanic communities.[148] This phenomenon holds regardless of which political party has control over agency appointments.[149] When authority is spread out among many decision-makers who are each responsible for smaller decisions, it makes sense that the likelihood of industry, or the loudest voices of the community, being able to sway regulators decreases. Therefore, policymakers should look for decentralized decision-making authority to create fair enforcement structures. By dividing the decision-making power among more individuals and reducing the chance of regulatory capture, community members should have a greater chance of getting their voice heard at the same volume as industry lobbyists.

c. Overall Recommendations for Enforcement

While it is not the most appealing explanation for environmental injustice, the process that goes into enforcement decisions has serious consequences for EJ outcomes. Although inspection and monitoring may not guarantee compliance, "inspections may induce [facilities] to improve their environmental performance."[150] When enforcers decide whether to investigate or target a facility, they are feeding firms information about when they *need* to comply with environmental regulations.[151] While individual regulatory authorities may be underfunded, in the aggregate they control enormous financial resources; therefore, regulators possess a huge share of the power needed to create change.[152] For all of these reasons, it is important to examine agency enforcement practices. Tackling unequal enforcement does not require creating a new system of entitlements—it

147. Valerie Volcovici & Timothy Gardner, *EPA Hit Hardest as Trump Budget Targets Regulations,* REUTERS (March 16, 2017), http://www.reuters.com/article/us-usa-trump- budgetepa- idUSKBN16N0E1.

148. Koninsky & Reenock, *supra* note 58, at 516.

149. *See id.*

150. Dion et al., *supra* note 59, at 6, 16.

151. Hellend, *supra* note 57.

152. Bailey, *supra* note 18, at 38.

simply requires a restructuring of current regulatory mechanisms and monitoring of those mechanisms for accountability. This strategy could have a big payoff in the fight to eliminate environmental injustice in low-income and minority communities.

3. Ensuring the Meaningful Involvement of Community Members

The research demonstrates that enforcement is linked to whether "communities are more mobilized around environmental justice concerns."[153] The Cerrell Report illustrates that firms can alter their behavior based on a community's perceived political power.[154] Policymakers have responded to this finding by calling for "meaningful involvement" of all stakeholders in decision-making processes that will have environmental impacts.[155] Characteristics of "meaningful involvement" have been difficult to pin down, and many projects end up giving mere lip service to this aspiration.

a. Characteristics of "Meaningful Involvement"

The scholarship on reforming financial regulation is informative in providing suggestions for improving environmental regulation with respect to stakeholder involvement. Baxter's indicators of transparency and involvement are relevant in evaluating participatory justice, and this Note will group them together under the umbrella of "meaningful involvement." Transparency is a prerequisite to involvement and will be addressed first.

Transparency in the regulatory process may be the "best of disinfectants"[156] for cleaning agencies of compliance bias. Baxter argues,

> The greater transparency imposed on the [Federal Reserve] by Dodd-Frank has helped produce more informed views on financial regulatory policy . . . Additionally, more rigorous disclosure requirements could help prevent biased decision making that might arise from the revolving door between regulators and their industry. Greater disclosure all round would at least enable other stakeholders and the media to focus a spotlight on improper collusion.[157]

The benefits of transparency in financial regulation—informing the public, reducing bias, and uncovering improper collusion—likely exist with respect to environmental regulation. However, environmental regulation is often much more local and place-specific than federal regulation of banking and invest-

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153. Koninsky & Reenock, *supra* note 58, at 516.

154. CERRELL ASSOCIATES, *supra* note 41, at 28–29.

155. *See* NAT'L ENVTL. JUST. ADVISORY COUNCIL, MEANINGFUL INVOLVEMENT AND FAIR TREATMENT BY TRIBAL REGULATORY PROGRAMS 1 (2004).

156. Louis Brandeis, *What Publicity Can Do*, HARPER'S WKLY. (Dec. 20, 1913), http://3197d6d14b5f19f2f440-5e13d29c4c016cf96cbbfd197c579b45.r81.cf1.rackcdn.com/collection/papers/1910/1913_12_20_What_Publicity_Ca.pdf.

157. Baxter, *supra* note 143, at 63.

ment.[158] Indeed, it may be beyond the capability of Congress to pass an environmental Dodd-Frank. Still, because of the high potential benefits and low potential costs of increased transparency in siting and enforcement decisions, EJ activists may be well served to develop creative ways to achieve this goal.

Even if all stakeholders are better informed due to increased transparency, it is difficult to balance the involvement of regular citizens against industry input. Baxter characterizes the notice and comment stage of financial regulation as pitting citizens' "worthless form letters" against industry's "organized and informed" comments.[159] As in the financial industry, firms who have a stake in environmental regulations have well-resourced and organized input.[160] Sophisticated, informed, and voluminous industry comment requires a more detailed response and is able to sway decision-making.[161] Baxter proposes other models of involvement that may be more successful in securing participatory justice than notice and comment.[162] Baxter's illustration of "proxy advocates"—common in utility and insurance regulation—may have implications for environmental regulation as well as financial regulation.[163] Proxy advocates are "internal agencies tasked to provide regulators with expertise and information from a consumer perspective, to challenge regulatory policies, and to represent the public interest at large in the decision making process."[164] The presence of proxy advocates in local, state, and federal environmental regulatory decision-making could increase the voices of vulnerable populations most likely to be affected by environmental injustice.

b. Identifying Meaningful Involvement in the Context of Environmental Policy

Distinguishing genuinely meaningful community involvement from perfunctory community participation is key to achieving environmental justice. The

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158. Environmental regulation deals with facts affixed to physical space, while financial regulation is more ephemeral. For example, EPA's Office of Enforcement and Compliance Assurance works with EPA regional offices and state and tribal governments to enforce national environmental laws and address pollution problems at the community-level. *About the Office of Enforcement and Compliance Assurance (OECA)*, EPA, https://www.epa.gov/aboutepa/about-office-enforcement-and-compliance-assurance-oeca (last visited Sept. 20, 2017). In contrast, the Commodity Futures Trading Commission (CFTC) has regulatory authority over certain financial markets not affixed to a particular locale. *Mission & Responsibilities*, U.S. COMMODITY FUTURES TRADING COMM'N, http://www.cftc.gov/About/MissionResponsibilities/index.htm (last visited Sept. 20, 2017).

159. Baxter, *supra* note 143, at 63–64.

160. *See* Elizabeth Warren, *Corporate Capture of the Rulemaking Process*, THE REG. REV. (June 14, 2016), https://www.theregreview.org/2016/06/14/warren-corporate-capture-of-the-rulemaking-process/ ("When proposed rulemaking notices are published and the public has a formal opportunity to weigh in, their views are quickly buried in an avalanche of detailed, well-funded, well-credentialed comments from industry insiders and their highly-paid allies. Those EPA rules on dangerous air pollutants? Industry groups submitted 81 percent of the comments during the notice-and-comment period. Public interest groups submitted 4 percent.").

161. Baxter, *supra* note 143, at 63.

162. *Id.* at 64.

163. *Id*.

164. *Id.* at 25.

NEJAC report on unintended consequences of revitalization interviewed stakeholders and reviewed project outcomes in an attempt to describe instances of successful meaningful involvement.[165] For example, in the Washington, D.C. Navy Yard revitalization project, community involvement was deemed to be "less effective" because "the community had a limited capacity to review and comprehend technical data."[166] This example illustrates the relevance of transparency to environmental justice, but also shows that attention alone is not enough when it comes to complex and confusing issues. Installing technically trained proxy advocates could level the playing field and serve to ensure that information-sharing is worthwhile.

A project in East Palo Alto was more successful than the Washington project because there were "multiple opportunities for public involvement through advisory committees and public meetings."[167] Ultimately, the NEJAC report concluded that involvement is not meaningful unless it occurs *throughout the life of the project*.[168] Extrapolating these findings to other instances, proxy advocates explicitly charged with speaking for the public interest could allow the East Palo Alto results to be replicated. Often, participation may be limited to "those who live comfortably enough to allow them to participate regularly."[169] By structuring decision making to include proxy advocates, environmental justice concerns can be voiced *throughout the life of the project* instead of in spurts and by a random variety of citizens.

c. Costs and Benefits of Meaningful Involvement

Political empowerment may be a policymaker's primary insurance against unintentionally harming community members. By listening to those who are impacted throughout the life of an environmental cleanup or green energy project, decision-makers become aware of negative consequences (like displacement or new pollution) much sooner.[170] Meaningful involvement has the added benefit of legitimizing environmental policy and making the government's decisions less vulnerable to political backlash.[171] Without an opportunity to participate, those affected are left out of the process and may end up having to move to a new community where they will continue to bear an inequitable amount of society's toxic burden.

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165. NEJAC, *supra* note 134, at 11.
166. *Id.*
167. *Id.*
168. *Id.*
169. Renee A. Irvine & John Stansbury, *Citizen Participation in Decision Making—Is It Worth the Effort?*, 64 PUB. ADMIN. REV. 55, 59 (2004).
170. *See id*. at 56.
171. *See id.*

Two concerns about this extra process include high costs and a significant slowdown of solution implementation.[172] However, the costs often associated with participation do not take into account the value that citizen participants gain from becoming involved.[173] Nor do the costs account for the increased probability of policy effectiveness.[174] These benefits could outweigh the costs in many instances. Future evaluation of participatory costs and benefits may reveal indicators for when participation is "worth it" (potentially, medium to large scale projects) and when it is not (small, one-off decisions that have very limited effects).

Still, some will argue that regulators should not spend any time or resources on projects that do not directly reduce environmental harm. Net harm reduction is a logical top priority because it benefits society as a whole. However, meaningful involvement of stakeholders does not prevent net harm reduction. Instead, it ensures that the policy solutions intended to reduce environmental harm are *in fact* doing so, rather than pushing the harm into a neighboring community. Environmental impacts do not respect manmade boundaries, and so solutions must ensure that we are not simply taking turns holding the "hot potato" of toxic facilities. Meaningful involvement over the course of the project will allow all those affected to speak up so that an informed evaluation of costs and benefits can take place.

4. Reducing Residential Similarity Preference

The research discussed in Part II, Section F, demonstrates that when individuals have a moderate to high preference for residential similarity, environmental disparities based on race are more likely.[175] By reducing residential similarity preference among all individuals, minority residents will have more options for housing away from disamenity-producing facilities.[176] However, the neutral principle of residential similarity preference among all individuals, regardless of race, is intertwined with historical non-neutral exclusionary practices that created segregation.[177] Policymakers have greater access to formal exclusionary structures, like discriminatory housing laws, than they do to internal individual preferences.[178] The first priority in increasing housing options for minorities should be to remove these lasting vestiges of segregation. The researchers who have demonstrated the effect of residential similarity preference acknowledge that this effect is "dwarfed by the dynamic combination of all [other] effects

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172. *See id.*
173. *Id.* at 58.
174. *Id.*
175. HEATHER CAMPBELL ET AL., RETHINKING ENVIRONMENTAL SUSTAINABILITY 94 (2015) (overlapping analysis of the research discussed in Kim, et al., *supra* note 43).
176. *Id.* at 95.
177. *Id.*
178. *Id.*

occurring at the same time."[179] In addition to being impossible to execute, suggesting that the government regulate individual preferences will likely be perceived as overly paternalistic. However, understanding the role played by residential similarity preference remains important for evaluating the potential success of other policy approaches. Knowing the degree to which residential homophily could be responsible for outcomes for environmental injustice will allow policymakers to anticipate backlash and articulate a response.

5. Reducing Information Costs that Burden Residential Choice

Even though there is little empirical support for the theory that disamenity-producing facilities drive down property values and attract low income, minority communities, the theory has not been fully vetted and may turn out to be true in some circumstances. It is worth examining solutions to this phenomenon, if it does indeed exist, so that those who understand the theory of market dynamics to be a serious cause of environmental injustice cannot quickly conclude that the problem is unsolvable.

The theory of market dynamics is attractive to many because it echoes the Coasian refrain beloved by proponents of Law and Economics: it takes two to transact.[180] However, even if people of lower income and people of color *are* moving to toxic areas, they are not doing so within a perfectly free market. Some people may not be aware that they are moving to a toxic area because of high information costs. For example, it may not be feasible for renters or less-equipped home purchasers to hire a real estate agent to reduce their information and search costs.[181] Indeed, because toxic facilities are disproportionately located in areas with less political capital, fewer people are aware that the harm is even occurring.[182] Information costs may be too high for residents to bargain around the harm they experience by living closer to disamenity-producing facilities.

A threshold step to reducing the disparate impact of environmental harm is to reduce the information costs necessary for residents to freely bargain in the housing market. An increased availability of information through free internet databases like the EPA's Environmental Justice Screening and Mapping Tool[183] could reduce these costs, informing potential renters and owners so that they can bargain around exposure to environmental harm.[184]

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179. *Id.* at 96.

180. Professor Coase perceived societal harm as the result of a transaction between two free, independent parties. In his paper, "The Problem of Social Cost," he explains, "The question [of social cost] is commonly thought of as one in which A inflicts harm on B and what has to be decided is: how should we restrain A? But this is wrong. We are dealing with a problem that is of a reciprocal nature." Coase, *supra* note 93, at 2.

181. John M. Quigley, *Transaction Costs and Housing Markets*, INSTITUTE OF BUSINESS AND ECONOMIC RESEARCH 3 (2002).

182. *See* W.J. BAUMOL & W.E. OATES, THEORY OF ENVIRONMENTAL POLICY 3 (1988).

183. Available at https://ejscreen.epa.gov/mapper/ (last visited Sept. 26, 2017).

184. *See* BAUMOL & OATES, *supra* note 182, at 4.

6. Expanding the Scope of Existing Environmental Policies to Support EJ

Some policies that currently exist have the potential to address environmental injustice. The National Environmental Policy Act (NEPA) requires that government projects create an environmental impact statement (EIS) to evaluate direct, indirect, and cumulative impacts of agency action.[185] However, according to the NEJAC report, EISs often fail to address gentrification and dislocation issues that could occur as the result of revitalization and environmental cleanup projects.[186]

NEJAC recommends that federal agencies follow the Council on Environmental Quality's 1987 directive to consider *cumulative* effects of agency action, which includes social impact analysis.[187] Social impact analysis may uncover potential displacement that would result from a cleanup, giving agencies the perspective to deal with this issue before the project takes place.[188] Policymakers should take the advice from the NEJAC report and weigh the potential social costs of environmental cleanup for community members against the benefit for those individuals and for society as a whole.

Additionally, supplementing "notice and comment" decision-making structures with technically-savvy "proxy advocates" for the public interest will allow residents to weigh in on the cost-benefit analysis throughout the life of any cleanup project. This meaningful participation can legitimize cleanup projects and help agencies avoid regulatory capture by industry. Even if the proxy advocate model is not adopted, some concrete criteria for meaningful involvement would provide activists and policymakers with a yard-stick to measure participatory justice in any given process. By increasing participatory justice, legitimate stakeholders will be on more equal footing as they debate which solutions to environmental injustice are worth pursuing.

Ultimately, some degree of new social harm will be unavoidable if we are going to clean up the most toxic areas in the country. People associated with polluting industries may lose their jobs.[189] Community members may be forced out of their neighborhoods. One type of pollution may be swapped for another. However, the cost of these harms can be brought to light through diligent analysis. Once the harms are known, mitigation of these harms may be possible. Socializing the cost of these new harms could prove to be more efficient than disproportionately imposing the existing harms on low-income and minority communities.

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185. 40 C.F.R. § 1508.25 (2017).
186. NEJAC, *supra* note 134, at 14.
187. *Id.* at 15.
188. *Id.*
189. *See supra* at Part III A.1.

CONCLUSION

The research evaluating the distribution of environmental harm among demographic groups shows mixed empirical evidence in support of the EJ Movement's claims. The fact that the environmental injustice appears only in some contexts and under only some methodologies requires researchers to standardize their methods and continue to collect data. Where it does occur, the causes of environmental injustice are difficult to disentangle. Discriminatory siting, unequal enforcement, wide gaps in political power, and residential similarity preference all contribute to the phenomenon in some way.

Policymakers should identify solutions that combat each known cause of environmental injustice. However, they should also keep in mind the unintended harm that these solutions could create, like environmental gentrification. Ultimately, the multitude of potential impacts requires balancing the costs and benefits of any proposed solution. Policymakers should provide opportunities for meaningful community involvement throughout individual environmental justice projects and create a record detailing potential social and environmental costs of proposed solutions. By understanding the causes of environmental injustice, policymakers can achieve a more equitable distribution of burdens and a lasting reduction in overall environmental harm. Setting concrete goals for meaningful participation, like installing knowledgeable proxy advocates in the regulatory process, can increase both participatory and distributive justice with respect to environmental harm while minimizing the potential for unintended consequences.