

Fordham International Law Journal

Volume 35, Issue 1

2016

Article 4

Brownfields and the Poor: Is Cleanup a Hazardous Waste of Time? An Analysis of the United States' Efforts at Remediation and Their Applicability to Brazil

Krista Yacovone*

*Fordham university School of Law

Copyright ©2016 by the authors. *Fordham International Law Journal* is produced by The Berkeley Electronic Press (bepress). <http://ir.lawnet.fordham.edu/ilj>

NOTES

BROWNFIELDS AND THE POOR: IS CLEANUP A HAZARDOUS WASTE OF TIME? AN ANALYSIS OF THE UNITED STATES' EFFORTS AT REMEDICATION AND THEIR APPLICABILITY TO BRAZIL

*Krista Yacovone**

INTRODUCTION.....	202
I. BROWNFIELD REMEDIATION EFFORTS IN THE UNITED STATES AND THE EFFECTS ON THE POOR	207
A. Brownfield Revitalization Framework in the United States.....	207
B. Brownfield Revitalization and Poverty Amelioration ..	215
1. Brownfield Sites and the Connection to Poverty ...	215
2. Sustainable Development and Positive Effects on the Poor	222
3. Community Involvement and Positive Effects on the Poor	228
II. BRAZILIAN BROWNFIELD REVITALIZATION EFFORTS AND THE POOR	233
A. Brownfield Revitalization Framework in Brazil	234
B. Poverty and Brownfield Sites in Brazil	237
III. APPLICATION OF US BROWNFIELD FRAMEWORK TO BRAZIL AND OTHER SOUTH AMERICAN COUNTRIES	239
CONCLUSION	247

* J.D. Candidate, 2012, Fordham University School of Law; B.A. Political Science, 2009, Boston College. The author would like to thank Professor Clare Huntington for her advice and encouragement and her family and friends for their unyielding support.

INTRODUCTION

At the close of the twentieth century, skeletons of the steel industry littered the landscape of Western Pennsylvania.¹ Steel mills that used to shine as symbols of wealth and security languished as stark reminders of the once-fruitful past.² Drained of their jobs, hundreds of thousands of long-time residents experienced economic hardships while poorer residents moved into the region to take advantage of declining property values, further compounding poverty rates.³ The abandoned mills became brownfield sites.⁴ Brownfield sites are deserted properties that remain undeveloped because they are contaminated or potentially contaminated by a hazardous substance.⁵ Blighted and unused, these sites reinforced the communities' feelings of despair.⁶ Areas that had once thrived experienced huge population and financial losses as both residents and businesses fled the area, crime and drug use

1. See generally Nancy Perkins, *A Tale of Two Brownfield Sites: Making the Best of Times from the Worst of Times in Western Pennsylvania's Steel Valley*, 34 B.C. ENVTL. AFF. L. REV. 503 (2007) (analyzing the redevelopment of two brownfield-ridden communities in Western Pennsylvania from an environmental justice ("EJ") perspective).

2. See *id.* at 504 (illustrating the boom of the lucrative steel industry in Western Pennsylvania and its subsequent decline in the 1980s).

3. See *id.* at 507–08, 513–14 (describing the economic and social decline of the communities of Homestead, Munhall, West Homestead, and Pittsburgh's South Side after the closure of the prosperous steel mills).

4. See *id.* at 504–05 (outlining the rise and fall of the steel mills and introducing the concept of brownfield sites).

5. Small Business Liability Relief and Brownfields Revitalization Act, 42 U.S.C. § 9601(39)(A) (2006) [hereinafter Revitalization Act] ("The term 'brownfield site' means real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant."). Both the Small Business Liability Relief and Brownfields Revitalization Act ("Revitalization Act") and the statute that it amends, the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601–9675 (2006) ("CERCLA"), provide extensive definitions of the terminology used throughout the legislation. Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9601 [hereinafter CERCLA] (defining all relevant language used in the statute); Revitalization Act, 42 U.S.C. § 9601(39)(A)–(D) (defining all relevant language used in the statute). The Revitalization Act is an amendment to CERCLA. For the purposes of this Note, citations to either statute refer to the same section of the United States Code.

6. See Perkins, *supra* note 1, at 507 (detailing the broken homes, increased suicides, and "widespread despair and loss of self-esteem" around the former steel mills).

increased, and unemployment persisted.⁷ Around one-fourth of the residents lived below the poverty line.⁸

The link between idle brownfield sites and poverty exists not only in Western Pennsylvania but across the United States.⁹ Impoverished and minority populations around brownfield sites experience conditions like those around the steel mills—an economy in decline, decaying infrastructure, lower property values, detrimental health effects, and increased drug use and crime rates.¹⁰ Remediation and redevelopment, in contrast, breathe new life into these neighborhoods.¹¹

Remediation and redevelopment together have a positive impact on brownfield communities through job creation, the elimination of health and safety hazards, the construction of

7. *See id.* at 507–08, 513–14 (enumerating the various economic and social ills felt by communities around the former steel mills).

8. *See id.* at 508–09, 514 (noting the difficulties experienced by populations around brownfield sites and citing US Census Bureau figures for the communities of Homestead, Munhall, West Homestead, and Pittsburgh’s South Side).

9. *See infra* notes 71–100 and accompanying text (describing the correlation between poverty, race, and brownfield sites). Unless otherwise indicated, for the purposes of this Note the poverty line is an annual income of US\$6225 for an individual. *See* CARMEN DENAVAS-WALT ET AL., U.S. CENSUS BUREAU, INCOME, POVERTY, AND HEALTH INSURANCE COVERAGE IN THE UNITED STATES: 2010, at 21 (2011) (presenting data on income and poverty in the United States in 2010 based on the 2011 Current Population Survey Annual Social and Economic Supplement).

10. *See infra* notes 88–99 and accompanying text (explaining the causality and consequences of living in close proximity to brownfield sites).

11. *See* CERCLA, 42 U.S.C. § 9621(d) (2006) (mandating that remediation must meet a level of cleanup that “assures protection of human health and the environment” and specifying that remedial actions shall be analyzed based on the site’s contaminants); *see also* Joel B. Eisen, “Brownfields of Dreams?": *Challenges and Limits of Voluntary Cleanup Programs and Incentives*, 1996 U. ILL. L. REV. 883, 908–09 (emphasizing the inability to predict cleanup at any given site because each site must be analyzed individually and explaining CERCLA’s “lengthy and multistep” remediation requirements); *Superfund Cleanup Process*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/superfund/cleanup/index.htm> (last updated Aug. 9, 2011) (establishing the many steps that result in remediation); *Superfund Redevelopment*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/superfund/programs/recycle/index.html> (last updated Sept. 23, 2011) (showing that redevelopment focuses on returning sites to safe and productive uses). *See, e.g.*, U.S. ENVTL. PROT. AGENCY, EPA 560-F-06-233, CHARLOTTE MAINTAINS REDEVELOPMENT MOMENTUM 1–2 (2006) (showcasing Charlotte, North Carolina’s continued efforts to redevelop brownfield sites, creating much-needed jobs and economic revitalization in impoverished areas); U.S. ENVTL. PROT. AGENCY, EPA 500-F-00-254, WENT FIELD BRINGS NEW HOPE TO IMPOVERISHED COMMUNITY 1–2 (2004) (heralding the transformation of a ten-acre brownfield site into an expansive park as the catalyst for the redevelopment and growth of a crime-ridden, economically-depressed community).

safe, affordable housing, and community beautification.¹² One way to achieve these goals is to incorporate environmental justice (“EJ”) considerations into remediation and redevelopment efforts, which requires “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.”¹³ The preservation of EJ considerations necessitates a focus on sustainable development, which recognizes environmental, economic, and social factors in decision-making.¹⁴ Remediation and redevelopment efforts

12. See, e.g., Emily Fisher, *Sustainable Development and Environmental Justice: Same Planet, Different Worlds?*, 26 *ENVIRONS: ENVTL. L. & POL’Y J.* 201, 212–13 (2003) (discussing the positive effects of remediation and redevelopment on a neighborhood near Boston that had multiple brownfield sites); Jessica Higgins, *Evaluating the Chicago Brownfield Initiative: The Effects of City-Initiated Brownfield Redevelopment on Surrounding Communities*, 3 *NW. J.L. & SOC. POL’Y* 240, 249–54 (2008) (describing the many successes of remediation and redevelopment in Chicago).

13. *Environmental Justice*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/environmentaljustice> (last updated Sept. 15, 2011) (defining environmental justice (“EJ”)). Although this is one of the most comprehensive definitions of EJ, many sources define EJ differently. Another source analyzes the environmental rights of the global population, stating that environmental justice is the principle that all people have the right to clean air, water, and land, and that those potentially affected by environmental decisions should have a meaningful say in the decision-making process, regardless of race, income, or ethnicity. See UNIV. CAL. HASTINGS C. L. PUB. L. RES. INST. ET AL., *ENVIRONMENTAL JUSTICE FOR ALL: A FIFTY STATE SURVEY OF LEGISLATION, POLICIES AND CASES* v (Steven Bonorris ed., 4th ed. 2010) [hereinafter *ENVIRONMENTAL JUSTICE FOR ALL*]. Yet another source considers Massachusetts’ EJ Policy and defines EJ as the right of all people to live in and enjoy a clean and healthful environment and to have “meaningful involvement” in the “equitable distribution of environmental benefits.” JULIAN AGYEMAN, *SUSTAINABLE COMMUNITIES AND THE CHALLENGE OF ENVIRONMENTAL JUSTICE* 26 (2005).

14. See *Sustainable Redevelopment of Brownfields*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/brownfields/sustain.htm> (last updated Aug. 5, 2011) (explaining the benefits to surrounding communities of green building and smart growth on brownfield sites); see also Patricia E. Salkin, *Land Use*, in *STUMBLING TOWARDS SUSTAINABILITY* 369, 369 (John C. Dernbach ed., 2002) (explaining that sustainable land development “requires consistent integration of social, environmental, and economic considerations in decisionmaking to produce results that promote a sound, coordinated, and harmonious built environment”); U.N. Secretary-General, *Development and International Economic Co-Operation: Rep. of the World Commission on Environment and Development*, 54, U.N. Doc. A/42/427 (Aug. 4, 1987) (presenting one of the most widely used definitions of sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”). *But cf.* Fisher, *supra* note 12, at 201 (noting that criticisms of sustainable development call it “aspirational at best, and as ‘the latest in a succession of restrictive . . . politically correct expressions’ at worst”).

should also include affected communities in the conversation about revitalization, giving communities a stake in the cleanup process and increasing the chances that their interests will be adequately protected.¹⁵ Public participation, coupled with sustainable development, can be an effective combination to successfully remediate brownfield sites and revitalize the community.¹⁶

The aforementioned issues have both domestic and international salience. Sustainable development has become a central tenet of international environmental policy.¹⁷ Agenda 21, a United Nations (“UN”) action plan focused on sustainable development and administered by the UN Commission on Sustainable Development, has advocated that any effective long-term anti-poverty strategy should employ sustainable development.¹⁸ Many agree that sustainable development is especially important for emerging, developing countries and newly industrialized countries that are looking to grow with an eye toward economic, social, and environmental concerns.¹⁹

In South America, Brazil is not only a newly industrialized country but the leader in brownfield site management among its

15. See *infra* notes 136–59 and accompanying text (explicating the benefits of increased community participation in the redevelopment process).

16. See Joel B. Eisen, *Brownfield Policies for Sustainable Cities*, 9 DUKE ENVTL. L. & POL'Y F. 187, 223 (1999) (positing that a commitment to sustainable development for effective brownfield remediation is incomplete without a focus on public participation in addition to sustainable development).

17. See, e.g., John C. Dernbach, *Sustainable Development: Now More than Ever*, in STUMBLING TOWARDS SUSTAINABILITY 45, 49 (John C. Dernbach ed., 2002) (describing both the 1992 United Nations Conference on Environment and Development in Rio de Janeiro, Brazil, which adopted Agenda 21, a blueprint for sustainable development, and the 2002 World Summit on Sustainable Development in Johannesburg, South Africa, which assessed the implementation of Agenda 21).

18. See United Nations Conference on Environment and Development, Rio de Janeiro, Braz., June 314, 1992, *Agenda 21*, ¶ 3.2, U.N. Doc. A/CONF.151/26/Rev.1 (Vol. I), Annex II (Jan. 1993) (emphasizing that an anti-poverty strategy is an essential part of a successful sustainable development plan).

19. See Dernbach, *supra* note 17, at 56–57 (arguing that while all countries should promote and practice sustainable development, developed countries in particular have a special responsibility to do so); see also A. Dan Tarlock, *Exclusive Sovereignty versus Sustainable Development of a Shared Resource: The Dilemma of Latin American Rainforest Management*, 32 TEX. INT'L L.J. 37, 52 (1997) (noting that, in modern international law, sustainable development is often used in efforts to bridge the North-South or rich-poor environmental gap).

neighbors.²⁰ Although Brazil's brownfield policy is advanced compared to these countries, its laws are ineffective at both remediating brownfield sites and protecting the surrounding poor.²¹ As a newly industrialized country, an advanced emerging market, the fifth-most populous country in the world, and the only country in South America with any brownfield law or policy to analyze, Brazil is ripe to consider the applicability of the US brownfield framework to its efforts at remediation and poverty alleviation.²²

This Note argues that the United States' brownfield legal framework and policy developments have worked to simultaneously address environmental concerns and ameliorate poverty. It recognizes that despite the lack of an extensive incorporation of EJ concerns, and despite the absence of any incorporation of sustainable development requirements into its legislative framework, US federal and state policies on these issues have positively complemented the legal regime to achieve reductions in poverty levels and in environmental contamination. This Note then argues that this approach should be adopted by Brazil to alleviate poverty and develop sustainably.

Part I presents an overview of US brownfield legislation, the effect of brownfield sites on the poor, and how sustainable development and community involvement can positively impact the poor and the environment. Part II shows that current brownfield regulation in Brazil is insufficient at both remediation and at protecting the poor. Part III suggests that Brazil should adopt an improved version of the United States' legal framework for brownfield revitalization.

20. See *FTSE Emerging Markets*, FTSE, http://www.ftse.com/Indices/FTSE_Emerging_Markets/index.jsp (last visited Oct. 23, 2011) (listing Brazil as an advanced emerging country); *infra* notes 165–66 and accompanying text (distinguishing Brazilian brownfield cleanup efforts from those of its neighbors); *infra* notes 201–44 and accompanying text (proposing changes to the current Brazilian legal landscape on brownfield management).

21. See *infra* notes 165–200 (analyzing contaminated site management in Brazil and the effects of current legislation—or lack thereof—on the poor).

22. See *FTSE Emerging Markets*, *supra* note 20 (listing Brazil as an advanced emerging country); International Data Base, U.S. CENSUS BUREAU, <http://www.census.gov/idb/ranks.html> (follow “Top 10 Countries” for “2011”) (last updated Dec. 20, 2010) (citing Brazil's current population as 203,429,773).

I. BROWNFIELD REMEDIATION EFFORTS IN THE UNITED STATES AND THE EFFECTS ON THE POOR

This Part describes brownfield cleanup efforts in the United States and their impact on surrounding communities. Part I.A. presents the legal and administrative framework for brownfield revitalization in the United States. Part I.B. discusses the connection between brownfield sites and poverty and how cleanup can positively affect the poor. Part I.B.1. examines the correlation between brownfield sites and poverty, why this relationship exists, and how it disadvantages surrounding communities. Parts I.B.2. and I.B.3. explain the benefits of sustainable development and community involvement for both impoverished communities and the environment, and show how the United States' legislative framework allows for positive policy developments.

A. *Brownfield Revitalization Framework in the United States*

The United States' brownfield revitalization framework is a combination of federal and state legislation.²³ The overarching federal scheme is the general legislation that allows for federal cleanups and provides considerable leeway for state and local governments to implement their own cleanup statutes.²⁴ Two

23. CERCLA, 42 U.S.C. § 9628 (2006) (outlining state response programs and their intersection with federal law); *see, e.g.*, COLO. REV. STAT. ANN. §§ 25-16-301 to -310 (West 2011) (establishing Colorado's voluntary cleanup program ("VCP")); 35 PA. CONS. STAT. §§ 6026.101-.505 (2011) (establishing Pennsylvania's VCP); VA. CODE ANN. §§ 10.1-1230 to -1237 (West 2011) (establishing Virginia's VCP); *see also* Eisen, *supra* note 11, at 886 (pointing out that state and federal cleanup programs work together to encourage brownfield redevelopment).

24. *See* Eisen, *supra* note 11, at 886 (noting that the rise of VCP statutes is consistent with the trend of the US Environmental Protection Agency ("EPA") delegating responsibility for environmental protection to the states); *see also* Veronica Eady Famira, *Recycling Brownfields*, in THE LAW OF ENVIRONMENTAL JUSTICE: THEORIES AND PROCEDURES TO ADDRESS DISPROPORTIONATE RISKS 605, 607 (Michael B. Gerrard & Sheila R. Foster eds., 2d ed. 2008) (stating that the EPA has almost never taken action at sites already being cleaned under VCPs); Dave Ryan, *Whitman Applauds Senate Passage of Brownfields Legislation*, EPA NEWSROOM (Dec. 20, 2001), http://epa.gov/brownfields/news/announcg_01.htm (follow "EPA News Release" hyperlink) (explaining that the Revitalization Act gives increased funding and flexibility to state and local governments for cleanup of brownfield sites). *But see* Eisen, *supra* note 16, at 207-08 (arguing that the failure to require uniform state VCP procedures is detrimental to a goal of sustainable development and instead serves the goal of returning brownfield sites to the market).

statutes primarily shape the federal brownfield scheme—the Comprehensive Environmental Response, Compensation, and Liability Act (“CERCLA”) and one of its amendments, the Small Business Liability Relief and Brownfields Revitalization Act (“Revitalization Act”).²⁵ The US Environmental Protection Agency (“EPA”), an administrative agency that regulates environmental protection, is the primary organ of enforcement.²⁶ Although the federal scheme addresses some aspects of EJ policy, some commentators argue that the lack of comprehensive EJ requirements can lead to neglect of the poor as stakeholders in revitalization.²⁷

CERCLA liability is one main obstacle to redevelopment.²⁸ CERCLA defines a “facility,” the area where liability may attach, very broadly, so that many sites fall within CERCLA's purview.²⁹ Liability may attach to past or present owners or operators of a site. Alternatively, it may apply to anyone who transported or arranged for the disposal or treatment of hazardous waste at a

25. CERCLA, 42 U.S.C. §§ 9601–9675; Revitalization Act, 42 U.S.C. §§ 9601–9675.

26. 42 U.S.C. § 9604 (granting the US federal government the authority to manage removal and remediation actions); 40 C.F.R. § 1.3 (2011) (granting the EPA its regulatory authority); see *Laws and Regulations, Summary of the Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/lawsregs/laws/cercla.html> (last updated Aug. 11, 2011) (describing the EPA's role under CERCLA).

27. Compare ROBERT D. BULLARD ET AL., UNITED CHURCH OF CHRIST JUSTICE & WITNESS MINISTRIES, TOXIC WASTES AND RACE AT TWENTY: 1987–2007, at 6–8 (2007) (proposing recommendations for Congress and the Executive branch to increase institutional EJ incorporation), with U.S. ENVTL. PROT. AGENCY, PLAN EJ 2014 2–6 (2011) (recognizing that the EPA should increase its consideration of EJ goals in policies and programs and identifying specific actions to further incorporate EJ to protect minority and low-income populations).

28. See Eisen, *supra* note 11, at 899 (positing that CERCLA liability “is most widely perceived as the most serious barrier to redevelopment, outweighing all benefits”); see also Douglas A. McWilliams, *Environmental Justice and Industrial Redevelopment: Economics and Equality in Urban Revitalization*, 21 *ECOLOGY L.Q.* 705, 725 (1994) (calling the “magnitude and uncertainty” of CERCLA liability a significant obstacle to urban industrial redevelopment).

29. 42 U.S.C. § 9601(9) (“The term ‘facility’ means (A) any building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or publicly owned treatment works), well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, or aircraft, or (B) any site or area where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located; but does not include any consumer product in consumer use or any vessel.”).

site.³⁰ This far-reaching liability standard has the positive effect of holding owners, operators, or transporters of hazardous waste accountable, while producing the negative effect of discouraging developers from buying brownfield sites for fear of being held responsible for cleanup.³¹ To encourage purchase and development, Congress included the Bona Fide Prospective Purchaser (“BFPP”) program in the Revitalization Act.³² BFPP status is available to all prospective purchasers of brownfield sites who conduct an environmental site assessment that meets the EPA’s “all appropriate inquiries” standard for determining environmental conditions.³³ Undertaking “all appropriate inquiries” involves, *inter alia*, review of the site’s prior environmental data, research on prior use, and interviews with past owners of the site.³⁴ Compliance with this standard, and with certain other qualifications, may allow parties to avoid CERCLA liability.³⁵ This promotes development without the

30. *Id.* § 9607(a) (“Covered persons [are] (1) the owner and operator of a vessel or a facility, (2) any person who at the time of disposal of any hazardous substance owned or operated any facility at which such hazardous substances were disposed of, (3) any person who by contract, agreement, or otherwise arranged for disposal, treatment, or arranged with a transporter for transport for disposal or treatment, of hazardous substances owned or possessed by such person, by any other party or entity, at any facility or incineration vessel owned or operated by another party or entity and containing such hazardous substances, and (4) any person who accepts or accepted any hazardous substances for transport to disposal or treatment facilities, incineration vessels or sites selected by such person, from which there is a release, or a threatened release which causes the incurrence of response costs, of a hazardous substance . . .”).

31. See James A. Kushner, *Brownfield Redevelopment Strategies in the United States*, 22 GA. ST. U. L. REV. 857, 867–68 (2006) (lamenting that CERCLA cleanup liability discourages the redevelopment of brownfield sites because owners could become liable for, *inter alia*, groundwater contamination or contamination of a landfill where the waste from the site has been sent); see also McWilliams, *supra* note 28, at 725–26 (agreeing that prospective purchasers and developers shy away from brownfield redevelopment out of fear of liability for site contamination).

32. 42 U.S.C. § 9601(40) (defining “bona fide prospective purchasers” (“BFPP”) and outlining the program’s general provisions).

33. *Id.* § 9601(40)(B) (requiring all BFPPs to show, by a preponderance of the evidence, that they “made all appropriate inquiries into the previous ownership and uses of the facility in accordance with generally accepted good commercial and customary standards and practices”).

34. 40 C.F.R. § 312.20 (2011) (outlining the “all appropriate inquiries” standard promulgated by the EPA and required to prove BFPP status).

35. See Famira, *supra* note 24, at 609 (stating that the BFPP Program allows parties to avoid CERCLA liability); see also *Superfund Reauthorization: Hearings before the Subcomm. on Water Res. and Env’t of the H. Comm. on Transp. and Infrastructure*, 104th

threat of potential liability, which often deters purchasers from buying the property.³⁶ The general fear of liability, however, still tends to inhibit redevelopment.³⁷

One way that CERCLA allows federal and state brownfield programs to work concurrently is through the grant program.³⁸ Under the Revitalization Act, the EPA can provide grants for brownfield revitalization to states, tribes, local governments, land clearance authorities, regional councils, redevelopment agencies, and other quasi-governmental entities created by state or local governments.³⁹ To date, the EPA has granted more than US\$14 billion in brownfield site cleanup and redevelopment funding.⁴⁰ Although the grants are seemingly high, there is not enough money to fully fund cleanup and redevelopment.⁴¹ Given the high number of brownfield sites, insufficient funding is a common problem during cleanups.⁴²

Cong. 607–08 (1995) (testimony of Patricia Randolph Williams, Rep., National Wildlife Federation) (explaining the steps BFPPs must take to obtain CERCLA liability relief).

36. See Memorandum from Barry Breen, Dir. of the Office of Site Remediation Enforcement on Bona Fide Prospective Purchasers and the New Amendments to CERCLA, to the Superfund Senior Policy Managers (Region I-X) and Regional Counsels (Regions I-X), U.S. Envtl. Prot. Agency 1 (May 31, 2002), *available at* <http://www.epa.gov/compliance/resources/policies/cleanup/superfund/bonf-pp-cercla-mem.pdf> (explaining that Congress intended the exemption of BFPPs from certain CERCLA liability to encourage redevelopment).

37. See *supra* note 31 (explicating how potential cleanup liability is a huge hurdle to redevelopment).

38. 42 U.S.C. § 9604(k) (detailing the tenets of the brownfields revitalization funding program); *id.* § 9628 (stating when the EPA can award funding to the states).

39. 42 U.S.C. § 9604(k) (outlining entity eligibility and general provisions for brownfield revitalization funding).

40. See *Brownfields and Land Revitalization: Basic Information*, U.S. ENVTL. PROT. AGENCY, http://www.epa.gov/brownfields/basic_info.htm (last updated Oct. 4, 2011) (describing the EPA's brownfield program).

41. See U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-10-857T, SUPERFUND: EPA'S COSTS TO REMEDIATE EXISTING AND FUTURE SITES WILL LIKELY EXCEED CURRENT FUNDING LEVELS 6–8 (2010) (predicting that despite funding from additional sources, the EPA's estimated remediation costs for fiscal years 2010 through 2014 will exceed available funds if funding levels remain constant); see also U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-05-746R, HAZARDOUS WASTE PROGRAMS: INFORMATION ON APPROPRIATIONS AND EXPENDITURES FOR SUPERFUND, BROWNFIELDS, AND RELATED PROGRAMS 4–5 (2005) (showing that in 2005, funding was US\$164 million, a US\$6 million drop from 2004).

42. See *Brownfields and Land Revitalization: Basic Information*, *supra* note 40 (citing the EPA's estimate of existing US brownfield sites as over 450,000); *supra* note 41 (explaining the inadequacy of funding); see also 42 U.S.C. § 9621(d) (mandating that remediation must meet a level of cleanup that "assures protection of human health and

When granting funds, the EPA is required to follow certain criteria.⁴³ The Revitalization Act lists the factors that must be considered when reviewing grant applications.⁴⁴ Three of the factors embody EJ goals: (1) the extent to which a grant would address the needs of a low-income community with an inability to draw on other sources for remediation and redevelopment, (2) the extent to which a grant would address the identification and reduction of threats to sensitive populations, such as minority or low-income communities, and (3) the extent to which the cleanup plan involves the community in decision-making regarding the redevelopment and future use of the site.⁴⁵ Although these are only three of ten factors, Executive Order 12,898 reinforces this requirement by mandating that all federal agencies conduct health and environmental programs without excluding participation in the program, denying program benefits to the public, or discriminating against populations based on race, color, or national origin.⁴⁶ Executive Order 12,898 does not require federal agencies to consider discrimination based on income.⁴⁷

State voluntary cleanup programs (“VCPs”) complement federal brownfield legislation.⁴⁸ The Revitalization Act specifically provides funding for state response programs, which incentivizes state cleanups.⁴⁹ Generally, states have wide discretion when designing brownfield cleanup laws.⁵⁰ Most VCP

the environment” and specifying that remedial actions shall be analyzed based on the site’s contaminants); Eisen, *supra* note 11, at 909 (emphasizing the inability to predict cleanup at any given site because each site must be analyzed individually).

43. 42 U.S.C. § 9604(k)(5)(C) (enumerating the criteria that the EPA must follow when deciding which states receive funding for brownfield cleanups).

44. *Id.* (listing the requirements that the EPA must follow when reviewing and granting funds for brownfield revitalization).

45. *Id.* § 9604(k)(5)(C)(vi), (ix), (x).

46. See Exec. Order No. 12,898, 3 C.F.R. 859 (1994), *reprinted as amended in* 42 U.S.C. § 4321 (2006) (requiring all federal agencies to address EJ issues).

47. See *id.* (failing to recognize income as a potentially discriminatory characteristic); see also *infra* notes 71–100 and accompanying text (explaining the correlation between minority and low-income populations and brownfield sites).

48. See *supra* note 23 and accompanying text (noting the duality of US brownfield law).

49. 42 U.S.C. § 9628 (delegating authority to the EPA to award grants to states or Indian tribes that have their own brownfield response programs).

50. See *supra* note 24 (noting the leeway given to state and local cleanups by the federal government).

statutes, however, have similar characteristics.⁵¹ They are voluntary, meaning developers are not required to enter into a program, and development is usually streamlined to accelerate the cleanup process.⁵² Most importantly, VCP statutes provide incentives for developers to remediate and redevelop.⁵³ First, states limit developer liability for past contamination against future enforcement.⁵⁴ Secondly, they can offer financial incentives.⁵⁵ Commentators have recognized that monetary incentives ignite EJ problems when state programs tie incentives to site development only and do not consider the level of site contamination or the specific characteristics of the surrounding communities.⁵⁶ For example, in 2003, New York began offering tax credits for brownfield redevelopment.⁵⁷ The tax credits,

51. See Eisen, *supra* note 11, at 920 (describing common features in state VCPs); see also William T.D. Freeland, Note, *Environmental Justice and the Brownfields Revitalization Act of 2001: Brownfields of Dreams or a Nightmare in the Making*, 8 J. GENDER RACE & JUST. 183, 196–97 (2004) (providing an overview of VCPs).

52. See Eisen, *supra* note 11, at 920 (comparing state VCPs); see also Freeland, *supra* note 51, at 196–97 (explaining certain characteristics of state VCPs in light of the Revitalization Act).

53. See Joel B. Eisen, *Brownfields at 20: A Critical Reevaluation*, 34 *FORDHAM URB. L.J.* 721, 729 (2007) (finding that remediation incentives are now “one part of the increasing trend of localities offering incentives to attract real estate development” and that “[t]he primary brownfields incentives, of course, are those offered by the [VCPs] now available in all but one state that provide road maps for developers to approach state environmental agencies or brownfields revitalization agencies (if they exist) and deal directly with the states”); see also Eisen, *supra* note 11, at 915–18 (showing the rapid rise of incentives for redevelopment in VCPs).

54. See Eisen, *supra* note 11, at 921 (presenting certain features of cleanups under VCPs); see also Freeland, *supra* note 51, at 197–98 (describing and comparing different VCP characteristics).

55. See ENVIRONMENTAL JUSTICE FOR ALL, *supra* note 13, at xv (recognizing that Massachusetts, Wisconsin, and other states have programs that give financial incentives to developers who redevelop brownfield sites in EJ communities); see also Eisen, *supra* note 11, at 921 (noting state involvement in cleanups under VCPs).

56. See, e.g., Freeland, *supra* note 51, at 194 (stating that while funding attracts developers, developer concerns usually focus on “the potential of a given site to recoup the investment of the developer,” a potential usually perceived to be unavailable in impoverished neighborhoods); Perkins, *supra* note 1, at 521 (explaining EJ concerns arising from state-encouraged development, such as locking in residual contamination and preventing the site from ever returning to residential use, and developing sites with gentrification as a final goal).

57. See *Negotiators Try to Resolve NY Brownfield Cleanup*, *TIMES-HERALD RECORD* (N.Y.), (June 23, 2008, 7:09 AM), <http://www.recordonline.com/apps/pbcs.dll/article?AID=/20080623/NEWS/80623003> (describing the old brownfield program in New York); see also *New Brownfields Law Boosts Cleanup Credits*, *JOURNAL NEWS*

however, were based on the economic cost of the project, rather than on the level of site cleanup or the overall benefit to the community.⁵⁸ There was no cap on the amount of tax credits one project could receive.⁵⁹ This resulted in a surge of hotel and luxury developments on brownfield sites instead of redevelopment that could have provided services like affordable housing for impoverished neighborhoods.⁶⁰ New York is now responsible for a potential US\$3 billion liability in tax credits.⁶¹ This demonstrates the difficulty faced by lawmakers when attempting to encourage redevelopment without instituting perverse incentives that ignore the communities that surround brownfield sites and result in financial injury to the state.⁶²

(Westchester, N.Y.), July 24, 2008, at B1 (explaining the failings of the old brownfield program in New York).

58. See *Negotiators Try to Resolve NY Brownfield Cleanup*, *supra* note 57 (lamenting certain failures of the old brownfield program in New York); see also *New Brownfields Law Boosts Cleanup Credits*, *supra* note 57, at B1 (highlighting concerns over the old brownfield program in New York).

59. See *Negotiators Try to Resolve NY Brownfield Cleanup*, *supra* note 57 (describing the old brownfield program in New York); see also *New Brownfields Law Boosts Cleanup Credits*, *supra* note 57, at B1 (explaining the failings of the old brownfield program in New York).

60. See *Negotiators Try to Resolve NY Brownfield Cleanup*, *supra* note 57 (noting a negative effect of tax incentives of the old brownfield program in New York and reporting that one main concern was that “too many tax breaks were going to lucrative hotel developments in Manhattan and Westchester rather than replacing crumbling factories with affordable housing in upstate cities”); see also Editorial, *Improve Brownfields Law, Spitzer Administration Changes would Curb Waste, Help Upstate*, BUFFALO NEWS, Feb. 7, 2008, at A6 (praising revisions to the old brownfield program in New York and emphasizing the need to encourage brownfield redevelopment both upstate, where “fallow . . . land goes untended”, and downstate, where high-value development projects continue near and in Manhattan).

61. See *Negotiators Try to Resolve NY Brownfield Cleanup*, *supra* note 57 (describing one of the negative impacts of the design of the old brownfield program in New York); see also Jodi Sokolowski, *Brownfield Law Will Cap Tax Credits*, BUSINESS FIRST (BUFFALO), July 17, 2008, available at 2008 WL 13345117 (reporting revisions to the old brownfield program in New York).

62. See J. Alex Tarquinio, *New Law Turns Brown into Green for New York State*, N.Y. TIMES, July 23, 2008, at C8 (differentiating the new brownfield program from the old brownfield program in New York). The new brownfield legislation stipulates that redevelopment tax credits will be linked directly to cleanup costs. *Id.* These redevelopment tax credits are capped at US\$35 million or three times the cost of the cleanup, whichever is lower. *Id.* There are also smaller remediation credits that are also tied to the cleanup. *Id.* Additionally, there will be a two percent increase in tax incentives when development focuses on low-income communities. See *New Brownfields Law Boosts Cleanup Credits*, *supra* note 57, at B1. A fifteen-person advisory board will oversee New York’s brownfield program for the first time. See Tarquinio, *supra*.

Incentives for redevelopment that neglect EJ concerns and thus neglect the poor arise in state VCPs because there are no explicit federal statutory requirements for states to consider EJ.⁶³ States are often susceptible to industry influence, focusing on the site's return to the market and its economic potential instead of preserving EJ goals.⁶⁴ Such economic potential can result in positive financial gains for the state.⁶⁵ Recently, however, the EPA began an initiative to support and produce state incorporation of EJ goals.⁶⁶ Additionally, CERCLA does require all state brownfield legislation to include some form of public participation requirement.⁶⁷ CERCLA mandates that all states publish and open for public comment the proposed and final remediation plans.⁶⁸ Some commentators believe that the public comment periods satisfy EJ goals.⁶⁹ Other commentators

63. See CERCLA, 42 U.S.C. §§ 9601–9675 (2006) (excluding any mandate for state incorporation of EJ considerations).

64. See Eisen, *supra* note 53, at 751 (noting that the brownfield redevelopment process is “subject to capture by well-heeled, politically savvy developers and a resulting distrust by local residents”); see also Eisen, *supra* note 11, at 1020–21 (describing industry influence on state and local regulatory bodies).

65. See Freeland, *supra* note 51, at 195 (explaining that when VCPs consider property values as determinants of the site's viability after redevelopment, states have an interest in approving the projects most likely to create the greatest tax benefit to its municipalities).

66. See OFFICE OF ENVTL. JUST., U.S. ENVTL. PROT. AGENCY, STATE ENVIRONMENTAL JUSTICE COOPERATIVE AGREEMENTS FACT SHEET 1 (2009), available at <http://www.epa.gov/compliance/ej/resources/publications/factsheets/fact-sheet-ej-sejca-grants-2009.pdf> (explicating a new EPA initiative to support and produce state activities that satisfy EJ goals).

67. 42 U.S.C. § 9617 (2006) (outlining public participation requirements that must be satisfied when adopting any remediation plan); see also Jennifer Felten, Note, *Brownfield Redevelopment 1995–2005: An Environmental Justice Success Story?*, 40 REAL PROP. PROB. & TR. J. 679, 685 (2006) (finding that, as of 2006, all state brownfield programs have some form of public participation requirements, though participation levels vary). See generally ENVIRONMENTAL JUSTICE FOR ALL, *supra* note 13 (highlighting the different forms of public participation requirements and general EJ provisions in VCPs).

68. 42 U.S.C. § 9617(a)–(d) (enumerating the requirements for publishing any proposed or final remediation plans and explaining any significant changes taken after adopting the final remediation plan).

69. See, e.g., Felten, *supra* note 67, at 694 (claiming that states are addressing EJ concerns absent any federal requirement to do so, specifically through the use of public participation requirements, and that the data demonstrates that the federal brownfield program is an EJ success); Richard J. Lazarus, “*Environmental Racism! That's What It Is.*,” 2000 U. ILL. L. REV. 255, 269 n.74 (suggesting that Executive Order 12,898, *supra* note 46, has had “a positive effect on the public's participatory rights in seeking to influence environmental decisionmaking”).

posit that public comment periods are only bare minimum public participation requirements, and that public comment periods alone cannot help reinvigorate impoverished communities around brownfield sites.⁷⁰

The US brownfield regulatory scheme is multifaceted. It assigns liability, incentivizes redevelopment, funds cleanup efforts, and marries federal and state remediation programs. This scheme highlights EJ considerations in various aspects. Despite these considerations, the connection persists between brownfield sites and poverty in the United States.

B. *Brownfield Revitalization and Poverty Amelioration*

This Part discusses the link between brownfield sites and impoverished communities and analyzes ways in which both brownfield sites and the surrounding populations can be remediated and revitalized. Part B.1. presents studies and empirical data that show the connection between brownfield sites and the poor. Part B.1. also considers the reason for this connection and describes the negative effects of brownfield sites on low-income and minority populations. Part B.2. explains how sustainable redevelopment can positively impact both the poor and the environment. Part B.3. depicts how community involvement in the remediation process can positively affect the poor and contribute to a successful site cleanup.

1. Brownfield Sites and the Connection to Poverty

Low-income and minority populations are disproportionately located around brownfield sites.⁷¹ The

70. See Famira, *supra* note 24, at 611 (highlighting the struggle of communities to have their voice heard during the redevelopment process); see also Freeland, *supra* note 51, at 184 (positing that the current brownfield legislation does not adequately consider EJ goals); Sara Pirk, *Expanding Public Participation in Environmental Justice: Methods, Legislation, Litigation and Beyond*, 17 J. ENVTL. L. & LITIG. 207, 213–14, 240 (2002) (noting that the public comment period is often used in environmental justice cases, but is not necessarily the best option; and advocating for an enhancement of community involvement).

71. See U.S. GOV'T ACCOUNTABILITY OFFICE, RCED-83-168, SITING OF HAZARDOUS WASTE LANDFILLS AND THEIR CORRELATION WITH RACIAL AND ECONOMIC STATUS OF SURROUNDING COMMUNITIES 3 (1983) (finding a correlation between four hazardous waste sites and communities that were predominately black and most were living below the poverty line); see also ENVIRONMENTAL JUSTICE FOR ALL, *supra* note 13, at xiv–xv

United Church of Christ's Commission for Racial Justice reached this conclusion in their 1987 report, *Toxic Wastes and Race in the United States*.⁷² Their updated 2007 report concluded that race is a significant and accurate predictor of hazardous waste facility locations and that there are large racial disparities in the distribution of these facilities.⁷³ Racial minorities comprise the majority of the population around hazardous waste sites, and comprise more than two-thirds of the population in neighborhoods with multiple, clustered facilities.⁷⁴ Given the correlation between race and poverty in the United States, these conclusions corroborate the academic findings on brownfield sites and the poor.⁷⁵

This predominant trend is also confirmed by raw data findings.⁷⁶ Milwaukee, Wisconsin is one of the most

(finding that brownfield sites are often located "in poor communities of color," that race in the United States is statistically correlated with income, and that "people of color bear a disproportionate burden of environmental pollution"); Famira, *supra* note 24, at 605 (explaining that brownfield sites are more heavily concentrated in "environmental justice communities," which are low-income or minority communities); Barry E. Hill & Nicholas Targ, *The Link Between Protecting Natural Resources and the Issue of Environmental Justice*, 28 B.C. ENVTL. AFF. L. REV. 1, 5 n.13 (2000) (explaining that the "literature is rife with statistics documenting the disproportionate burdening of communities where minority and low income populations live").

72. See UNITED CHURCH OF CHRIST COMM'N FOR RACIAL JUSTICE, TOXIC WASTES AND RACE IN THE UNITED STATES: A NATIONAL REPORT ON THE RACIAL AND SOCIOECONOMIC CHARACTERISTICS OF COMMUNITIES WITH HAZARDOUS WASTE SITES 23 (1987).

73. See BULLARD ET AL., *supra* note 27, at xi, 1 (concluding that, based on the 2000 US Census Bureau data, "significant racial and socioeconomic disparities persist in the distribution of the nation's commercial hazardous waste facilities").

74. See *id.* at xi, xii (demonstrating its findings that both "race" and "place" matter).

75. See CARMEN DENAVAS-WALT ET AL., *supra* note 9, at 1-2, 17 (presenting data on income and poverty in the United States in 2010 based on the 2011 Current Population Survey Annual Social and Economic Supplement). In 2010, there were 10.7 million blacks living in poverty in the United States, which is 27.4% of the total black population. *Id.* There were 13.2 million Hispanics in poverty, which is 26.6% of the total Hispanic population. *Id.* Non-Hispanic Whites had the lowest poverty rate of all racial groups. *Id.*

76. One caveat to the subsequent data on poverty, minorities, and brownfield sites: the poverty statistics for cities are based on 2010 data, while the poverty statistics for communities around brownfield sites are based on numbers from the 2000 US Census. The reason for this is that: (1) the tool available for compiling this data uses the 2000 US Census data; and (2) given the fact that poverty has generally risen in the past ten years, and almost none of these sites has been returned to full use, the numbers are likely unchanged. Compare CARMEN DENAVAS-WALT ET AL., *supra* note 9, at 14 (citing the official 2010 US poverty rate at 15.1%, noting that this is the highest

impoverished cities in the United States: twenty-seven percent of a population of 605,013 lives below the poverty line.⁷⁷ Between North Twentieth and North Old World Streets in Milwaukee, there is a three-and-a-half square mile radius that contains five brownfield sites.⁷⁸ In this area, over fifty percent of the population lives below the poverty line.⁷⁹ The surrounding neighborhoods are between fifty-four and seventy-five percent minority populations within a half-mile radius around each brownfield.⁸⁰

poverty rate since 1993, and acknowledging that 2010 represents the first full calendar year after the recession ended in June 2009), with JOSEPH DALAKER, U.S. CENSUS BUREAU, *POVERTY IN THE UNITED STATES: 2000*, at 1 (2001) (citing the official 2000 US poverty rate at 11.3%).

77. See 2009 *American Community Survey 1-Year Estimates: Milwaukee City, Wisconsin*, U.S. CENSUS BUREAU, http://factfinder.census.gov/servlet/ADPTable?_bm=y&context=adp&-qr_name=ACS_2009_1YR_G00_DP3&-ds_name=ACS_2009_1YR_G00_-tree_id=309&-redoLog=true&-caller=geoselect&-geo_id=16000US5553000&-format=&-lang=en (last visited Oct. 23, 2011) (providing social and economic statistics for Milwaukee, Wisconsin in 2009); *Population Estimates*, U.S. CENSUS BUREAU, <http://www.census.gov/popest/cities/SUB-EST2009.html> (follow the “Annual Estimates of the Resident Population for Incorporated Places over 100,000, Ranked by July 1, 2009 Population: April 1, 2000 to July 1, 2009” hyperlink for the Excel spreadsheet) (last visited Oct. 23, 2011) (estimating the populations of US cities for each year from 2000 to 2009).

78. See *EJ View*, U.S. ENVTL. PROT. AGENCY, <http://epamap14.epa.gov/ejmap/entry.html> (enter “Milwaukee, WI”; then filter results by entering “Brownfields” under “Sites Reporting to EPA”) (last updated Aug. 1, 2011) (showing the location of certain brownfield sites in Milwaukee, Wisconsin).

79. See *EJ View*, U.S. ENVTL. PROT. AGENCY, <http://epamap14.epa.gov/ejmap/entry.html> (enter “Milwaukee, WI”; then filter results by entering “Brownfields” under “Sites Reporting to EPA”; then filter results again by entering “Below Poverty (%)” under “Demographics”; then click “Filter by Value” and enter “> = 50”) (last updated Aug. 1, 2011) (showing the demographics around certain brownfield sites in Milwaukee, Wisconsin).

80. See *EJ View*, U.S. ENVTL. PROT. AGENCY, <http://epamap14.epa.gov/ejmap/entry.html> (go to “Search by EPA Facility”; then enter “1805 W. State St” in “Milwaukee, WI”; click the “EJ View” button) (last updated Nov. 3, 2010) (showing that within a half-mile around the 1805 W. State St. brownfield the population is 54.1% minority); *EJ View*, U.S. ENVTL. PROT. AGENCY, <http://epamap14.epa.gov/ejmap/entry.html> (go to “Search by EPA Facility”; then enter “502-04 West Cherry St” in “Milwaukee, WI”; click the “EJ View” button) (last updated Nov. 3, 2010) (showing that within a half-mile around the 502-04 West Cherry Street brownfield the population is 69.7% minority); *EJ View*, U.S. ENVTL. PROT. AGENCY, <http://epamap14.epa.gov/ejmap/entry.html> (go to “Search by EPA Facility”; then enter “Ambrosia Chocolate Former” in “Milwaukee, WI”; click the “EJ View” button) (last updated Nov. 3, 2010) (showing that within a half-mile around the Ambrosia Chocolate Former brownfield the population is 54.8% minority); *EJ View*, U.S. ENVTL. PROT. AGENCY, <http://epamap14.epa.gov/ejmap/entry.html> (go to “Search by EPA Facility”; then

These correlations are found not only in the country's most impoverished cities. Charlotte, North Carolina has a poverty rate of 15.3% and a population of 704,422.⁸¹ Around one Charlotte brownfield, almost seventy percent of the neighborhood is impoverished.⁸² About half of the neighborhoods within a half-mile radius around the brownfield consist of minority populations.⁸³ In Seattle, Washington, the poverty rate is even lower—10.6% of a population of 616,627.⁸⁴ Despite the relatively low poverty rate, there is still an extremely strong correlation between income, race, and brownfield locations: in one stretch near Seattle's Kobe Terrace Park, there are six brownfield sites in a two-block radius, over an area of two-and-a-half square miles.⁸⁵ The poverty rate in this region is over forty percent.⁸⁶

enter "J. Anthony Subdivision" in "Milwaukee, WI"; click the "EJ View" button) (last updated Nov. 3, 2010) (showing that within a half-mile around the J. Anthony Subdivision brownfield the population is 74.6% minority); *EJ View*, U.S. ENVTL. PROT. AGENCY, <http://epamap14.epa.gov/ejmap/entry.html> (go to "Search by EPA Facility"; then enter "Mandel Co" on "1400-1402 North 4th Street" in "Milwaukee, WI"; click the "EJ View" button) (last updated Nov. 3, 2010) (showing that within a half-mile around the Mandel Co. brownfield the population is 57.7% minority).

81. See *2009 American Community Survey 1-Year Estimates: Charlotte City, North Carolina*, U.S. CENSUS BUREAU, http://factfinder.census.gov/servlet/ADPTable?qr_name=ACS_2009_1YR_G00_DP3&geo_id=16000US3712000&ds_name=&_lang=en (last visited Oct. 23, 2011) (providing social and economic statistics for Charlotte, North Carolina in 2009); *Population Estimates*, *supra* note 77 (listing US population statistics).

82. See *EJ View*, U.S. ENVTL. PROT. AGENCY, <http://epamap14.epa.gov/ejmap/entry.html> (enter "Charlotte, NC"; then filter results by entering "Brownfields" under "Sites Reporting to EPA"; then filter results again by entering "Below Poverty (%)" under "Demographics"; then click "Filter by Value" and enter "> 68") (last updated Aug. 1, 2011) (showing the demographics around certain brownfield sites in Charlotte, North Carolina).

83. See *EJ View*, U.S. ENVTL. PROT. AGENCY, <http://epamap14.epa.gov/ejmap/entry.html> (go to "Search by EPA Facility"; then enter "Brown's Solvent" in "Charlotte, NC"; click the "EJ View" button) (last updated Nov. 3, 2010) (showing that within a half-mile around the Brown's Solvent Company brownfield the population is 55.2% minority).

84. See *2009 American Community Survey 1-Year Estimates: Seattle City, Washington*, U.S. CENSUS BUREAU, http://factfinder.census.gov/servlet/ADPTable?_bm=y&context=adp&qr_name=ACS_2009_1YR_G00_DP3&ds_name=ACS_2009_1YR_G00_&tree_id=309&redoLog=true&_caller=geoselect&geo_id=16000US5363000&parsed=true&format=&_lang=en (last visited Oct. 23, 2011) (providing social and economic statistics for Seattle, WA in 2009); *Population Estimates*, *supra* note 77 (listing US population statistics).

85. See *EJ View*, U.S. ENVTL. PROT. AGENCY, <http://epamap14.epa.gov/ejmap/entry.html> (enter "Seattle, WA"; then filter results by entering "Brownfields" under "Sites Reporting to EPA") (last updated Aug. 1, 2011) (showing the location of certain brownfield sites in Seattle, Washington).

The half-mile radius around these six brownfield sites is between forty-five and sixty percent minority populations.⁸⁷

An examination of the causal link between low-income and minority communities and brownfield sites can become a chicken-or-the-egg analysis.⁸⁸ Some commentators argue that polluting industries are disproportionately located in minority and economically-depressed areas, taking the stance that polluters move into low-income areas.⁸⁹ These commentators

86. See *EJ View*, U.S. ENVTL. PROT. AGENCY, <http://epamap14.epa.gov/ejmap/entry.html> (enter “Seattle, WA”; then filter results by entering “Brownfields” under “Sites Reporting to EPA”; then filter results again by entering “Below Poverty (%)” under “Demographics”; then click “Filter by Value” and enter “> = 40”) (last updated Aug. 1, 2011) (showing the demographics around certain brownfield sites in Seattle, Washington).

87. See *EJ View*, U.S. ENVTL. PROT. AGENCY, <http://epamap14.epa.gov/ejmap/entry.html> (go to “Search by EPA Facility”; then enter “12th and Jefferson” in “Seattle, WA”; click the “EJ View” button) (last updated Nov. 3, 2010) (showing that within a half-mile around the 12th and Jefferson brownfield the population is 50.3% minority); *EJ View*, U.S. ENVTL. PROT. AGENCY, <http://epamap14.epa.gov/ejmap/entry.html> (go to “Search by EPA Facility”; then enter “Beatter/Turner/Miller” in “Seattle, WA”; click the “EJ View” button) (last updated Nov. 3, 2010) (showing that within a half-mile around the Beatter/Turner/Miller brownfield the population is 60.6% minority); *EJ View*, U.S. ENVTL. PROT. AGENCY, <http://epamap14.epa.gov/ejmap/entry.html> (go to “Search by EPA Facility”; then enter “Former Lloyd’s Rocket” in “Seattle, WA”; click the “EJ View” button) (last updated Nov. 3, 2010) (showing that within a half-mile around the Former Lloyd’s Rocket Gas Station brownfield the population is 61.4% minority); *EJ View*, U.S. ENVTL. PROT. AGENCY, <http://epamap14.epa.gov/ejmap/entry.html> (go to “Search by EPA Facility”; then enter “Former Nu Way” on “113–12th Ave” in “Seattle, WA”; click the “EJ View” button) (last updated Nov. 3, 2010) (showing that within half of a mile around the Former Nu Way Cleaners brownfield the population is 60.4% minority); *EJ View*, U.S. ENVTL. PROT. AGENCY, <http://epamap14.epa.gov/ejmap/entry.html> (go to “Search by EPA Facility”; then enter “Hamm Creek” in “Seattle, WA”; click the “EJ View” button) (last updated Nov. 3, 2010) (showing that within a half-mile around the Hamm Creek brownfield the population is 47.8% minority); *EJ View*, U.S. ENVTL. PROT. AGENCY, <http://epamap14.epa.gov/ejmap/entry.html> (go to “Search by EPA Facility”; then enter “Ninth and Jefferson” in “Seattle, WA”; click the “EJ View” button) (last updated Nov. 3, 2010) (showing that within a half-mile around the Ninth and Jefferson Street Building brownfield the population is 44.9% minority).

88. See Garric E. Louis & Luna M. Magpili, *Representing Inequities in the Distribution of Socio-Economic Benefits and Environmental Risk*, 79 ENVTL. MONITORING & ASSESSMENT 101, 104–05 (2002) (questioning whether regarding hazardous waste sites, the “associations between polluting facilities, poverty and race have arisen due to the preferential siting of facilities in poor minority areas, or due to the preferential settling of poor minority populations in areas that have had their property values depressed by the presence of pre-existing pollution sources”).

89. See, e.g., 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, 9,

allege that environmental racism is at work, thus implicating EJ concerns.⁹⁰ Other commentators posit that the poor move into polluted areas either before site abandonment, to take advantage of industry jobs, or after abandonment, to take advantage of depressed property values.⁹¹ Regardless of causation, these abandoned sites have negative effects on the surrounding communities. Many site contaminants can disproportionately impact vulnerable populations, such as minorities, women, and children.⁹² These groups tend to be more susceptible to the deleterious health effects of site

33–34 (1997) (analyzing the demographics of host communities around hazardous waste facilities between 1970 and 1990 and finding that, although researchers found no consistent evidence that low-income populations were intentionally targeted for facility sitings, there was evidence that many facilities were located in areas that were disproportionately Hispanic at the time of the siting decision); BULLARD ET AL., *supra* note 27, at xii (arguing that for many industries, it is a “race to the bottom” for cheap land and labor).

90. See EDUARDO LAO RHODES, *ENVIRONMENTAL JUSTICE IN AMERICA: A NEW PARADIGM* 6 (2003) (describing environmental racism as when

persons of color, either by design or neglect, endure a disproportionate share of the cost of economic development and growth, without enjoying a corresponding share of either the economic and environmental benefits. They have virtually no representation among the major nongovernmental environmental organizations and below-average representation within environmental agencies such as the [EPA]);

see also Lazarus, *supra* note 69, at 257 n.17, 260 (explaining the coining of the term “environmental racism” by the Rev. Dr. Benjamin Chavis, former executive director of the NAACP, when Chavis yelled, “This is environmental racism!” during his arrest at a protest over the siting of a landfill in a predominantly black community, and describing Chavis’s application of the term to mean that environmental laws are themselves racist in their implementation and application).

91. See, e.g., Vicki Been, *Locally Undesirable Land Uses in Minority Neighborhoods: Disproportionate Siting or Market Dynamics?*, 103 *YALE L.J.* 1383, 1388–90 (1994) (explaining the market dynamics theory of facility distribution, which posits that after siting a hazardous waste or otherwise undesirable facility in a neighborhood, property values will decrease, those who can afford to move will leave the neighborhood, and low-income and minority populations will move to or remain in the neighborhood); Perkins, *supra* note 1, at 507 (referencing specifically the brownfield sites in Western Pennsylvania, to which poverty-stricken populations migrated in hopes of taking advantage of the plummeting property values around these sites).

92. See Samara F. Swanston, *Race, Gender, Age, and Disproportionate Impact: What Can We Do about the Failure to Protect the Most Vulnerable?*, 21 *FORDHAM URB. L.J.* 577, 591 (1994) (describing certain vulnerable populations and how their susceptibility to “environmental insult” differs from the “average” person’s susceptibility); *see also* U.S. ENVTL. PROT. AGENCY, EPA 230-R-92-008, *ENVIRONMENTAL EQUITY: REDUCING RISK FOR ALL COMMUNITIES* 21 (1992) (identifying low-income and minority populations as two groups disproportionately sensitive to the health effects of air pollution).

contaminants because they are predisposed to certain diseases.⁹³ For example, some toxins may aggravate osteoporosis, a disease more common in women.⁹⁴ Notably, many environmental toxins aggravate biological predispositions in minority populations, such as diabetes, chronic liver disease, cardiovascular disease, and chronic respiratory disease.⁹⁵

Apart from negative health effects, depressed property values in the area around brownfield sites discourage the construction of new businesses and withhold much-needed jobs and services from the neighborhood.⁹⁶ Failing infrastructure, too weak to support development activities, also deters new businesses.⁹⁷ Cities are deprived of the potential revenues a remediated site could generate, weakening the cities' ability to pay for services such as education.⁹⁸ Additionally, abandoned brownfield sites are unattractive and prime locations for crime and illegal activities, contributing to an overall feeling of neighborhood blight.⁹⁹ These effects are not unique to the United States but are felt by populations across the globe that live in communities around brownfield sites.¹⁰⁰

93. See Swanson, *supra* note 92, at 591–93 (highlighting the health concerns of vulnerable populations, such as osteoporosis and breast cancer in women and diabetes, chronic liver diseases, cardiovascular diseases, chronic respiratory diseases, and HIV in minorities).

94. See *id.* at 591–95 (proffering examples of how certain toxins aggravate certain conditions particular to or prevalent in vulnerable populations, such as ozone, lead, and “fat-loving” chemicals like DDT).

95. See *id.* at 593 (explaining that minority populations are often at the highest risk for toxic exposure because: (1) they are subject to greater occupational exposure as a result of the fact that they are overrepresented in the most hazardous fields; (2) they disproportionately live in urban areas in nonattainment under the Clean Air Act; and (3) they have older housing units that likely contain lead-based paint).

96. See Higgins, *supra* note 12, at 244 (enumerating the list of ways in which brownfield sites harm surrounding communities).

97. See Eisen, *supra* note 11, at 914 n.147 (noting that although some brownfield sites have excellent existing infrastructure, others are located near decrepit infrastructure, which deters potential developers from building on such sites).

98. See Higgins, *supra* note 12, at 244 (discussing the deleterious effects of brownfield sites on states and their citizens).

99. See Eisen, *supra* note 11, at 913–14 (citing reasons why developers shy away from brownfield redevelopment); see also Felten, *supra* note 67, at 682 (explaining the negative effects of unremediated brownfield sites on surrounding communities); Higgins, *supra* note 12, at 244 (showing the tangible and intangible costs of living near brownfield sites).

100. See *infra* notes 188–200 and accompanying text (depicting the negative effects of brownfield sites on impoverished populations in Brazil as an example).

The connection between poverty and brownfield sites across the United States results in adverse impacts on the surrounding communities. These adverse impacts include health effects as well as social and economic disadvantages, such as increased crime rates and drug usage. Sustainable development and community involvement have been proffered as two methods that can positively influence impoverished communities around brownfield sites and help revitalize urban blight.

2. Sustainable Development and Positive Effects on the Poor

Many consider brownfield sites to be ideal for sustainable development.¹⁰¹ From an EJ standpoint, sustainable development provides social and economic benefits to the surrounding impoverished communities by focusing on healthy living.¹⁰² From a developer's standpoint, sustainable development creates greater site value by improving the lifetime operating efficiency of the new structure.¹⁰³ It also increases the site's brand value, since sustainability can be used as a marketing tool.¹⁰⁴

Although there is no legal mechanism requiring sustainable development on brownfield sites, the EPA encourages this redevelopment approach.¹⁰⁵ Along with the EPA, the United

101. See generally WILLIAM SARNI, *GREENING BROWNFIELDS: REMEDIATION THROUGH SUSTAINABLE DEVELOPMENT* (Joy Bramble Oehlkers et al. eds., 2010) (championing the sustainable redevelopment of brownfield sites from a developer's perspective).

102. See Fisher, *supra* note 12, at 212–13 (citing the Dudley Street Neighborhood Initiative in Roxbury, Massachusetts, as a success story of how sustainable development can benefit urban communities and address EJ issues). See generally Alexandra Dapolito Dunn, *Siting Green Infrastructure: Legal and Policy Solutions to Alleviate Urban Poverty and Promote Healthy Communities*, 37 B.C. ENVTL. AFF. L. REV. 41 (2010) (arguing that sustainably developed urban green infrastructures can reduce poverty and yield both healthier citizens and a healthier environment).

103. See SARNI, *supra* note 101, at 5 (providing reasons for developers to build on brownfield sites). "Operating efficiency" is generally defined as the "[r]atio of the actual output of a piece of equipment, department, or plant as compared to the planned or standard output." *Glossary*, ROCKWOOD GRP., <http://www.rockwood.com.hk/main/Glossary.asp#O> (last visited Oct. 23, 2011).

104. See SARNI, *supra* note 101, at 5 (emphasizing the desirability of brownfield sites for development).

105. See *Sustainable Redevelopment of Brownfields*, *supra* note 14 (encouraging smart growth and sustainable redevelopment through its Green Buildings on Brownfields

States' National Brownfield Association has been pushing the United States Green Building Council ("USGBC") to increase the Leadership in Energy and Environmental Design ("LEED") point value for developing a brownfield site.¹⁰⁶ The USGBC is a nonprofit organization that promotes cost-efficient, energy-saving buildings and uses the LEED rating system to encourage and support green construction.¹⁰⁷ LEED certification focuses on sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality.¹⁰⁸ Increasing the point value for redeveloping a brownfield will encourage developers interested in achieving LEED certification to build on blighted lands.¹⁰⁹ The National Brownfield Association is also working with the EPA to promote sustainability pilot projects.¹¹⁰

Building affordable, LEED-certified sustainable housing is one way to benefit poor neighborhoods surrounding brownfield sites.¹¹¹ The EPA has a Green Buildings on Brownfields

Initiative and recognizing that smart growth can provide tangible economic growth and "can remove blight and environmental contamination, create a catalyst for neighborhood revitalization, lessen development pressure at the urban edge, and use existing infrastructure").

106. See SARNI, *supra* note 101, at 15–16 (explaining that green building on brownfield sites can create value).

107. See *About USGBC*, U.S. GREEN BUILDING COUNCIL, <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=124> (last visited Oct. 23, 2011) (describing the United States Green Building Council ("USGBC") and its objectives).

108. See *What LEED Is*, U.S. GREEN BUILDING COUNCIL, <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1988> (last visited Oct. 23, 2011) (explaining that the USGBC uses the LEED certification system to help building owners and operators identify and implement "practical and measurable green building design, construction, operations and maintenance solutions" and to encourage "projects that implement strategies for better environmental health performance").

109. See SARNI, *supra* note 101, at 15–16 (explaining the value of green building on brownfield sites).

110. See *id.* at 17 (noting efforts of the EPA and the National Brownfield Association to promote the greening of brownfield sites).

111. See *Neighborhood Development Resources: Affordable Green Neighborhoods Grant Program*, U.S. GREEN BUILDING COUNCIL, <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=2184> (last visited Oct. 23, 2011) (presenting the USGBC's LEED for Neighborhood Development grant program and explaining how LEED projects can spur benefits such as green homes and infrastructure, walkable streets and green spaces, new jobs, and access to healthy food); see, e.g., TASSAFARONGA APARTMENTS, OAKLAND, CA: EPA REGION 9 BROWNFIELDS PROGRAM SUCCESS STORIES, U.S. ENVTL. PROT. AGENCY 2 (2011), available at http://www.epa.gov/region9/brownfields/land-revitalize/pdf/R9_FS_Tassafaronga_final_040111.pdf (depicting the joint federal-state

Initiative, which provides communities with technical assistance to facilitate green buildings on brownfield sites through pilot projects.¹¹² Additionally, there are many community-based green building programs that incorporate the goals of both sustainable redevelopment and public participation.¹¹³ For example, the Community Economic Development Unit of Brooklyn Legal Services Corporation A has been working to assist nonprofit community development corporations to build and maintain affordable green housing and other infrastructure such as health centers.¹¹⁴ These lawyers are assisting community development organizations in navigating the nuances of the brownfield laws to provide low-income, primarily minority neighborhoods in Brooklyn, New York, with healthy, residential housing.¹¹⁵

Sustainable development does not always mean the construction of LEED-certified buildings. For example, in Michigan, brownfield sites are being redeveloped to provide wind energy.¹¹⁶ Wind farms on brownfield sites are desirable because, inter alia, brownfield sites are typically close to areas of high energy consumption; incentive programs can be readily applied to renewable energy programs; and there is the positive redevelopment of an abandoned site for sustainable energy use.¹¹⁷ In Michigan, there are 2946 brownfield sites capable of

cleanup of two brownfield sites in California that resulted in LEED-certified housing for very low- to moderate-income residents).

112. See *Sustainable Redevelopment of Brownfields*, *supra* note 14 (offering information about the EPA's Green Buildings on Brownfields Initiatives).

113. See, e.g., Dunn, *supra* note 102, at 50 (describing the community-based New York Restoration Project, which "funds green improvements and upkeep in economically and environmentally burdened areas of New York").

114. See Jessica Rose et al., *Community Economic Development Lawyers Assist Nonprofit Organizations in Creating Holistic Green Communities*, 44 CLEARINGHOUSE REV. 257, 258 (2010) (heralding a green community economic development approach to remediating systemic urban issues).

115. See *id.* at 259–60 (recognizing initiatives to address issues of employment, available commercial space, and healthy, affordable housing shortages through brownfield redevelopment).

116. See generally SOJI ADELAJA ET AL., POTENTIAL APPLICATION OF RENEWABLE ENERGY ON BROWNFIELD SITES: A CASE STUDY OF MICHIGAN (2009) (describing the advantages and positive practical results of developing wind and solar facilities on brownfield sites in Michigan).

117. See *id.* at 3 (identifying efforts to use brownfield sites to produce renewable energy); see also GAIL MOSEY ET AL., NAT'L RENEWABLE ENERGY LAB., U.S. DEP'T OF ENERGY, EPA/600/R-08/023, CONVERTING LIMBO LANDS TO ENERGY-GENERATING

producing 4320 megawatts of energy from wind power.¹¹⁸ The construction of wind farms on these sites would translate into the creation of 2162 construction jobs and 196 long-term jobs.¹¹⁹ The EPA urges renewable energy generation on brownfield sites and, along with other federal agencies, provides incentives for renewable redevelopments on contaminated lands.¹²⁰

Job creation that stems from the clean energy industry is part of the new “green-collar” job movement, which many propose as one approach to combat poverty.¹²¹ Green-collar jobs, described as well-paid jobs that contribute directly to building a sustainable economy, are usually local and provide a long-term career path.¹²² The Cypress Hills Verde Initiative in eastern Brooklyn, an organization focused on complete community revitalization, has created a green-collar worker

STATIONS: RENEWABLE ENERGY TECHNOLOGIES ON UNDERUSED, FORMERLY CONTAMINATED SITES 3 (2007) (justifying the use of renewable energy technologies on brownfield sites and other “limbo lands”).

118. See ADELAJA ET AL., *supra* note 116, at 11 (reporting wind energy potential for each region of Michigan).

119. See *id.* at 12 (illustrating the economic development implications from wind energy).

120. See FEDERAL INCENTIVES FOR ACHIEVING CLEAN ENERGY DEVELOPMENT ON CONTAMINATED LANDS, U.S. ENVTL. PROT. AGENCY 1–2 (2009), *available at* http://www.epa.gov/oswercpa/incentives/federal_incentives.pdf (outlining federal incentives for installing clean energy as part of brownfield redevelopment projects, such as federal tax credits for renewable energy investment and development).

121. See APOLLO ALLIANCE ET AL., GREEN-COLLAR JOBS IN AMERICA’S CITIES: BUILDING PATHWAYS OUT OF POVERTY AND CAREERS IN THE CLEAN ENERGY ECONOMY 2 (2008) (championing green jobs as “the kind of family-supporting jobs that once anchored the American middle class, but in the industries of the future: industries like wind turbine manufacturing, solar panel installation, energy efficiency retrofits, and green building”); see also Dunn, *supra* note 102, at 50–51, 60–61 (noting that the construction and implementation of green infrastructure yields corresponding green-collar jobs in, inter alia, construction, maintenance, and installation, and detailing the positive developments that result from linking construction permits to green infrastructure); *Environmental Workforce Development and Job Training*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/brownfields/job.htm#bro> (last updated July 11, 2011) (describing a federal grant program that provides funds to organizations “to recruit, train, and place predominantly low-income and minority, unemployed and underemployed residents from solid and hazardous-waste-impacted communities. These grants help to create green jobs that reduce environmental contamination and build more sustainable futures for communities”).

122. See APOLLO ALLIANCE ET AL., *supra* note 121, at 3 (defining and describing green-collar jobs); see also Dunn, *supra* note 102, at 50–51 (citing statistics that show a thirty-one percent increase in green-collar job hires from July 2007 to January 2009 and predicting the creation of 6.9 million green jobs by 2020).

training center to complement plans to construct new green buildings and retrofit existing structures.¹²³ Providing jobs and requisite training through sustainable development involves impoverished neighborhoods in the community revitalization process and creates career paths that stimulate long-term personal and widespread economic growth.¹²⁴

It is important to note that the use of renewable energy for site remediation may depend on the specific community.¹²⁵ For example, a community might benefit more from affordable housing units than wind turbine facilities.¹²⁶ Alternatively, renewable energy structures might be ideal on a site that is too highly contaminated for a housing development or an urban garden.¹²⁷ Although the clean energy industry widens the green-collar job market, which, in turn, positively impacts low-income and minority populations, clean energy alternatives also

123. See Rose et al., *supra* note 114, at 260 (describing how training in the green jobs industry accompanies efforts in Brooklyn to redevelop brownfield sites into green commercial and residential properties).

124. See APOLLO ALLIANCE ET AL., *supra* note 121, at 3 (demonstrating how green-collar jobs not only spur economic growth but provide the opportunity for career growth); see also Rose et al., *supra* note 114, at 260 (explaining a redevelopment program that focuses on total revitalization of the neighborhood, including a green-collar jobs training center that will provide residents with the skills to conduct low-cost energy retrofits to homes and will involve them in the redevelopment process).

125. See NAT'L RENEWABLE ENERGY LAB., U.S. DEP'T OF ENERGY, NREL/PO-640-40844, RENEWABLE ENERGY POTENTIAL FOR BROWNFIELD REDEVELOPMENT STRATEGIES I (2006) (noting that in the process of identifying suitable renewable energy technologies for a brownfield site, economic, social, and environmental effects on the community should be taken into consideration).

126. Cf. Evan Lehmann & Christa Marshall, *Cape Wind Proposal Faces a Renewed Political Storm*, N.Y. TIMES, Sept. 10, 2010, <http://www.nytimes.com/pages/business/index.html> (enter "Cape Wind" into the search box; select the third hyperlink) (detailing the opposition to the Cape Wind project in Massachusetts, a sentiment sometimes expressed by communities near wind turbines). But see C.J. Hughes, *A Cleaner Way to Keep the City Running*, N.Y. TIMES, Jan. 2, 2009, at RE8 (reporting on the small wind turbines that are powering some buildings in New York City and look much more like small fans than large-scale wind turbines).

127. See Bill Scanlon, *Brownfields' Bright Spot: Solar and Wind Energy*, RENEWABLEENERGYWORLD.COM (June 16, 2010), <http://www.renewableenergyworld.com/rea/news/article/2010/06/brownfields-bright-spot-solar-and-wind-energy> (commenting that although many brownfield sites might be too toxic to build on or difficult to find redevelopers, renewable energy sources can be installed without significantly disturbing the contaminated soil); see also U.S. ENVTL. PROT. AGENCY, RE-POWERING AMERICA'S LAND INITIATIVE MANAGEMENT PLAN 3 (2009) (illustrating the EPA's progress plan for their initiative focusing on building renewable energy facilities on formerly or currently contaminated lands, such as petroleum-contaminated lands).

emphasize the need for redevelopment plans that are tailored to the affected community.¹²⁸

Urban agriculture is a movement that can contribute to the sustainable redevelopment of brownfield sites while benefitting low-income communities.¹²⁹ Urban agriculture is small-scale agriculture in an urban setting.¹³⁰ Besides providing low-cost, easily accessible, and healthy food, urban agriculture can beautify the community, create jobs and educational opportunities, and eliminate crime-prone vacant lots.¹³¹ Urban agriculture can also help to bind soil contaminants, as some crops thrive on contaminated soil.¹³² These green spaces positively impact the environment by raising awareness of environmental goals and aiding in carbon sequestration, the process by which plants remove and store carbon dioxide.¹³³ Urban gardens also enrich the soil with nitrogen fixation, are

128. See Scanlon, *supra* note 127 (showing that if a brownfield contains soil too toxic to safely build housing or commercial structures, the land can be reused by installing renewable energy infrastructure); see also *supra* note 116–23 and accompanying text (discussing ways in which renewable energy installations create green-collar jobs).

129. See *infra* notes 130–33 (detailing how urban agriculture can benefit low-income communities while redeveloping brownfield sites).

130. See William Kraus, *Urban Agriculture Takes Root*, 44 CLEARINGHOUSE REV. 277, 277 (2010) (defining urban agriculture as “localized small-scale agriculture within an urban setting”); see also Jac Smit & Joe Nasr, *Urban Agriculture for Sustainable Cities: Using Wastes and Idle Land and Water Bodies as Resources*, 4 ENV’T & URBANIZATION 141, 141 (1992) (defining urban agriculture as “food and fuel grown within the daily rhythm of the city or town”).

131. See Dunn, *supra* note 102, at 52–53 (emphasizing that the incorporation of green spaces in urban areas is an important environmental health and cost-saving mechanism for the poor); see also Kraus, *supra* note 130 at 277 (recognizing the potential benefits from urban farming).

132. See *Urban Agriculture & Improving Local, Sustainable Food Systems*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/brownfields/urbanag/index.html> (last updated Oct. 20, 2011) (providing information on agriculture projects as part of brownfield redevelopment); Hannah Shayler et al., *Soil Contaminants and Best Practices for Healthy Gardens*, CORNELL WASTE MGMT. INST. 1, 3 (Oct. 20, 2009), http://cwmi.css.cornell.edu/Soil_Contaminants.pdf (explaining how to grow crops in contaminated soil and listing which crops thrive on contaminants).

133. See Dunn, *supra* note 102, at 47–48 (discussing how green urban spaces offer many benefits, such as better air quality through the increased uptake in carbon, an increased quality of life, higher property values, lower crime rates, and enhanced street life and community aesthetics); see also Kraus, *supra* note 130, at 280 (explaining how urban agriculture not only promotes general awareness about the environment but aids in carbon sequestration, “the process by which plants remove and store carbon dioxide through photosynthesis”).

good sites for composting, and create a tree canopy to reduce stormwater runoff entering the sewer system.¹³⁴

3. Community Involvement and Positive Effects on the Poor

An essential tenet of an effective remediation process is the involvement of the affected community.¹³⁵ Apart from being a central concern when striving to achieve EJ goals, communities are often best situated to assess the proposed remediation plan.¹³⁶ For example, the community, once informed about the status of the site and the types of contaminants present, can decide whether the brownfield should become a school or whether the site is too highly contaminated and would adversely impact children.¹³⁷ Communities can also address threats such as ineffective cleanup and the possibility that the proposed plan will lead to “gentrification and the future inability to afford to live in their own neighborhood.”¹³⁸

Executive Order 12,898 includes a public participation section that requires the EPA to ensure that all public notices, documents, and hearings on environmental issues are concise,

134. See Dunn, *supra* note 102, at 52–53 (examining how urban agriculture is an important environmental strategy and instrument for combating poverty, enhancing food security, promoting local economic development, and providing nutritious foods); see also Kraus, *supra* note 130, at 280 (describing multiple environmental benefits from urban gardens).

135. See Felten, *supra* note 67, at 683 (arguing that “[b]ecause cleanup of these sites has a major effect on the health and economic well-being of the surrounding community, the community’s participation in decisionmaking is vital” and, therefore, community involvement in decision making better serves the goal of sustainable redevelopment); see also Perkins, *supra* note 1, at 528 (emphasizing repeatedly that remediation needs to include the public from the beginning of the redevelopment process).

136. See Felten, *supra* note 67, at 683 (explaining why brownfield redevelopment requires community participation); see also Pirk, *supra* note 70, at 212–13 (championing community participation because affected communities have unique perspectives on their own values and can often offer a broader view than experts).

137. See Felten, *supra* note 67, at 683 (presenting various reasons why communities around brownfield sites should participate in redevelopment decisions).

138. See Famira, *supra* note 24, at 610 (explaining why brownfield redevelopments are often warily considered by surrounding communities). Gentrification is the “restoration and upgrading of a deteriorated or aging urban neighborhood by middle-class or affluent persons, resulting in increased property values and often in displacement of lower-income residents.” BLACK’S LAW DICTIONARY 755 (9th ed. 2009).

understandable, and readily accessible.¹³⁹ It also includes a provision for translating crucial documents into other languages for limited-English-speaking populations.¹⁴⁰ This is an important federal mandate on EJ concerns and recognizes both the importance of public participation and the particular characteristics of EJ populations.¹⁴¹ Many feel that the absence of these requirements in state brownfield legislation, however, enables less-than-adequate state public participation requirements.¹⁴²

Today, all states have some form of public participation requirement included in their brownfield legislation.¹⁴³ Most, however, do not fully involve the community in planning; instead, the majority of programs are public notice requirements.¹⁴⁴ Under these requirements, the public is notified when a developer submits an application pursuant to the states' brownfield program.¹⁴⁵ The public then generally receives an opportunity to comment on the remediation plans.¹⁴⁶ By this time, however, developers, municipalities, and bureaucrats have invested significant time and resources in the

139. See Exec. Order No. 12,898, 3 C.F.R. 859 (1994), *reprinted as amended in* 42 U.S.C. § 4321 (2006) (requiring all federal agencies to consider EJ issues).

140. See *id.* (specifying that “[e]ach federal agency may, whenever practicable and appropriate, translate crucial public documents, notices, and hearings relat[ed] to human health or the environment for limited English speaking populations”).

141. See *id.* (promoting understandable, accessible public notifications specifically to increase agency consideration of EJ goals).

142. See Felten, *supra* note 67, at 685–86 (describing the public participation requirements in state VCPs and showing that most states only have bare minimum public participation requirements in the form of public comment periods); see, e.g., Freeland, *supra* note 51, at 198–99 (comparing VCPs in Texas and in Maryland and showing that they generally only provide for public comment periods, if they provide for any public participation at all).

143. See Felten, *supra* note 67, at 685 (analyzing the public participation requirements in state VCPs and noting that although every state VCP contains some form of public participation provision, the level of public participation in each state VCP greatly varies).

144. See *id.* (finding that most public participation requirements only consist of public notice requirements, which are informative, but do not fully involve the community in decision making and therefore do not fully satisfy EJ goals).

145. See Famira, *supra* note 24, at 611 (elucidating the general public participation requirements under most state VCPs).

146. See *id.* (describing public participation requirements under most state VCPs while lamenting the ongoing EJ struggle for communities to have their voices heard).

project and are unlikely to make alterations.¹⁴⁷ Some states do mandate a heightened level of participation: thirty-five states require hearings for citizens' voices to be heard, and four states have citizen grant programs.¹⁴⁸ Citizen grant programs, like New York's Brownfields Opportunity Areas Program, can provide reimbursement of project costs to municipalities and community organizations to develop revitalization plans and implementation strategies.¹⁴⁹ Communities can use these funds to gain an understanding of land use and zoning, to evaluate potential for revitalization, and to generally learn more about the process of remediation and redevelopment so as to fully inform and immerse themselves in the cleanup process.¹⁵⁰

Without proper consideration, rising prices that accompany gentrification may ensure that the impacted community is not living with the effects of the cleanup process at all.¹⁵¹ Some commentators argue that community involvement is one of the best ways to prevent the poor from losing their homes and any possible economic benefit stemming from the redeveloped site.¹⁵² The importance of community involvement is evident in

147. See Felten, *supra* note 67, at 685 (criticizing public comment periods because they give communities little time to mobilize and propose an improvement or oppose part of the redevelopment plan).

148. See *id.* at 686 (praising citizen grant programs but decriing their scarcity).

149. See, e.g., N.Y. GEN. MUN. LAW § 970-r (McKinney 2011) (outlining the New York state assistance program to community-based organizations or community boards and specifying that the grant program can provide up to ninety percent of remediation costs).

150. See *id.* (describing how financial assistance can positively affect the community and redevelopment projects).

151. See Perkins, *supra* note 1, at 511–12, 526 (lamenting that although one revitalized community in Pennsylvania experienced doubling tax revenues and new upscale businesses attracted out-of-town shoppers, pre-existing residents remained unemployed or garnered wages insufficient to support a family and thus might have had to relocate); Andrew O. Guglielmi, *Recreating the Western City in a Post-Industrialized World: European Brownfield Policy and an American Comparison*, 53 *BUFF. L. REV.* 1273, 1308–09 (2005) (discussing brownfield redevelopment in Portland, Oregon and noting that because Portland's redevelopment strategies focused on regenerating tourism and culture around brownfield sites, property values soared, efforts at constructing low-income housing were ignored, and poorer populations were forced to move away from the redeveloped sites); see also ENVIRONMENTAL JUSTICE FOR ALL, *supra* note 13, at xv (explaining that gentrification continues to threaten EJ communities around brownfield sites).

152. See Famira, *supra* note 24, at 610–11 (proposing that communities can rebut the threat of gentrification by obtaining meaningful involvement at an early stage in the decision-making process). Some states have made an effort at requiring EJ

Western Pennsylvania, where a comparison of Homestead and South Side, two remediated sites surrounded by impoverished populations, showed positive redevelopment and increased sustainability around the site that was influenced by greater community participation.¹⁵³ The marked difference between the two was the involvement of the South Side Local Development Company, a neighborhood community development corporation.¹⁵⁴ While Homestead experienced an influx of upscale businesses, drawing in wealthier shoppers from the surrounding neighborhoods and depriving low-income workers of sufficient economic development to regain control over their lives, South Side preserved the historical features of the neighborhood, such as the old street names.¹⁵⁵ The high-density grid pattern of the neighborhood remained intact (important for ensuring sustainability), 150 new businesses moved into the community, and affordable housing units were constructed.¹⁵⁶ The project created at least 2500 jobs.¹⁵⁷

The involvement of the South Side Local Development Company empowered the community by securing its voice at the table.¹⁵⁸ The community could ensure the preservation of their goals, such as maintaining the neighborhood's identity and its

considerations in the redevelopment process through administrative policy. *See, e.g.*, EXEC. OFFICE OF ENVTL. AFFAIRS, COMMW. OF MASS., ENVIRONMENTAL JUSTICE POLICY 4 (2002), available at http://www.mass.gov/Eoeea/docs/eea/ej/ej_policy_english.pdf (declaring that EJ "shall be an integral consideration . . . in the implementation of all [Executive Office of Environmental Affairs] programs" and that the Commonwealth shall design services to, inter alia, "enhance public participation" and "encourage economic growth through the cleanup and redevelopment of brownfield sites"); *Smart Growth/Smart Energy Toolkit*, COMMW. OF MASS., http://www.mass.gov/envir/smart_growth_toolkit/pages/mod-ej.html (last visited Oct. 23, 2011) (presenting Massachusetts' suggestions for municipalities and developers to better engage EJ communities in the planning and development process).

153. *See* Perkins, *supra* note 1, at 525–27 (comparing the redevelopment of both sites).

154. *See id.* at 526–27 (analyzing the disparities between the redevelopment of the Homestead brownfield sites and the South Side brownfield sites).

155. *See id.* at 510–11, 519 (painting a post-remediation picture of the Homestead and South Side communities).

156. *See id.* at 518–19 (praising the remediation results around the South Side brownfield sites).

157. *See id.* at 520 (describing the South Side community's reaction to remediation).

158. *See id.* at 527 (finding a higher degree of community empowerment and satisfaction in South Side than in Homestead).

increased autonomy.¹⁵⁹ Community involvement, alongside the goals of job creation, affordable green housing, and healthy sustainable development, can assist low-income communities in keeping their homes and benefiting from the healthy redevelopment of brownfield sites.¹⁶⁰

Commentators argue that the consideration of EJ goals during the remediation and redevelopment process is important to protect the communities most affected by brownfield sites.¹⁶¹ The United States has crafted its framework to hold liable parties accountable while attempting to encourage remediation and redevelopment through a system of grants and complementary state programs.¹⁶² The United States has also prioritized EJ by requiring certain EJ considerations in the grant process and advocating for sustainable development solutions through the EPA.¹⁶³ The US legal framework allows EJ policy to operate in a way that promotes sustainable development and community involvement, both of which remediate contamination and ameliorate poverty.¹⁶⁴

US brownfield management developed through legislation and policy. Federal and state remediation programs crafted a system through which EJ concerns are considered, though not always to the utmost degree. A lack of adequate EJ consideration

159. *See id.* at 520 (explaining the South Side community's positive reactions post-remediation).

160. *See supra* notes 101–34 and accompanying text (analyzing the positive effects of sustainable redevelopment of brownfield sites on surrounding communities).

161. *See, e.g.*, Felten, *supra* note 67, at 680 (recognizing the greater incorporation of EJ goals in brownfield legislation after the National Environmental Justice Advisory Council Waste Facility Siting Subcommittee reported that “greater community participation, including empowerment and leadership, was one of the primary ways in which [b]rownfield redevelopment could better serve the needs of the poor and minorities *who are most affected by the programs*” (emphasis added)); Andrea Ruiz-Esquide, Comment, *The Uniform Environmental Covenants Act: An Environmental Justice Perspective*, 31 *ECOLOGICAL L.Q.* 1007, 1024–25 (2004) (explaining the potential problems that could befall low-income and minority communities around brownfield sites and recounting the general call of EJ advocates for public participation requirements to address and eliminate these problems).

162. *See supra* notes 29–41, 49–62 and accompanying text (explicating the two-tiered federal-state brownfield scheme in the United States).

163. *See supra* notes 44–47, 105–10, 120 and accompanying text (describing US efforts at incorporating EJ concerns into environmental laws and regulations).

164. *See supra* notes 102–61 and accompanying text (illustrating how sustainable development and community involvement satisfy EJ goals and can be encouraged through legislation, regulation, and policy).

has negative effects on the minority and low-income populations disproportionately surrounding brownfield sites. Sustainable redevelopment and community involvement, however, are two mechanisms that can meet the dual goals of brownfield remediation and poverty alleviation. Although Brazil is a country with a skeleton of brownfield law, certain changes and modifications to the US system would allow Brazil to flesh out its current bare minimum standards to provide greater protection to the poor and to the environment.

II. BRAZILIAN BROWNFIELD REVITALIZATION EFFORTS AND THE POOR

Site contamination and subsequent management is an issue of increasing concern in South American countries.¹⁶⁵ Although Brazil is one of the most advanced South American countries regarding brownfield remediation and redevelopment, smaller countries on the continent have yet to institute any meaningful legal framework to deal with this problem.¹⁶⁶ Despite Brazil's headway in comparison to its regional neighbors, Brazil's brownfield laws are still underdeveloped.¹⁶⁷

This Part discusses the current brownfield framework in Brazil and demonstrates its systemic legal, social, and environmental failures. Part II.A. examines the brownfield legal framework in contemporary Brazil on a national, state, and local level. Part II.B. explores the connection between poverty and brownfield sites in Brazil and the consequences of the perpetuation of contaminated sites.

165. See U.N. Env'tl. Programme, *Regionally Based Assessment of Persistent Toxic Substances*, ¶ 2.6.11, GE.03-01710 (July 2003) ("The [Eastern and Western South American] Region has very few officially recognized contaminated sites, mostly in heavily populated industrial areas, i.e. [the City of] Sao [sic] Paulo (Brazil) However, official numbers grossly underestimate the real situation due to illegal or non-reported contaminated sites throughout the Region. Most of these sites are more than twenty years old and there is a risk of emission if affordable cleaning technologies are not available.").

166. See ANDREAS MARKER, *CONTAMINATED SITE MANAGEMENT AND BROWNFIELD REDEVELOPMENT IN LATIN AMERICA* 2, 5 (2007) (explaining that his study focused on Argentina, Brazil, Chile, Mexico, and Uruguay, where brownfield sites are already part of the political discussion, because there is no substantial data from other Latin American countries).

167. See *id.* at 10 (stating that "specific legislation on the contaminated site issue does not yet exist in Brazil").

A. *Brownfield Revitalization Framework in Brazil*

There is no federal legislation or national policy in Brazil governing contaminated site management.¹⁶⁸ There are correspondingly no legal definitions of relevant terminology, such as “contaminated site” and “remediated site.”¹⁶⁹ The Brazilian Constitution does, however, recognize the authority of the federal, state, and local governments to legislate on issues of environmental liability.¹⁷⁰ It also grants power to local governments to establish urban land use controls.¹⁷¹ Although states have taken up this mandate through State Environmental Agencies, the only state that has made any progress through legislation or policy is the São Paulo State Agency.¹⁷² Locally, there has been some municipal regulation, but the City of São Paulo remains the only municipality with the strong semblance of a brownfield policy.¹⁷³

168. *See id.* at 13 (noting that although Brazil has submitted some laws on soil protection and brownfield remediation, the country is still addressing these issues through pollution control laws from the 1970s); *see also* Ana Luiza Silva Spínola et al., *Contaminated Sites and Brownfield Management: State of Art in Brazil and in Germany*, 21 *MGMT. ENVTL. QUALITY: AN INT’L J.* 299, 301 (2010) (discussing the absence of any federal public policy in Brazil on contaminated sites and brownfield management).

169. *See* Spínola et al., *supra* note 168, at 301 (proposing aspects of future brownfield legislation, including the “legal definition of specific terminology”).

170. CONSTITUIÇÃO FEDERAL [C.F.] [CONSTITUTION] art. 24 (Braz.) (granting power to the Union, the States, and the Federal Districts to legislate on environmental issues).

171. *Id.* art. 30 (establishing the power of municipalities to institute planning and land use controls, specifically in urban areas); *see* Lei No. 6.938, de 31 de Agosto de 1981, DIÁRIO OFICIAL DA UNIÃO [D.O.U.] de 2.9.1981 (Braz.) *available at* <http://www2.camara.gov.br/legin/inddef/lei/1980-1987/lei-6938-31-agosto-1981-366135-norma-pl.html> (outlining Brazil’s National Environmental Policy, which aims at the preservation and restoration of the environment and creates a National Environment System that integrates federal, state, and local institutions to achieve the legislation’s goals).

172. *See* MARKER, *supra* note 166, at 10–11 (noting the singularity of the State of São Paulo’s contaminated land policy); *see, e.g.,* *Áreas Contaminadas*, CETESB, <http://www.cetesb.sp.gov.br/areas-contaminadas/> (follow “O que são Áreas Contaminadas”) (last visited Oct. 23, 2011) (explaining the State of São Paulo’s contaminated land management policy and referencing Brazil’s National Environmental Policy).

173. *See* Spínola et al., *supra* note 168, at 302 (stating that the City of São Paulo is the exception to the overall lack of municipal control of brownfield sites); *cf.* MARKER, *supra* note 166, at 11, 15, 21–22 (citing the City of São Paulo, Rio de Janeiro, and Porto Alegre as effectively involved municipalities in brownfield site management but failing to mention any legislation instituted by either Rio de Janeiro or Porto Alegre).

The Federal Ministry of the Environment is Brazil's federal environmental management agency, the mission of which is, inter alia, to protect and restore the environment and to include "sustainable development in public policies, in a participative, democratic, and transversal way, at all levels and instances of government and society."¹⁷⁴ The Federal Ministry of the Environment is preparing a resolution on the establishment of criteria, guide values, and institutional processes for contaminated site management.¹⁷⁵ It has also constructed an inventory of priority-contaminated sites in Brazil, finding that there are approximately 700 sites that are hazardous to the population.¹⁷⁶

Comparatively, the São Paulo State Agency has developed a list of sites for remediation numbering around 2500.¹⁷⁷ Despite almost complete delegation of contaminated site control from the federal government to the states, the State of São Paulo is the only state with established regulation for cleanup and remediation of brownfield sites.¹⁷⁸ Additionally, some argue that

174. *El Ministério*, MINISTÉRIO DE MEIO AMBIENTE, <http://www.mma.gov.br/sitio/en/index.php?ido=conteudo.monta&idEstrutura=206> (last visited Oct. 23, 2011) (presenting a general overview of the Federal Ministry of the Environment). At a glance, this mission statement seems like a general statement of quasi-EJ principles, without the inclusion of a specific prohibition on discrimination and without explicit EJ recognition. The Federal Ministry of the Environment is responsible for coordinating and implementing the national environmental policy guidelines established by the National Environment Council, which advises the federal government on rules and standards. *See* Lei No. 6.938 (explaining the federal delegation of authority).

175. *See* MARKER, *supra* note 166, at 13–14 (describing efforts at contaminated site management in Brazil). Information on the Federal Ministry of the Environment's efforts at crafting a policy for contaminated site management came from a 2007 study. Based on a more recent study, the resolution is either not yet complete or is complete but has a negligible effect. *See generally* Spínola et al., *supra* note 168 (failing to mention the Federal Ministry of the Environment's resolution).

176. *See* MARKER, *supra* note 166, at 14 (pointing out the Federal Ministry of the Environment's attempts to assess contaminated sites).

177. *See* Spínola et al., *supra* note 168, at 302 (stating that as of 2009, the State of São Paulo confirmed the existence of 2514 contaminated sites within its borders); *see also* MARKER, *supra* note 166, at 14 (noting that as of 2007, almost 2000 sites in the State of São Paulo had been registered, investigated, and partly remediated).

178. *See* MARKER, *supra* note 166, at 10–11 (calling the State of São Paulo a "stakeholder of high relevance in the issue" and denoting industrialized states like Minas Gerais, Rio de Janeiro, Bahia, and Rio Grande do Sul as "potential stakeholders"); *see, e.g.,* *Áreas Contaminadas*, CETESB, <http://www.cetesb.sp.gov.br/areas-contaminadas/> (last visited Oct. 23, 2011) (providing access to information about contaminated areas and the permitting process; displaying an inventory of

these steps are not sufficient for effective remediation and redevelopment.¹⁷⁹

At the municipal level, there are neither local instruments nor local actions to clean up contaminated sites.¹⁸⁰ The City of São Paulo, however, is an exception and has made important strides towards sustainable brownfield revitalization, passing specific laws to develop and revitalize degenerated urban areas.¹⁸¹ The first of these laws established a “master plan,” laying the foundation for an urban land use policy that not only recognizes the social, economic, and environmental justice aspects of brownfield redevelopment but establishes the goals of improved hazardous waste management and the redevelopment of contaminated lands.¹⁸² Along with the “master plan,” the City of São Paulo crafted its brownfield policy by creating specific guidelines for contaminated land management.¹⁸³ Legislation providing a foundation for revitalization soon followed, establishing procedure for building on contaminated sites and requiring research and risk assessment of such sites or of any suspected contaminated sites.¹⁸⁴

contaminated areas in the State of São Paulo; explaining how to manage a contaminated area; and offering risk assessment guides); *see also* Spínola et al., *supra* note 168, at 301 (describing the State of São Paulo’s policies).

179. *See* Spínola et al., *supra* note 168, at 302 (urging municipalities to accept and fulfill their responsibilities despite state agency action).

180. *See id.* (noting that at the municipal level, the absence of both instruments and actions to enforce intervention on contaminated sites is widespread); *see also* MARKER, *supra* note 166, at 15 (recognizing the City of São Paulo’s developing legal structure concerning contaminated land, building construction permits, and reutilization of potentially contaminated sites and the city’s attempts to streamline the construction licensing process).

181. *See supra* note 180 and accompanying text (establishing the City of São Paulo’s legislative efforts towards a consistent brownfield policy).

182. Lei No. 13.430, de 13 de Setembro de 2002, LEI ORDINÁRIA DE SÃO PAULO de 14.9.2002 (Braz.), *available at* http://sempla.prefeitura.sp.gov.br/pde/LEI_13430-13.09.02.pdf (promulgating a strategic urban development policy, including regulations on environmental zoning that consider social justice issues and demonstrate a commitment to land use policies that include public participation).

183. Decreto No. 42.319, de 21 de Agosto de 2002, LEI ORDINÁRIA DE SÃO PAULO de 21.8.2002 (Braz.), *available at* <http://www.radarmunicipal.com.br/legislacao/decreto-42319> (follow link for “Diário Oficial do Município de São Paulo, 22/08/2002, p. 1”) (enumerating specific guidelines and procedures for managing contaminated land in the City of São Paulo, including a requirement for publicizing any potential health risks and a public participation requirement).

184. Lei No. 13.564, de 24 de Abril de 2003, LEI ORDINÁRIA DE SÃO PAULO, art. 1, de 25.4.2003 (Braz.), *available at* <http://www.radarmunicipal.com.br/legislacao/lei->

The City of São Paulo's legislative strides are the beginnings of a local policy for contaminated land management that other localities could emulate.¹⁸⁵ Municipalities are important actors in site remediation and redevelopment because they control urban land use and occupation and are the governmental actors who can constrain the use of contaminated properties.¹⁸⁶ In a system devoid of concrete federal or state policy, municipalities are well-equipped to establish policies on regulation and licensing of site reutilization, liability issues, and funding.¹⁸⁷

B. Poverty and Brownfield Sites in Brazil

As in the United States, there is a connection between contaminated sites and the poor in Brazil.¹⁸⁸ In Brazil, twenty-two percent of people live below the poverty line.¹⁸⁹ Eighty-six percent of the total population lives in urban areas, which have the greatest disparities in income distribution of any urban areas in the world.¹⁹⁰ Without any effective, comprehensive legislation,

13564 (follow link for "Diário Oficial do Município de São Paulo, 25/04/2003, p. 1") (providing for construction on land that is contaminated or suspected of contamination); Lei No. 13.885, de 25 de Agosto de 2004, LEI ORDINÁRIA DE SÃO PAULO, art. 201, de 6.10.2004 (Braz.), available at <http://www.leispaulistanas.com.br/sites/default/files/PlanoRegionalEstrategico/LEI%2013885.PDF> (establishing standards for researching and assessing potential land contamination and health effects).

185. See MARKER, *supra* note 166, at 27 (suggesting that although the City of São Paulo's efforts at managing contaminated lands are fairly new, other South American municipal governments could learn from their experiences).

186. See Spínola et al., *supra* note 168, at 302 (arguing that municipalities play an important role in site management "because it is the public entity that controls urban land use and occupation by issuing authorizations and having to also create mechanisms that legally restrain the use of a contaminated property"); see also MARKER, *supra* note 166, at 27 (espousing the importance of local government involvement in contaminated site management, especially because the American and European experiences have shown that brownfield redevelopment is generally in the competence of municipalities).

187. See MARKER, *supra* note 166, at 15, 27 (explaining how local government involvement can directly influence brownfield redevelopment efforts).

188. See *id.* at 17–18 (describing the connection between brownfield sites and poverty in South America).

189. See *Brazil at a Glance*, WORLD BANK, 1 (Feb. 25, 2011), http://devdata.worldbank.org/AAG/bra_aag.pdf (presenting an overview of socio-economic conditions in Brazil).

190. See *id.* (presenting an overview of socio-economic conditions in Brazil); U.N.-HABITAT, STATE OF THE WORLD'S CITIES 2008/2009: HARMONIOUS CITIES 70 (2008), available at <http://www.unhabitat.org/pmss/listItemDetails.aspx?publicationID=2562>

and absent any policy regarding brownfield cleanup, contaminated sites are reused without any investigation into their environmental histories.¹⁹¹ Housing complexes and urban shanty towns develop on contaminated lands, endangering the health and economic well-being of poor inhabitants.¹⁹² Most of the time, the impoverished populations are not aware of the risks to which they are exposed by living on or around a brownfield.¹⁹³ This is due to the lack of information on the site in general, the unavailability of public information if it does exist, and the inability of the poor to access such information.¹⁹⁴ An additional problem surfaces when informal dwellers, or squatters, move onto contaminated properties.¹⁹⁵ Once an informal dweller occupies a contaminated site, it is harder for local governments to reintegrate the property because the real owners cannot be identified, cannot be located, or do not care about the informal development.¹⁹⁶ These informal dwellings are then exposed to high levels of contaminants, of which they may or may not know.¹⁹⁷ Absent legislation allowing municipalities to expel the dwellers, all hopes of remediating and redeveloping the site for economic and social benefits are quashed.¹⁹⁸

As described in Part I, US populations around brownfield sites experience adverse health effects, loss of jobs and economic development, weak infrastructures, increased crime

(follow the “Download” hyperlink) (explaining the inequalities of income distribution in Latin American urban areas).

191. See MARKER, *supra* note 166, at 17 (discussing how old commercial properties are redeveloped without any investigation into soil quality). *But see supra* note 184 and accompanying text (noting that the City of São Paulo passed legislation requiring investigation into the environmental history of suspected contaminated sites).

192. See MARKER, *supra* note 166, at 17–18 (describing the negative effects of contaminated sites on the poor and illustrating the particular problems experienced by the poor in Brazil who live atop brownfield sites).

193. *Id.* at 18.

194. See *id.* (explicating how the poor unknowingly expose themselves to the negative effects of brownfield sites because of the lack of comprehensive site inventory, management, and control in Brazil).

195. See *id.* (explaining how squatters impede efforts of local governments to manage or control contaminated sites).

196. See *id.* (highlighting the difficulties faced by local governments when attempting to encourage remediation or execute cleanup themselves).

197. See *id.* (explicating the adverse effects of contaminated sites on the poor).

198. See *id.* (explaining how the lack of any comprehensive contaminated site management legislation adversely affects both the poor and the environment).

rates, and general neighborhood degradation.¹⁹⁹ A nonexistent federal policy and fragmented state and local efforts cannot shield the environment from harmful contaminants, cannot adequately protect the poor, and can only harm larger society.²⁰⁰

Although Brazil is advanced in contaminated site management compared to most of its South American neighbors, it has yet to institute any national, state, or local brownfield policy. The State of São Paulo and the City of São Paulo have begun developing site management law and policy, but they have yet to be joined by other states or municipalities. This lack of control on the national level exacerbates poverty around brownfield sites and increases the difficulty of site management.

III. APPLICATION OF US BROWNFIELD FRAMEWORK TO BRAZIL AND OTHER SOUTH AMERICAN COUNTRIES

Based on the experience of the United States in remediating and redeveloping brownfield sites, Brazil should follow the US approach in constructing a legislative scheme and subsequent policy on brownfield cleanups. The US system, however, is not without its flaws. Part III posits that, with some modifications, the US framework is a positive example for Brazil's brownfield laws. Part III then addresses some possible problems that Brazil might face during implementation of a modified US brownfield scheme.

Most importantly, Brazil should institute a unified system, codified by federal legislation, that provides a legal framework and regulatory guidance. This framework should establish clear cleanup goals, create practices and standards for remediation, and impose certain liabilities with corresponding incentives to offset risks and encourage development. Brazilian state and local systems should complement these federal efforts. The integrated federal-state-local framework, however, should focus on EJ to a greater degree than in the United States to protect surrounding

199. See *supra* notes 92–99 and accompanying text (describing the negative impacts that brownfield sites can have on surrounding communities).

200. See *supra* notes 188–98 (showing the effects of unremediated brownfield sites on the surrounding communities).

vulnerable communities from further harm and to fully revitalize the blighted area.

First, Brazilian federal legislation should define important terms so that all stakeholders are fully informed and that all states and localities are operating on the same understanding. Clear terminology facilitates clear cleanup goals. In the United States, CERCLA and the Revitalization Act provide extensive definitions of all necessary terms to prevent confusion.²⁰¹ Definitions provide crucial terminology, uniformity, and clarity, all of which are essential for an efficient brownfield program. Brazilian federal legislation should also include a statutory definition of EJ, which would incorporate EJ into the legal framework and establish it as an important component of brownfield law.

One crucial note for Brazil is the importance of federal and state environmental agencies. An overarching federal framework complemented by state and local systems requires administrative agencies to manage and regulate brownfield policies. In the United States, the EPA works to coordinate federal environmental efforts and to facilitate collaboration between the federal and state governments.²⁰² Although Brazil benefits from the Federal Ministry of the Environment, and although there are environmental departments in certain Brazilian states, these agencies should be established in every state.²⁰³ The Federal Ministry of the Environment has already shown a concern for sustainable development and public participation in environmental policies.²⁰⁴ This should be expanded to incorporate the full definition of EJ.²⁰⁵ All Brazilian federal and state environmental administrative agencies should include a full EJ definition in their brownfield policies and should

201. *See supra* note 5 (noting that the US federal legislation defines all relevant terminology).

202. *See supra* notes 24, 39–42, 49–70 and accompanying text (discussing the interplay between federal and state cleanup programs in the United States).

203. *See supra* notes 172–74 and accompanying text (noting the existence of Brazil's federal environmental agencies as well as the scarcity of state environmental authorities).

204. *See supra* notes 174–76 and accompanying text (showing the Federal Ministry of the Environment's recognition of important EJ considerations).

205. *See supra* note 13 and accompanying text (exploring the various nuanced definitions of EJ).

establish EJ agency subdivisions, such as the Office of Environmental Justice in the EPA.²⁰⁶ Brazilian agencies should explicitly enumerate the goals of promoting sustainable development and community involvement to alleviate poverty.²⁰⁷

Brazilian federal legislation should also provide guidance on remediation standards. Although CERCLA establishes certain cleanup standards, the statute's practical result is that site remedies are analyzed on a case-by-case basis.²⁰⁸ Brazil should follow this framework but with more detailed guidance. Brazil should institute a general cleanup procedure that requires site inquiries and an in-depth assessment of remediation techniques. This will not only set precedent for Brazilian state and local government standards but will also set a baseline for future cleanups. Recognizing that site specificity is a necessary feature of brownfield site management, Brazil should work off of the Federal Ministry of the Environment's current hazardous waste site inventory list to set minimum cleanup standards for at least the most dangerous contaminants.²⁰⁹ This will inject heightened clarity into the standards and avoid confusion as to remediation efficacy. In time, certain general cleanup standards could be established for all or almost all of Brazil's hazardous contaminants.

Cleanup standards should also take EJ considerations into account. For example, when Brazilian legislation requires an assessment of remediation techniques, it should also mandate that stakeholders address vulnerable populations, such as low-income and minority individuals, when deciding a proper remediation plan. Including EJ as a statutory requirement, instead of as an Executive Order, will increase the chances that vulnerable populations will be protected during and after

206. *See supra* note 13 (referencing the EPA Office of Environmental Justice's established definition of EJ).

207. *See supra* Part I.B.3. (promulgating the importance of sustainable development and community involvement in satisfying EJ goals and effectively remediating brownfield sites).

208. *See supra* note 11 (demonstrating CERCLA's ad hoc, if not vague, remediation requirements).

209. *See supra* note 176 and accompanying text (noting that the Brazilian Federal Ministry of the Environment is constructing a list of the most hazardous sites in Brazil).

remediation.²¹⁰ An EJ statutory requirement, coupled with an EJ statutory definition, will legally codify EJ as a serious concern and surpass the United States' efforts at EJ protections.²¹¹

An overarching Brazilian federal framework should include liability for cleanup to incentivize change in current industry practices and to fund remediation.²¹² A clear establishment of liability standards will help dissolve questions about responsibility, which will not only assuage the fears of non-liable developers and encourage them to redevelop the site but force the responsible parties to pay for cleanup. When no private liability is discoverable, Brazilian states and localities should take up the helm and remediate abandoned sites.²¹³ Additionally, Brazil should incorporate safe harbor provisions for new developers, like the US Revitalization Act's Bona Fide Purchaser Program.²¹⁴ This will encourage development by helping to dissolve some liability for non-contributors.²¹⁵

Incentives to redevelop can help to overcome liability hurdles. This can be done through grant programs and the encouragement of state and local brownfield management systems.²¹⁶ The EPA's grant programs, although often falling short, are a step in the right direction toward igniting

210. *See supra* notes 46–47 and accompanying text (describing Executive Order 12,898 mandating agency consideration of EJ in the United States and noting its shortcomings).

211. *See supra* notes 44–47, 63–70, 162–63, and accompanying text (explaining the importance of EJ considerations in brownfield legislation and policy and showing that the United States does not completely satisfy these considerations).

212. *See supra* notes 28–31 and accompanying text (discussing CERCLA's far-reaching liability scheme, which holds responsible actors accountable for cleanup and deters developers from contaminating sites).

213. *See supra* notes 53–61, 186–87 and accompanying text (emphasizing the importance of state and local involvement in contaminated site management and remediation).

214. *See supra* notes 32–36 and accompanying text (describing the US Bona Fide Prospective Purchaser ("BFPP") program, which allows developers to avoid CERCLA liability if they meet certain standards promulgated by the EPA).

215. *See supra* note 35–36 and accompanying text (addressing the effect of the BFPP program, which allows certain developers to avoid legal liability for contamination).

216. *See supra* notes 39–70 and accompanying text (explaining the federal support of state brownfield programs in the United States).

remediation efforts.²¹⁷ The EPA provides these grants directly to US states, as established by the Revitalization Act.²¹⁸ This encourages cleanup while bolstering US state and local systems.²¹⁹

Brazil's Federal Ministry of the Environment should consider EJ goals when it awards funding.²²⁰ Like the EPA's grant mandate, the Federal Ministry of the Environment should be required to consider the reduction of threats to vulnerable populations and to assess the needs of low-income communities.²²¹ Unlike the EPA's grant mandate, these should be prime considerations, instead of just three out of ten, and there should be sufficient oversight to ensure the protection of these goals.²²²

Another way for Brazil's grant program to incorporate EJ goals is to formulate grants that are earmarked specifically for sustainable development on brownfield sites surrounded by impoverished communities. These grants could be provided from government funds or from a general tax on the public. The tax could also stem from the use of the structure built on a redeveloped brownfield site; for example, if a wind farm were built on a brownfield site, a tax on energy provided to system users could be set aside specifically for other sustainable development initiatives.

As a regulatory agency, the Brazilian Federal Ministry of the Environment should take the lead in regulating EJ policies within the statutory EJ framework. Like the EPA, the Federal Ministry of the Environment should provide programs to promote green jobs, urban agriculture, and a variety of

217. *See supra* notes 39–42 and accompanying text (discussing the EPA's grant program that funds the cleanup of brownfield sites but which is inadequate to fully remediate all of the current existing brownfield sites in the United States).

218. *See supra* text accompanying note 39 (proffering the statutory mandate for the EPA's funding program).

219. *See supra* text accompanying note 49 (noting statutory authority for the grant as an incentive for states to spearhead redevelopment).

220. *See supra* notes 44–47 and accompanying text (recounting criteria that the US Revitalization Act requires the EPA to examine when reviewing grant applications).

221. *See supra* notes 44–47 and accompanying text (explaining EJ requirements that the EPA must consider when granting funding).

222. *See supra* notes 44–47 and accompanying text (demonstrating the inadequacies of US federal brownfield legislation in fully protecting EJ populations, notably low-income communities).

sustainable development paths.²²³ These sustainable development initiatives should be targeted at low-income communities around brownfield sites.²²⁴ Most importantly, Brazilian federal, state, and local environmental agencies should regulate development to include plans for “green” affordable housing.²²⁵ Brazilian state and local governments in particular should craft sustainable development policies with requirements for affordable housing in an effort to prevent the development of impoverished communities around and directly on top of brownfield sites.²²⁶ This could be done by tying construction permits to requirements that mandate green building tactics and the construction of affordable housing for any displaced populations.²²⁷ This will further protect the poor and maximize the positive effects of sustainable development.

Additionally, Brazilian regulations should provide incentives to redevelop sustainably.²²⁸ Tax credits for sustainable redevelopment might be one type of incentive. It is important, however, that these tax credits do not become perverse and incentivize luxury developments over community remediation.²²⁹ They should be tied to the overall cleanup of the site, the benefit to the surrounding community, and the degree to which the builder developed sustainably.²³⁰ Particularly, larger tax credits should be given to developers who build affordable,

223. *See supra* notes 121–23, 130–34, and accompanying text (emphasizing the EPA’s efforts to encourage various types of sustainable development).

224. *See supra* note 105 and accompanying text (noting that the EPA encourages the sustainable redevelopment of brownfield sites because it can benefit surrounding communities).

225. *See supra* notes 112–15 and accompanying text (describing community-based and federally-encouraged efforts to build affordable, sustainable housing as part of brownfield redevelopment projects).

226. *See supra* notes 191–98 and accompanying text (explaining how both formal and informal dwellings are constructed on contaminated sites because there is no uniform system researching, documenting, or controlling their use).

227. *See supra* note 121 (noting the positive developments resulting from linking construction permits and green infrastructure).

228. *See supra* note 120 and accompanying text (discussing the various tax credits available for renewable energy investment and development).

229. *See supra* notes 56–62 and accompanying text (citing the New York brownfield program as an example of when tax credits for redevelopment turn perverse).

230. *See supra* notes 56–62 and accompanying text (explaining ways in which the New York brownfield program could have prevented its tax credits from becoming perverse).

green housing on brownfield sites and effectively limit gentrification.²³¹ This can be coupled with any agency requirements for providing sustainable, affordable housing along with redevelopment.²³² Although the Brazilian Federal Ministry of the Environment should promulgate these regulations and incentives, Brazilian states and localities could implement similar systems.

Brazilian state and local systems are essential to a fully operational national brownfield framework.²³³ They can mimic and bolster many of the aforementioned federal policies, such as funneling taxes toward sustainable projects to help the poor, incentivizing sustainable development, and incorporating EJ goals into their missions.²³⁴ The current fragmentation and ineffectiveness of these state and local systems, however, should spur the Brazilian federal government to buttress these programs before granting them the wide discretion that they currently hold.²³⁵ Although the Brazilian federal government cannot bolster other programs before fixing its own, it should take into account Brazilian state and local systems when crafting its own regulatory scheme. The weakness of current Brazilian state and local programs should influence the first few years of brownfield policy after the passage of a national scheme. During this time, there should be tight federal-state-local cooperation. As the Brazilian federal program grows and stakeholders have a better idea of cleanup goals and standards, the Brazilian federal government can grant states and localities increased autonomy.

231. *See supra* notes 105–15, 151–52 and accompanying text (describing efforts to build affordable, sustainable housing and noting the dangers of gentrification).

232. *See supra* notes 225–27 and accompanying text (providing possible avenues for a Brazilian brownfield policy to require sustainable redevelopment that benefits both the poor and the environment).

233. *See supra* notes 49–55, 170–87, and accompanying text (explicating the importance of US VCPs and showing that the absence of Brazilian state and local framework is less than beneficial to the regulation of contaminated sites).

234. *See supra* notes 201–11, 220–32, and accompanying text (suggesting ways in which a national Brazilian brownfield policy could revitalize contaminated sites and protect surrounding communities).

235. *See supra* notes 177–87 and accompanying text (demonstrating the dispersed and limited state and local programs to regulate contaminated sites).

Like in the United States, Brazilian state and local governments should have public participation requirements.²³⁶ These requirements should be more than just public announcements and public commenting periods.²³⁷ There should be sustained community involvement at every level of planning.²³⁸ Community outreach groups should be formed locally as part of the developer's plan to keep the community fully informed.²³⁹ Integrating impoverished communities into the redevelopment process would allow communities to adequately protect their interests.²⁴⁰ Forming citizen outreach groups would permit those who may not have the time or opportunity to attend meetings to easily access distilled and comprehensible information. This would enable them to stay involved without sacrificing valuable time in the labor market. Information dissemination requirements should be included as well. This would hopefully limit the development of urban shanty towns on abandoned brownfield sites.²⁴¹ Site owners or Brazilian local governments should bear the responsibility of preventing these communities from developing in and on top of danger zones.²⁴²

There will be roadblocks on the path to achieving a successfully integrated brownfield framework that adequately protects both the poor and the environment in Brazil. For example, Brazil may have problems with funding. CERCLA has

236. See *supra* notes 67, 135–59 and accompanying text (explaining that CERCLA requires some form of public participation requirement and discussing what these requirements typically entail).

237. See *supra* notes 143–50 and accompanying text (demonstrating the inadequacies of notice and comment periods alone).

238. See *supra* notes 138–50 and accompanying text (explicating the importance of community involvement and providing examples of which types of involvement better satisfy EJ goals).

239. See, e.g., *supra* notes 153–59 and accompanying text (highlighting the importance of community outreach groups through a comparative case study in Western Pennsylvania).

240. See *supra* notes 136–38, 151–52 and accompanying text (examining the importance of community involvement so that populations near brownfield sites can protect their interests).

241. See *supra* notes 191–98 and accompanying text (explaining the development of formal and informal communities on contaminated sites and the government's limited control of such developments).

242. See *supra* notes 191–98 and accompanying text (underscoring the hazards of unregulated contaminated sites and the difficulties faced by both local governments and surrounding communities when brownfield sites languish absent legislation).

been in force for over thirty years and the United States still cannot fully fund brownfield cleanups.²⁴³ Another problem may arise in the interplay between Brazilian federal, state, and local governments. Given the great independence of state and local governments today, delegation of authority from Brazilian federal agencies might become entangled in bureaucratic constraints.²⁴⁴ These obstacles, however, should not halt any progress toward a comprehensive brownfield revitalization framework in Brazil.

CONCLUSION

Although the United States has created a statutory brownfield cleanup framework within which EJ policies operate, Brazil has the opportunity to incorporate EJ concerns directly into its statutes and to complement these statutes with EJ regulations. The United States has provided a good working model for Brazil to establish brownfield cleanup statutes and to legally require the adequate consideration of impoverished communities surrounding brownfield sites. This can be done through urging sustainable development and public participation as policy approaches within a legislative framework that requires EJ considerations at every step of the revitalization process. By instituting brownfield legislation that addresses EJ considerations, Brazil can create a brownfield revitalization scheme that protects both the poor and the environment. This can also help to entrench Brazil at the forefront of South American brownfield policy, which may encourage other countries in the region to formulate similar legislation and which would increase the protection of the environment and of society's most vulnerable populations.

243. *See supra* note 41 and accompanying text (demonstrating that the federal brownfield program cannot fully fund the cost of remediating present and future contaminated sites).

244. *See supra* notes 168–87 and accompanying text (discussing the Brazilian federal, state, and local roles in environmental control and showing how the lack of federal policy and the delegation of environmental controls to states and localities has left state and local governments with wide, albeit unfulfilled, discretion).