

Environmental Justice Research

Annotated index

Political Economy Research Institute (PERI)
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Diana, Bridget, Michael Ash and James K. Boyce. 2021. [Green for All: Integrating Air Quality and Environmental Justice into the Clean Energy Transition](#). Amherst MA: PERI.

A comparison of three decarbonization pathways for the U.S. electricity sector – the first narrowly focused on carbon alone, the second incorporating air quality co-benefit targets, and the third incorporating environmental justice targets too – shows that substantial improvements in air quality and environmental justice can be achieved at very modest extra cost. In the absence of explicit mandates, however, the carbon-alone pathway not only fails to take full advantage of these opportunities but also will lead to increased emissions of hazardous co-pollutants and heightened environmental disparities in some regions of the country.

[Air Toxics at School](#). 2021.

Age-related disparities in the impacts of exposure to pollution are an important equity issue. PERI developed this interactive tool for tracking industrial air pollution at every K-12 school and higher education institution in the U.S. Users can obtain information on the industrial facilities and toxic chemical releases that generate health risks at any school's location. This is a sequel to USA Today (2008) investigative series and its accompanying database.

Boyce, James K. 2020. [Distributional issues in climate policy: Air quality co-benefits and carbon rent](#). In Graciela Chichilnisky and Armon Rezai, eds., *Handbook on the Economics of Climate Change*. Cheltenham: Elgar.

Climate policy can yield substantial here-and-now benefits for the public at large, above and beyond the income and employment gains that would be generated by clean energy investments, and near-term benefits from mitigation such as reduced risk from coastal flooding and extreme heat waves. These include improvements in air quality and public health that would come with reduced use of fossil fuels, and net income gains that will accrue to the majority of households if the rent derived from a price on carbon emissions is recycled as equal per capita dividends. Both sorts of benefits entail important issues of intra-generational equity.

Ash, Michael and James K. Boyce. 2018. [Racial Disparities in Pollution Exposure and Employment at U.S. Industrial Facilities](#). *Proceedings of the National Academy of Sciences*, 115: 10636-10641.

Using facility-level data from the EPA's Toxics Release Inventory and the EEOC's EEO-1 database, we assess the extent to which the racial and ethnic distribution of industrial employment corresponds to the distribution of exposure to air toxics emitted by the same facilities. The share of pollution risk accruing to minority groups generally exceeds their shares of overall employment and higher paying jobs by a wide margin. We find no evidence that facilities that create higher pollution risk for surrounding communities provide more jobs in aggregate.

Boyce, James K. and Michael Ash. 2018. [Carbon Pricing, Co-Pollutants, and Climate Policy: Evidence from California](#). *PLoS Medicine*, 15: e1002610.

Invited commentary on the Cushing et al. (2018) study published in the same issue, on the environmental justice impacts of the first three years of California's cap-and-trade program for carbon dioxide emissions.

Ash, Michael and James K. Boyce. 2017. Pollution for Jobs? Do racial minorities get an employment bonus for community exposure to air toxics? Paper prepared for the U.S. Equal Opportunity Employment Commission (EEOC).

Report including confidential facility-specific data, on which the authors' PNAS (2018) paper is based.

Boyce, James K., Klara Zwickl and Michael Ash. 2016. [Measuring environmental inequality](#). *Ecological Economics*, 124: 114-123.

State-level measures of environmental inequality in the U.S. for exposure to industrial air pollution are presented to examine three methodological issues: first, the sensitivity of alternative indicators to spatial scale and population weighting; second, sensitivity of rankings to different segments of the overall distribution; and third, relationships between vertical and horizontal (inter-group) inequality. We conclude that no single indicator is sufficient to address the full range of equity concerns that are relevant to environmental policy.

Zwickl, Klara, Michael Ash, and James K. Boyce. 2014. [Regional variation in environmental inequality: Industrial air toxics exposure in US cities](#). *Ecological Economics*, 107: 494-509.

An analysis of racial and ethnic disparities in exposure to industrial air toxics in U.S. cities, focusing on variations with neighborhood income as well as regional variation. We find that racial and ethnic disparities in pollution exposure are strongest among neighborhoods with median incomes below \$25,000, while income-based disparities are stronger among neighborhoods with median incomes above that level. We also find considerable differences across the ten EPA regions. In the two regions with the highest median exposure (the Midwest and South Central regions), African-Americans and Hispanics face significantly higher exposures than whites, whereas in the region with the next highest exposure (the Mid-Atlantic), the reverse is true. We show that the Mid-Atlantic result is attributable to intercity variations – minorities tend to live in the less polluted cities in the region – rather than to within-city variations.

Zwickl, Klara. 2014. [Three Essays on Economic Inequality and Environmental Degradation](#). Ph.D. dissertation. Department of Economics, University of Massachusetts Amherst.

Essay 1: Regional variation in environmental inequality: Industrial air toxics exposure in US cities. Essay 2: Informal environmental regulation of industrial air pollution: Does neighborhood inequality matter? Essay 3: Socio-economic disparities in proximity to unconventional natural gas drilling.

Ash, Michael, James K. Boyce, Grace Chang and Helen Scharber. 2013. [Is Environmental Justice Good for White Folks? Industrial Air Toxics Exposure in Urban America](#). *Social Science Quarterly*, 94: 616–636.

A between-city and within-city analysis of environmental disparities, using geographic microdata from the U.S. Environmental Protection Agency's Risk-Screening Environmental Indicators and demographic data from the 2000 U.S. Census. We find that average exposure in an urban area is positively correlated with the extent of racial and ethnic disparity in the distribution of the exposure burden, and that in urban

areas with higher pollution-exposure discrepancies the average exposures tend to be higher for all population subgroups, including whites. This suggests that improvements in environmental justice could benefit not only minorities but also whites.

Boyce, James K. and Manuel Pastor. 2013. [Clearing the air: incorporating air quality and environmental justice into climate policy](#). *Climatic Change*, 120: 801-814.

In addition to lower carbon dioxide emissions, policies to reduce fossil fuel combustion can yield substantial air quality co-benefits via reduced emissions of co-pollutants such as particulate matter and air toxics. If co-pollutant intensity (the ratio of co-pollutant impacts to carbon dioxide emissions) varies across pollution sources, efficient policy design would seek greater emissions reductions where co-benefits are higher. The distribution of co-benefits also raises issues of environmental equity. This paper presents evidence on intersectoral, intrasectoral and spatial variations in co-pollutant intensity of industrial point sources in the United States, and discusses options for integrating co-benefits into climate policy design to advance efficiency and equity.

Legot, Cristina, Bruce London, Anna Rosofsky and John Shandra. 2012. [Proximity to industrial toxins and childhood respiratory, developmental, and neurological diseases: environmental ascription in East Baton Rouge Parish, Louisiana](#). *Population and Environment*, 33: 333-346.

East Baton Rouge Parish is a locus of particularly high volumes of emissions of developmental neurotoxins, i.e., those toxins that put children's health and, especially, learning abilities at greatest risk. Many of these are also respiratory toxins, linked to childhood diseases (e.g., asthma) that impact school performance. Greater proximity to the main sources of these toxins is associated with higher rates of neurodevelopmental diseases and childhood asthma, and higher percentages of minority and low-income households. The authors conclude that vulnerable populations are disproportionately exposed to the sorts of toxins that limit their life chances.

Boyce, James K. and Manuel Pastor. 2012. [Cooling the Planet, Clearing the Air: Climate Policy, Carbon Pricing, and Co-Benefits](#). Portland: Economics for Equity and the Environment and Washington, DC: Joint Center for Political and Economic Studies.

*Detailed analysis of relationships between carbon dioxide emissions and hazardous air pollution from point-source fossil fuel combustion in the U.S., on which the authors' *Climatic Change* (2013) paper is based.*

Mohai, Paul, James K. Boyce, Manuel Pastor and Michael Ash (principal investigators). 2011-2013. *Collaborative Research on the Correlates and Consequences of Risks from Airborne Toxics: Dynamic Spatial Analysis*. National Science Foundation, \$338,548.

Grant for collaborative environmental justice research at PERI, the University of Michigan, and the University of Southern California.

Ash, Michael and James K. Boyce. 2011. [Justice Environnementale et Performance des Entreprises: Nouvelles Perspectives et Nouveaux Outils](#). *Revue de l'OFCE/Débats et politiques* (Paris: L'Observatoire Français des Conjonctures Economiques), 120: 73-98.

This article aims at familiarizing decision-making and academic European audiences to new quantitative empirical tools developed and used in the U.S. to assess the corporate environmental performance and illuminate the environmental justice issues attached to them. It highlights the importance of availability of geocoded data and application of integrative methods to facilitate the interpretation of these data.

Scharber, Helen. 2011. [Three Essays on Racial Disparities in Infant Health and Air Pollution Exposure Pollution Exposure](#). Ph.D. dissertation. Department of Economics, University of Massachusetts Amherst.

Essay 1: Accelerated weathering among minority mothers in Texas: Exploring the evidence. Essay 2: Are we poisoning the most vulnerable? The distribution of toxic air pollution across newborns in Texas. Essay 3: Using RSEI data to assess the effects of toxic air pollution on infant health: An exploration.

Ash, Michael and James K. Boyce. 2010. [Measuring corporate environmental justice performance](#). *Corporate Social Responsibility and Environmental Management*, DOI: 10.1002/csr.238.

This paper develops the measure of corporate environmental justice performance that is applied to industrial air pollution in PERI's Toxic 100 Air Polluters Index. Such measures can serve as a valuable tool in efforts to promote corporate social responsibility and to document systematic patterns of environmental injustice.

Legot, Cristina, Bruce London and John Shandra. 2010. [Environmental Ascription: High-Volume Polluters, Schools, and Human Capital](#). *Organization & Environment*, 23: 271-290.

To explore the prevalence of toxins near schools and the potential correlation with limited life chances and racial and class characteristics remains, the authors mapped the locations of the top 100 polluters of developmental and neurotoxins in the U.S. and then determined the number of schools within a 2-mile radius, as well as the racial and socioeconomic composition of the areas surrounding each site. A significant proportion of the top industrial polluters were located in close proximity to multiple schools, and these schools were more likely to be located in neighborhoods with a disproportionate number of poor, minority residents.

Ash, Michael, James K. Boyce, Grace Chang, Manuel Pastor, Justin Scoggins and Jennifer Tran. 2009. [Justice in the Air: Tracking Toxic Pollution from America's Industries and Companies to our States, Cities, and Neighborhoods](#). Amherst, MA: PERI and Los Angeles: USC Program for Environmental and Regional Equity.

This popular publication uses the EPA's Toxics Release Inventory and Risk Screening Environmental Indicators to explore the characteristics of populations most affected by industrial air pollution, presenting data at the levels of states, metropolitan areas, industrial sectors, corporations and individual facilities.

USA Today. 2008. The Smokestack Effect: Toxic Air and America's Schools. A three-part series published in December 2008, with accompanying online interactive database.

PERI assisted in this landmark investigation of air toxic concentration levels around the nation's schools. The high-profile report prompted increased attention to the issue by officials, parents, and legislators.

Boyce, James K. 2007. Inequality and Environmental Protection. In Jean-Marie Baland, Pranab Bardhan, and Samuel Bowles, eds., *Inequality, Collective Action, and Environmental Sustainability*. Princeton: Princeton University Press.

An examination of links between inequality and environmental protection, reviewing theory and empirical evidence on the "power-weighted social decision rule" hypotheses that (i) greater inequalities of wealth

and power lead to higher levels of environmental degradation, and (ii) the distribution of environmental costs is non-random, with disproportionately higher burdens borne by populations with less wealth and power.

Boyce, James K., Sunita Narain and Elizabeth A. Stanton, eds. 2007. *Reclaiming Nature: Environmental Justice and Ecological Restoration*. London: Anthem Press.

This volume, an outcome of PERI's Natural Assets Project supported by the Ford Foundation, brings together contributions from scholars around the world exploring efforts to advance the right to a clean and healthy environment.

Manuel Pastor, Robert D. Bullard, James K. Boyce, Alice Fothergill, Rachel Morello-Frosch and Beverly Wright. 2006. [*In the Wake of the Storm: Environment, Disaster, and Race After Katrina*](#). New York: Russell Sage Foundation.

Written in the aftermath of the catastrophic damage inflicted on New Orleans by Hurricane Katrina, this report reviews research on the relationships between race, the environment, and disasters. It observes that the acute risks posed by disasters, like the chronic risks analyzed in environmental justice research, often are distributed in ways that reflect established chasms of power. The uneven distribution of risk may result in underinvestment in prevention and preparedness, increasing burdens for the society as a whole.

Ash, Michael and T. Robert Fetter. 2004. [*Who Lives on the Wrong Side of the Environmental Tracks?*](#) *Social Science Quarterly*, 85: 441-462.

Using microdata from the EPA's Risk-Screening Environmental Indicators Model, this study advanced the study of environmental inequality in three ways. First, where previous studies focus on the proximity to point sources and the total mass of pollutants released, this study employs a measure of toxic exposure reflects that atmospheric dispersion and chemical toxicity. Second, it analyzes the data at a fine level of geographic resolution. Third, it controls for substantial regional variations in pollution, allowing identification of exposure differences within cities as well as between cities. The results indicate that African Americans tend to live both in more polluted cities in the United States and in more polluted neighborhoods within cities. Hispanics live in less polluted cities on average, but they live in more polluted areas within cities. The results also reveal a consistent income-pollution gradient, with lower-income people significantly more exposed to pollution.

Toxic 100 Polluters Index. 2004 –. A periodic publication of PERI's [*Corporate Toxics Information Project*](#).

Beginning in 2004, PERI combined facility-level data from the EPA's Risk-Screening Environmental Indicators project with information on corporate ownership of industrial facilities to rank firms by their air pollution impacts, taking into account the total mass of releases of toxic chemicals, their relative toxicity, and population exposures. In subsequent years, the Toxic 100 indexes were expanded to include water pollution and greenhouse gas emissions, and to report the extent to which pollution burdens fall disproportionately on low-income communities and people of color. The index, which has received wide coverage in the media, is accompanied by an interactive database that provides facility-level and chemical-specific details for all firms.

Boyce, James K. and Miriam Zoll. 2003. [*The New Environmental Activists*](#). Amherst, MA: PERI. *A popular publication highlighting the work of grassroots environmental justice organizations across the United States.*

Pastor, Manuel. 2003. Building Social Capital to Protect Natural Capital: The Quest for Environmental Justice. In James K. Boyce and Barry G. Shelley, eds., *Natural Assets: Democratizing Environmental Ownership*. Washington, DC: Island Press.

In this study, written for PERI's Natural Assets Project, Manuel Pastor writes that by defending the right to clean air and clean water, the environmental justice movement is helping to build assets in the hands of low-income communities in the forms of both natural and social capital.

Bouwes, Nicolaas W., Steven Hassur and Marc Shapiro. 2003. Information for Empowerment: The EPA's Risk-Screening Environmental Indicators Project. In James K. Boyce and Barry G. Shelley, eds., *Natural Assets: Democratizing Environmental Ownership*. Washington, DC: Island Press.

In this study, written for PERI's Natural Assets Project, the authors (two of whom led EPA's project that created RSEI, the Risk-Screening Environmental Indicators) carry out the first environmental justice study based on RSEI microdata. Difference-of-means analysis at the national level suggests substantial disparities in air pollution exposure along lines of race, ethnicity and income class.