

A User's Guide to Environmental Justice: Theory, Policy, & Practice

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Executive Summary

The demand for “environmental justice” (EJ) has gained substantial traction in the last few years, as well it should. For too long, communities of color and low income have borne disproportionate and unfair environmental burdens, such as a concentration of pollution from multiple sources, the legacy of hazardous waste sites, a lack of convenient access to forests, parks, and other natural recreational amenities, and a lack of power to shape local land use decisions. EJ campaigns are gaining momentum to right these historic wrongs, evidenced in: the rise of frontline groups and charismatic leaders; the campaign platform and early actions of President Biden; an historic agreement amongst largely white leadership of environmental NGOs and frontline EJ groups embodied in the Equitable and Just National Climate Platform; and EJ legislation being considered and enacted in Congress, as well as state legislatures, governors, and mayors across the country.

There is a robust body of scholarship and general information on EJ (for example: the work of [Dr. Robert Bullard](#) and EJ-focused organizations such as Boston’s [Alternatives for Community and Environment](#) and the [New York City Environmental Justice Alliance](#)), but in part because this field is relatively new, the degree to which that scholarship has reached and informed policymakers is limited. Now that both the federal government and many state and local governments are contemplating major financial investments and policies focused on EJ, and policy innovation, it becomes even more imperative that information on examples of EJ innovations best practices be widely shared and understood. A key pillar in EJ will be widespread, community-designed and community-supported investment in neighborhoods that have been economically and environmentally burdened by a long history of racist government and industry decisions. In this white paper, we focus on the actions that the Environmental Protection Agency (EPA) and its state counterparts could take in the short and medium term in order to move towards a more environmentally just society, while keeping in mind the necessity of more comprehensive intervention by Congress. This white paper therefore reviews scholarship, best practices, and policy examples relevant to the EPA’s commitment to EJ into a single document that can serve as a reference tool for policymakers. In this white paper, we address how policymakers have historically defined EJ communities and measured disparate environmental burdens, what are leading best practices and innovations to address the challenge, and how might one measure the success or failures of EJ policies.

We also provide the following recommendations, all of which should be done to the maximum extent possible with the direct input and collaboration of those most affected by environmental injustice:

- **The EPA, in consultation with community advocates and the NEJAC, should develop an overall definition of EJ communities, at the national or regional level, and should include environmental, demographic, energy, climate, land-use, and community indicators.**
- **The EPA should conduct an internal assessment of how much EPA program funding has been invested in EJ communities in terms that can be compared with wealthier and whiter communities, and release this information publicly.**
- **Environmental regulators should help equip residents of EJ communities to use and scale up “citizen science,” an emerging approach with access to local, site specific data on environmental harms, and work to implement within the agency approaches to utilizing citizen science in decision-making.**
- **Environmental regulators should cultivate a holistic, community-based law enforcement regime in which community residents working in tandem with law enforcement agencies that represent all sources of pollution can bring significant pollution-reduction results.**
- **The Department of Justice should rescind its abolition of supplemental environmental projects, and EPA should issue new guidance on the use of SEPs which encourages their use by and for the benefit of EJ communities.**

- **Permitting laws and regulations at the federal and state levels should be amended to allow for a more fulsome and meaningful community input and analysis of unfair, cumulative impacts of new land uses on already burdened communities.**
- **Policymakers implementing new policies and programs should integrate and fund rigorous evaluation frameworks (based on Theories of Change) and mechanisms with stakeholder engagement so that EJ project impacts and progress toward stated goals, especially in marginalized communities, can be tracked and used for subsequent policy development and improvement.**

I. A Brief History of Environmental Justice

The environmental justice movement has evolved in parallel with and in response to traditional environmentalism to focus on the unequal distribution of environmental harms among different people and communities. Despite the policy successes of the traditional environmental movement in the United States, including the Clean Air Act (1963), Clean Water Act (1972), conservancy programs like establishing [National Parks](#), and the establishment of the EPA (1970), it has become increasingly clear that some people and communities are better protected by environmental regulations than others. Research revealing the whiteness of the environmental community elevated concerns that social justice and racial justice were not prioritized in mainstream environmentalism ([Taylor, 2017](#)).

Applying the Civil Rights Act of 1964, which prohibits discrimination based on race, color, or national origin ([Lau v. Nichols, 414 U.S. 563, 568, 1974](#)), frontline communities and others began to use the term “environmental racism” to focus on the unequal (social and spatial) distribution of environmental burdens. Following the 1982 wave of grassroots protests concerning the siting of a PCB landfill in an African American community in Warren County, NC, two influential studies ([US GAO, 1983](#) and [United Church of Christ, 1987](#)) confirmed the patterns of environmental injustices in certain communities and argued that race was the most potent factor influencing the locations of hazardous waste facilities. The correlation between environmental hazards and vulnerable communities, especially people of color, has received widespread attention in the subsequent years ([Bullard et al., 2007](#)).

Responding to the demands for EJ, President Clinton issued [an executive order](#) in 1994. According to [the order](#), federal agencies need to “make achieving environmental justice part of their mission,” despite the fact that the order is not judicially enforceable ([Perls, 2020](#)). The later federal efforts led by the Obama Administration have made significant progress, such as developing the EJSCREEN tool, discussed below, and the release of EPA’s first and only formal finding of discrimination ([Perls, 2020](#)). More recently, in June 2016, EPA has released the [EJ 2020 Action Agenda](#) for the years 2016 -2020.

Meanwhile, in the past 30 years, a great number of EJ groups in the US have adopted formal legal status ([Perez et al., 2015](#)). The EJ movement has evolved to include, and partner with, the climate justice movement, often under the umbrella concept of “a Just Transition” away from a fossil fuel economy and toward a more just, equitable, sustainable economy. For example, the Climate Justice Alliance ([CJA](#)) formed in 2013 and created a venue to unite frontline communities to a just transition.

Too many environmental policies and practices, however, continue to exacerbate inequities and perpetuate disparities. Bullard and Johnson have argued that “although environmental and civil rights laws have been on the books for more than three decades, all communities have not received the same benefits from their application, implementation, and enforcement” ([Bullard and Johnson, 2002](#)). Recent evidence continues to show that vulnerable communities have experienced disproportionate environmental burdens and other related side effects. EJ has been used as a civil rights frame in multiple areas of activism, including health inequality and racial injustice in policing. For example, EJ communities have suffered disproportionately from the COVID-19 pandemic, as underlying health conditions resulting from pollution worsen health outcomes. Black, indigenous, and people of

color (BIPOC) are also disproportionately located in areas that will be most at risk of the effects of climate change, such as increased heat and flooding. In addition, new coalitions linking the Black Lives Matter movement with climate justice reflect the long-lasting interconnections between environmental justice and racial justice ([Thomas and Haynes, 2020](#)).

The EJ movement has engaged in a decades-long effort to draw attention to unequal environmental burdens and now appears to be on the cusp of winning significant policy victories to address these structural problems. As one example, On January 27, 2021, President Biden signed an [executive order](#) “to secure environmental justice and equitable economic opportunity.” Biden will reorganize existing environmental justice groups within the federal government as the White House Environmental Justice Advisory Council and the White House Environmental Justice Interagency Council, which will be responsible for ensuring the all-of-government approach to addressing environmental injustice (Cho, 2021).

II. Defining Environmental Justice Communities

The starting point for effective EJ policy is to define “environmental justice communities”. Without a clear and comprehensive definition, policymakers are likely to continue to overlook or make assumptions about certain communities and potentially over-invest in communities that are not unduly burdened. Defining EJ communities is an essential first step in identifying communities where permitting projects that result in further pollution should be discouraged or disallowed, and where existing and future investments in infrastructure, monitoring stations, workplace training, and enforcement activities should be targeted. This section examines how EPA and several leading states define or identify EJ communities.

The EPA [defines](#) EJ as 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”. This definition is informed by the long history of inequitable distribution of environmental hazards in the United States, and the exclusion of marginalized groups from the policy development and implementation process. Certain communities – predominately Black, Hispanic, Indigenous, and poor communities – are at particular risk of environmental injustice, which results in poor health outcomes and lower quality of life for residents of these communities. Not only are EJ communities likely to lack enforcement of environmental and health policies, but these communities also [lack](#) access to nutritious food, green space, safe housing, and public transit.

Legislation in the 1990s attempted to instruct EPA to identify areas of the country that were most polluted by toxic chemicals, and to designate these areas as “[environmental high impact areas](#)”; however, this legislation was never enacted by Congress, and in 2021, it remains true that EPA has not identified the communities most at risk of environmental injustice for targeted programs. The EPA has committed to [funding projects](#) in “[overburdened communities](#),” which are intentionally vaguely [defined](#) by the agency. While socioeconomic and environmental factors such as race and ethnicity, income, tribal or indigenous populations and lands, environmental hazards, and lack of opportunity for public participation are described as relevant to the identification of a community as “overburdened,” no concrete definition has been enacted by the EPA to solidify a list of communities (identified by zip code or census tracts, for example) that are categorized as EJ communities, and therefore eligible for amended permitting processes, increased enforcement against pollution, and investment in monitoring, infrastructure, and jobs programs.

While EPA provides funding for EJ-focused programs (such as the [Environmental Justice Collaborative Problem-Solving Cooperative Agreement Program](#), the [Environmental Justice Small Grants Program](#), and various other grants that can be used to clean up brownfields or conduct workforce development and training programs), without a working definition of an EJ community, the proportion of agency funding that is expended in EJ communities cannot be calculated. For example, EPA has funding allocated for water quality enforcement activities. Using a definition of an EJ community, EPA could report how much of its expenditures were focused in these communities. As it stands, EPA [reports](#) on activities conducted in self-identified EJ communities, funding allocated

to Opportunity Zones, and funding allocated through EJ programs for self-identified EJ communities in its annual *Environmental Justice Report*.

Although EPA has been reluctant to define an EJ community, EPA has offered assistance to states in developing their own mapping tools to identify areas at risk of environmental injustice. However, until every state has undergone this process, which seems unnecessarily laborious and time- and resource-intensive, a nation-wide analysis of where program funding is allocated will be difficult, as the definition of an “environmental justice community” will vary across state borders.

EPA encourages states to develop their own methods of identifying EJ communities, in a “[states as laboratories of democracy](#)” approach. EPA has created a useful tool for identifying EJ communities: the Environmental Justice Screening Tool ([EJSCREEN](#)). EJSCREEN provides demographic and pollution-related indicators at the census-tract level for communities across the United States but falls short of providing cumulative EJ risk or burden for communities. This is a major omission because given the legacy of environmental injustices, the cumulative harm and burden is a critical part of identifying environmental justice communities. Still, EPA uses EJSCREEN to “[look for areas that may be candidates for additional EJ consideration](#),” a promising, if vague, indication that EJ communities are being targeted for resources and outreach. Table 1 provides an overview of the EJSCREEN indicators which are generally reported at the census tract level.

Table 1: Demographic and environmental pollution indicators used in EPA’s EJSCREEN tool

EJSCREEN	
Low-Income	Percent of households with an income less than twice the federal poverty level
Minority	Percent identifying as a race other than white alone and/or identifying as Latino/Hispanic
Education	Percent of age 25+ without a high school degree
Linguistic Isolation	Percent of people living in linguistically isolated households, in which all members age 14+ speak a non-English language and also speak English less than “very well”
Youth	Percent of population under age 5
Elderly	Percent of population over age 64
Cancer Risk	Lifetime cancer risk from inhalation of air toxics
Respiratory Hazard Index	Air toxics respiratory hazard index – the ratio of exposure concentration to health-based reference concentration
Diesel PM	The diesel particulate matter level in the air
PM 2.5	Annual average PM2.5 concentration, estimated from a combination of monitoring data and air quality modeling
Ozone	Daily maximum 8-hour ozone concentration averaged over May-September
Traffic Proximity and Volume	Sum of vehicle volumes, adjusted by road segment length, divided by distance within 500 meters of the census block centroid
Lead Paint Indicator	The percentage of occupied housing units built before 1960
RMP Proximity	the count of Resource Management Plan (RMP) facilities, distance-adjusted
Hazardous Waste Proximity	The count of active treatment, storage, or disposal facilities (TSDFs), distance-adjusted
NPL Proximity	The count of proposed and listed NPL sites, distance-adjusted
Wastewater Discharge Indicator	Toxicity-weighted concentration in water bodies, distance-adjusted.

Source: <https://www.epa.gov/ejscreen/overview-environmental-indicators-ejscreen> and <https://www.epa.gov/ejscreen/overview-demographic-indicators-ejscreen>

The EPA supports state efforts to build their own state-based environmental justice mapping tool, using EJSCREEN as a blueprint, and [notes](#) that several states are in the process of building such mapping tools, referencing New Jersey, North Carolina, and Michigan as states that have worked with the EPA. The demographic indicators used are

generally constant, mirroring the indicators used in EJSCREEN. For example, New Jersey’s recent environmental justice law (discussed further below in Section III), defines overburdened communities using demographic indicators. Some states have expanded EJ mapping tools to include more health-related and environmental variables than are used in EJSCREEN. California’s EJ mapping tool: [CalEnviroScreen](#), builds on the foundation of EJSCREEN, dividing indicators into demographic and pollution-focused categories, then adding indicators [specific to the context of pollution in California](#) (including risk of pesticide exposure, housing burden, and measures of groundwater pollution). California has also enacted legislation that requires the state to direct the proceeds of the state’s cap-and-trade program to projects located in “[disadvantaged communities](#)” to further reduce greenhouse gas emissions. Disadvantaged communities are the top 25 percent scoring census tracts in the state, as defined by a [cumulative EJ score](#) determined by CalEnviroScreen data. Figure 1 shows the disadvantaged communities in California as of June, 2018. These communities are eligible for certain program funding at the state level - for example, no-cost rooftop solar installations are available to income-qualified households located in disadvantaged communities.

California Disadvantaged Communities

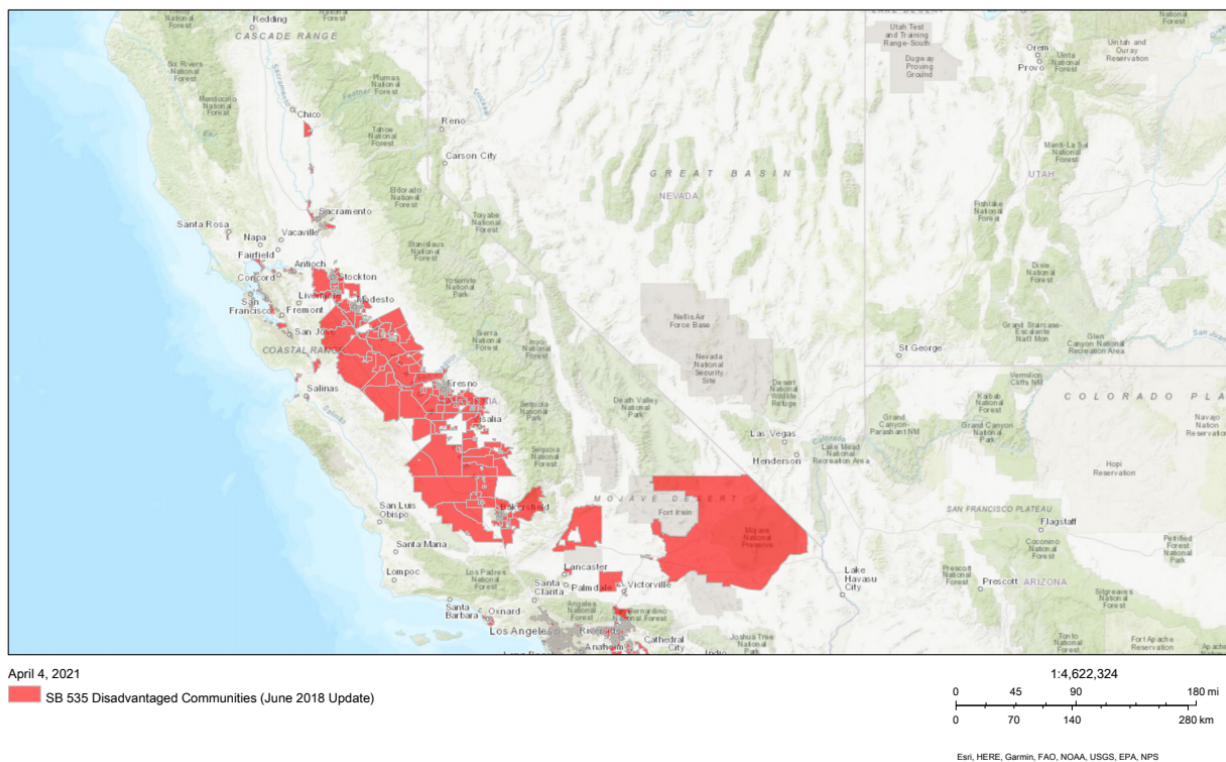


Figure 1: A map of disadvantaged communities in California, by census tract. Disadvantaged Communities (DACs) are defined according to California [SB 535](#), which instructed CalEPA to [identify DACs](#) using geographic, socioeconomic, public health, and environmental hazard indicators. CalEPA designated the highest scoring 25% of census tracts from CalEnviroScreen, and 22 additional census tracts that score in the highest 5% of CalEnviroScreen’s Pollution Burden, but do not have an overall CalEnviroScreen score because of unreliable socioeconomic or health data, as DACs.

Similarly, the state of Washington has developed a publicly accessible [Information by Location \(IBL\) Tool](#) that provides an expansive view of the health and vulnerability of its residents. This mapping tool consolidates various indices of health and vulnerability including environmental health disparities, diesel pollution, social vulnerability to hazards (including COVID-19), lead exposure risk, and other health disparities (see Figure 2). The IBL Tool allows users to explore relative environmental health disparities – composed of demographic and pollution indicators – at various spatial levels, including within counties and cities; school district boundaries; the service areas of public or

investor-owned utilities; and using preliminary [climate-related data](#), such as temperature and precipitation. The IBL Tool also includes the location of community infrastructure (care facilities, farmworkers housing, ethnic radio stations, prisons), supporting an expansive approach to what EJ should look like. Figure 2 shows the cumulative measure of environmental health disparities for census tracts in Washington state, a feature that EJSCREEN does not currently provide. Users interested in digging into the construction of the cumulative index are able to download the data used in constructing this index, a crucial measure of data transparency.

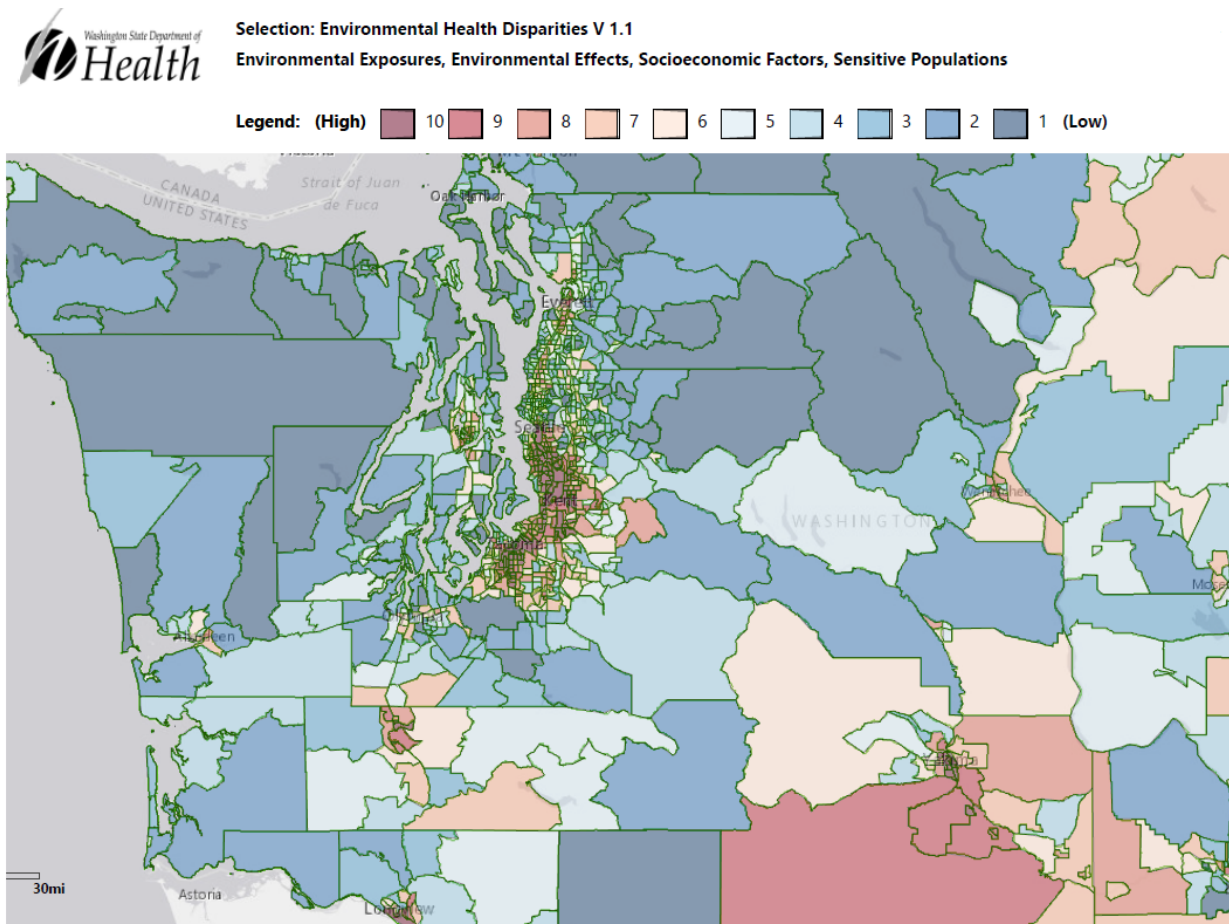


Figure 2: A map of Washington's Information by Location (IBL) Tool's environmental health disparities layer, adapted from California's CalEnviroScreen. Each census tract is given a cumulative score between 1-10, consisting of rankings of environmental exposures, environmental effects, socioeconomic factors, and sensitive population variables. Source: <https://fortress.wa.gov/doh/wtn/WTNIBL/>. Accessed April 5, 2021

While states are encouraged to develop their own EJ screening tools, cities can use existing tools as well to identify neighborhoods at risk of environmental injustice. For example, in Chicago, the Natural Resources Defense Council (NRDC) has developed [an adapted version of the EJSCREEN tool](#). The adaptation accounts for all the EJSCREEN factors for individual block groups while also generating a composite score of 2 to 10 for each block group. The higher the composite score is, the higher the cumulative burden is likely to be in that block group, as shown by orange-red colors on the map in Figure 3. This adapted screening tool offers the possibility of comparing cumulative burdens across census block groups, and the identified block groups with higher cumulative burdens should be targeted for more appropriate air monitoring, public health reforms, and other relevant interventions.

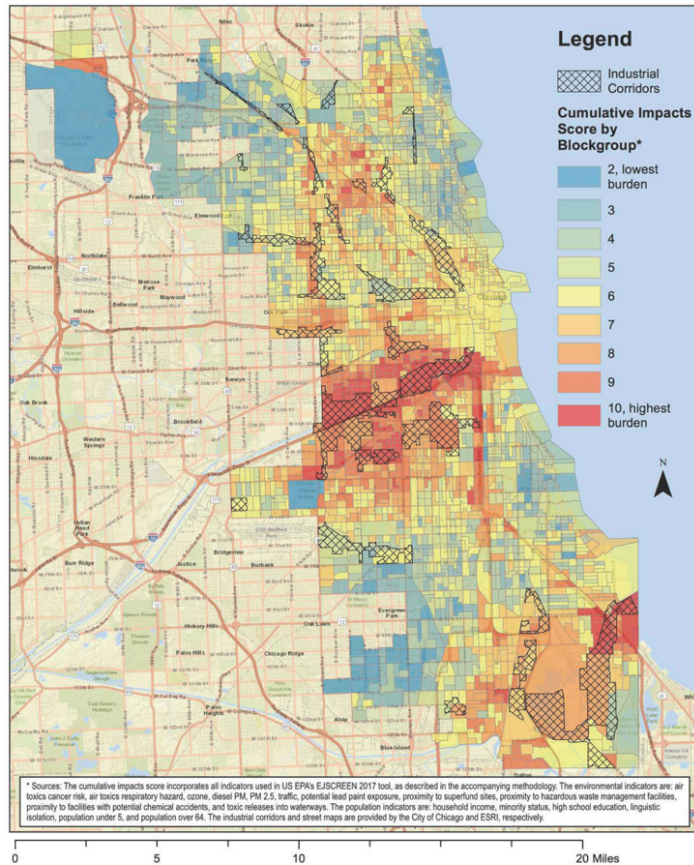


Figure 3. Cumulative Burden of Environmental Exposures and Population Vulnerability in Chicago

Source: [\(National Resources Defense Council Map, 2018\)](#).

Based on this review of the definition of EJ communities and the use of EJ mapping tools, we suggest several recommendations. First, EPA should develop and promulgate a nation-wide definition of “environmental justice communities,” with the input of state and local government, the National Environmental Justice Advisory Council, and EJ activist groups with dedicated representation by poor, Black, Indigenous, and other people of color. The EJSCREEN mapping tool is a useful basis for developing this definition - a cumulative EJ index could be developed using this existing tool, with the top scoring percentile of census tracts qualifying as “environmental justice communities.” As an alternative to a nation-wide definition, or as a method of including additional communities in the category of “environmental justice communities,” EPA regional offices could consider additional indicators that are particularly relevant within their districts, as a way of ensuring that the definition is contextually appropriate. This contextualization may include adding various pollution indicators, such as pesticide exposure or CAFO density in agricultural regions; proximity of mining or resource extraction sites; or incinerator density. Absent EPA action in developing a definition of an “environmental justice community,” states should continue developing EJ mapping tools based on EJSCREEN, which take into consideration the same type of contextual indicators discussed above and utilize these tools to direct resources to communities disproportionately affected by pollution and economic marginalization.

Regardless of the jurisdictional level at which EJ mapping and definition occurs, indicators should be adapted to meet the growing effects of climate change. Mapping tools should be flexible enough to allow users to incorporate climate-related indices into an overall EJ index, as well as allow for isolation of communities that are specifically at risk of climate change-induced vulnerability, such as wildfire or flooding. Currently, most states that have some definition of an “environmental justice community” use a combination of race and ethnicity, tribal status, income,

and/or education levels to denote whether a community qualifies as an “environmental justice community.” Expanding these definitions to include traditional environmental indicators, as used by EJSCREEN and CalEnviroScreen, would target resources more specifically to communities vulnerable to pollution. Further expanding these definitions using Washington’s IBL Tool as an example will ensure that the definition of an “environmental justice community” evolves as we continue to understand the intersection of human society, the environment, energy, and climate. The inclusion of energy infrastructure, climate change models, and community centers helps residents fully conceptualize the interlinked nature of social and environmental systems. Table 2 shows a list of possible indicators that can be used to expand on the foundation set by EJSCREEN.

Table 2: Potential indicators for incorporating energy, climate, and community in EJ screening tools

Indicator Type	Examples
Energy	Power plants Transmission lines Substations Microgrids Solar development Energy burden Utility structure
Climate	Flood zones Temperature/heat islands Precipitation Disaster risk (wildfire, hurricane)
Land Use	Green space Municipal zoning type Public housing Agricultural use Natural barriers to flooding Wildlife-urban interface zones
Community Resources	Churches Schools Hospitals Community Centers Prisons Landfills

Source: Authors.

III. Tools and Practices for Strengthening Environmental Justice

This section reviews innovative approaches to address past and present environmental injustices. Some existing policy tools can be applied to EJ, including direct government investments in EJ communities, incentives for private investments in EJ communities, stronger enforcement of existing regulations, and permitting of new land uses. In addition to these existing policy tools, new innovative approaches are also emerging.

This section of the paper highlights some emerging innovative practices to promote environmental justice: citizen science, enforcement, and permitting.

A. Citizen science and data collection: robust air monitoring networks

Citizen science refers to “science which assists the needs and concerns of citizens” or “a form of science developed and enacted by citizens themselves” ([Irwin, 1995](#)). It is a relatively new phenomenon and has been primarily

incorporated as voluntary engagement in science within the environmental domain ([Ceccaroni et al., 2021](#)). Citizen science is a powerful and effective tool to enable communities to gather knowledge and information on their environment and empower themselves to access remediation resources ([Ramirez-Andreotta et al., 2016](#); [Wylie et al., 2016](#)), and therefore citizen science can promote EJ and “data justice” ([Vera et al., 2019](#)). This subsection introduces one of the recent citizen science practices promoting environmental justice - robust air monitoring networks in North Texas, in which data were gathered mostly by air monitors (located by citizens and other actors such as EPA or the university) instead of citizens themselves.

The air monitoring network called “SharedAirDFW” in North Texas presented in detail below is one of the most recent examples of citizen science applied to EJ, reflecting the wisdom of the use of citizen science in data collection. Other examples include [the West Oakland Environmental Indicators Project](#), [the Louisiana Bucket Brigade case](#), and more projects that utilize the power and local knowledge of community-based data collectors to advocate for EJ.

“SharedAirDFW,” a regional air monitoring network led by the University of Texas-Dallas and a North Texas environmental activism group called Downwinders at Risk, has facilitated over 100 new custom-built air quality monitors that provide real-time air quality information through an app for North Texas residents. As shown in Figure 4, users of SharedAirDFW can view data from air monitors deployed by UT-Dallas researchers and EPA as well as PurpleAir monitors set by local residents. About half of the monitors are intended to benefit frontline and vulnerable communities by enabling them to obtain more information to support assertions that air quality is worse in areas where large communities of color or low-income communities are located.

This citizen-friendly regional air monitoring network will be one of the largest air monitoring networks in the U.S., solving the problem of information scarcity, increasing transparency, and empowering citizens at an individual level. It not only highlights the importance of collective effort by government agencies, universities, organizations, and citizens, but also sheds lights on the potential approaches to [environmental data justice \(EDJ\)](#), which emerges from conversations between data justice and EJ and concerns who undertakes mapping, community air monitoring, archiving, and tracking of environmental data.

It is acknowledged, however, that in citizen-science datasets, there can exist potential biases and low data quality although it might not be a major concern in the case we introduced (since citizens in north Texas just play a major role in locating air monitoring). On the one hand, in some data collection types such as temperature and precipitation, or identifications of species, the collection of data by citizens can be biased due to the lack of training, professional knowledge (e.g., many types of animals are hard for people without background to identify and record), nonintegrated data standards, etc. Yet, professionals can also make mistakes when collecting data, and it should be acknowledged that biases exist in all datasets and data collection programs. For example, a study ([Kosmala et al., 2016](#)) shows that many of the systematic biases in the citizen science datasets can also be found in professionally collected data. On the other hand, certain groups of people such as retired people (i.e., might have more time or extra energy than the working class) might be more privileged to be participating in the citizen science programs, engendering the lack of diversity of data collection in terms of demographics. In other words, there can be potentially high variability among volunteers.

Despite potential biases that can emerge from citizen science datasets, citizen science can dramatically increase sample sizes and sampling frames which can be critically important. In addition, some of the mistakes or biases can be mitigated through a variety of measures such as offering training programs. For example, in response to the contamination crisis in East Chicago where 90% of the population are people of color, the Indiana National Association for the Advancement of Colored People (NAACP) launched the [“Our Youth Scientists Project”](#) and worked with local schools in East Chicago to equip students with the relevant resources to collect soil, air, and water samples in their neighborhoods. Training regarding how to test the samples for toxicity and how to document the information on social media would also be offered. In addition, modeling attributes that vary among volunteers such as age and education level might be beneficial to reduce the other potential biases regarding the

variability among volunteers in terms of demographics, ability, etc. and increase the reliability of the citizen science datasets.

In this section, we are not proposing that datasets should be solely collected through the citizen science approach. Rather, it would be important to incorporate local and indigenous knowledge and professional investigation into citizen science datasets. These sources of knowledge are all very critical to inform decision-making and promote environmental justice in the long run. As noted by a recent study, citizen science partnerships with indigenous and local peoples as well as governance systems can make significant contributions to meeting sustainability challenges.

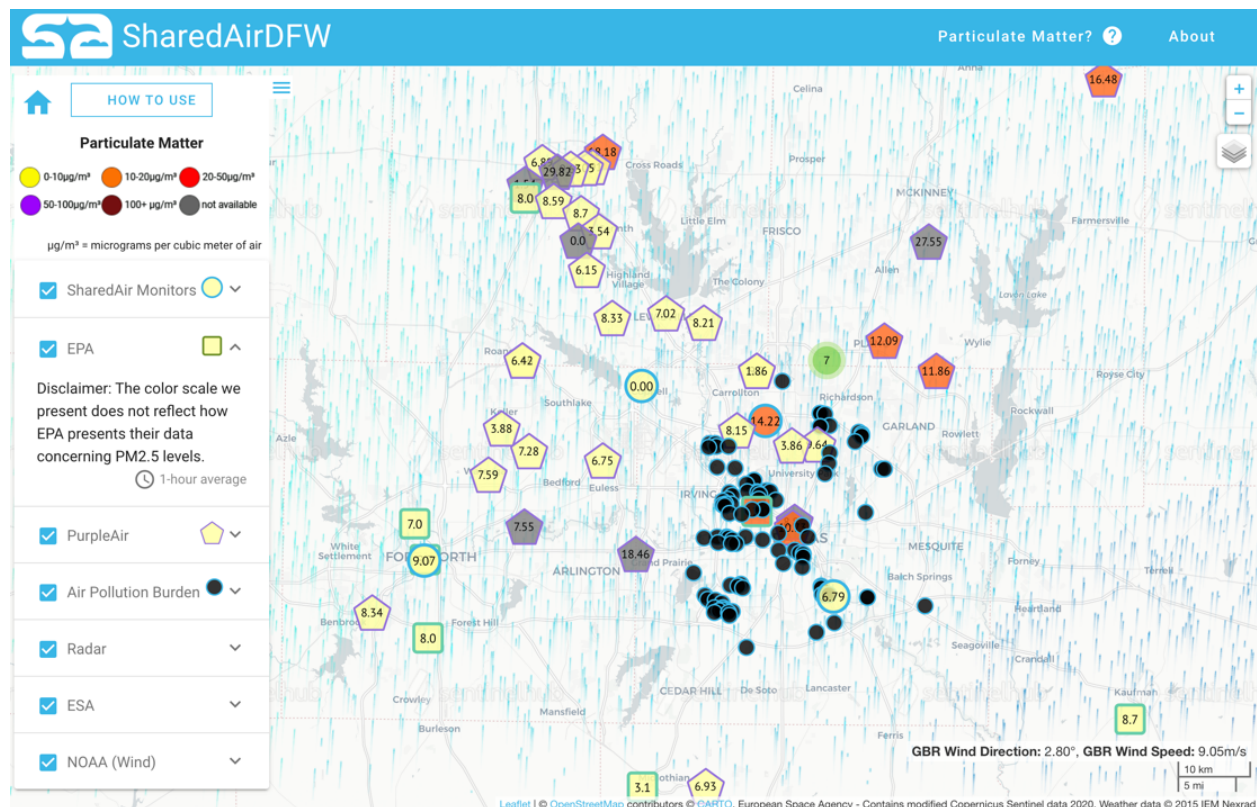


Figure 4. Air monitors in North Texas

Source: [SharedAirDFW](https://www.sharedairdfw.org/)

B. Environmental enforcement practices and tools

Environmental regulatory agencies, such as EPA and its state counterparts, have significant discretion in how they deploy resources for the enforcement of environmental laws. This discretion has led to widespread inequities and disparities in who has been protected by environmental laws and who is unprotected due to a lack of enforcement. While EJ cannot be achieved through a law enforcement strategy alone, stronger enforcement of existing laws and regulations would make a big difference. This section highlights two historically successful ways that EJ can be advanced—through holistic, community-based law enforcement and supplemental environmental projects (SEPs).

Holistic, community-based law enforcement

A common feature of EJ communities is that they suffer from a multitude of environmental burdens. More effective enforcement of environmental laws clearly holds promise, but there are many challenges: different law enforcement agencies bear responsibility for different problems such that no one agency is responsible for the overall health of a community. This division of responsibility is compounded by the lack of resources at the local level to adduce the scientific information often needed to successfully prosecute a case. Given these common threads, an emerging and promising best practice is a community-based, holistic law enforcement approach that combines the local knowledge of community members with the law enforcement tools of agencies that collectively have jurisdiction over varying environmental threats.

This has been pioneered by the Environmental Justice Task Force assembled by CalEPA. The task force includes about a dozen state and local agencies that collectively have jurisdiction over air and water pollution, pesticides, toxic chemicals, water resources, waste recycling, public health, and other environmental threats. The [primary goals](#) of the Task Force are to “increase compliance in areas disproportionately impacted by health and environmental factors,” “provide communities with meaningful opportunities for input on potential environmental justice concerns and implementation of proposed remedies,” and “increase coordination [among law enforcement agencies] across all media (air, water, toxics, solid waste and pesticides)” in disproportionately impacted areas.”

This approach has yielded promising results that are well presented in [story maps](#) maintained by the Task Force. For example, in [Stockton](#) CA, an EJ community, the Task Force spent three months meeting with Stockton residents, community organizations, and city leaders to define priorities. They settled on illegal waste dumping, air pollution near schools, and odorous, discolored drinking water as their primary concerns and identified historically redlined sections of Stockton as priority areas. The task force members working with this community took a bus tour to immerse themselves in the issues, held numerous workshop meetings, and worked with community members to launch a public education campaign to stop illegal mattress dumping, conducted air quality monitoring at an elementary school, posted almost 100 signs warning truck operators to shut off their engines when stationary, and issued flyers to residents on how to access free services to test their water. Numerous agencies conducted a blitz of over 200 inspections of local industries operating near schools and residential neighborhoods focusing on air and water pollution, toxic substances, solid waste, illegal auto dismantling, and pesticide use redline areas. Within three months, more than 90% of the facilities found to be in violation had come into compliance. In addition, the affected community developed relationships with regulatory agencies that are ongoing, were able to see that these agencies were responsive to their concerns, and learned how to spot and report future violations.

Similar success stories can be found in rural settings such as [Imperial County](#), cities including [Los Angeles](#) and [Oakland](#), and industrial corridors such as [southeast Pomona](#). The common threads of these efforts include extensive consultation with the community to identify and prioritize the biggest threats; immersion of the regulatory officials into the challenges faced; a coordination of state and local agency officials to ensure that there is sufficiently wide jurisdiction to address multiple threats; and an intensive and focused educational and enforcement campaign.

These successes teach us that robust environmental law enforcement can make a big difference, but it is effective only when the affected communities are integrally involved, and when all the agencies with jurisdiction over environmental threats are working in tandem. In a new Biden administration that is taking an “all of government” approach, this model can be replicated and scaled up in many other states. As these models scale up, however, a missing piece should be added: a way to measure the results using indices that are directly relevant to those who live in the affected communities. In the Stockton example, knowing whether illegal mattress dumping was reduced, whether air quality near schools improved, and whether reports of discolored or dirty drinking water went down could help prioritize future EJ resources to the areas where they will best meet EJ goals. The issue of measuring success is addressed in section V of this paper.

Supplemental Environmental Projects

Supplemental environmental projects (SEPs), occur when a violator of an environmental law agrees as a part of a settlement with state or federal regulators to fund a project that directly benefits the environment and in some manner compensates for the harm caused by the violation. Sometimes, the funds devoted to the SEP can be deducted from the overall fine or penalty that is assessed and would typically be paid to a federal or state treasury general fund. SEPs are beneficial because they may mitigate the harm of the violation in a much more direct and meaningful way than writing a check to the federal or state treasury, and they have direct relevance to EJ communities.

At the federal level until recently, EPA had a written policy on supplemental environmental projects. [Under the 2015 updated policy](#), EPA recognized that SEPs that promote EJ serve the overall mission of EPA, although the document does not specifically call out EJ projects as a preferred category of SEPs. Instead, the document establishes general criteria to govern its approval of SEPs. At a minimum, a SEP must have a “nexus” to the violation itself, *e.g.*, it benefits the community harmed by the acts of pollution, and the project must be specifically defined and described so that EPA is assured that it will be implemented. The policy also gives EPA significant discretion to determine how much of a deduction can be made from the fine, based on criteria such as the quantifiable benefit of the SEP, the extent to which it benefits communities that bear disproportionate pollution burdens, the extent to which it reflects community input, whether it fosters innovation, whether it prevents pollution in the future, and whether it addresses not multiple media of pollution, rather than one type.

There are significant success stories in directing SEPs towards EJ communities. As recounted in an [article](#) by a law firm specializing in environmental law, the Tenneco Oil company funded the purchase of land and the construction of a water supply system for the Sac and Fox Nation in Oklahoma to address the company’s pollution of tribal groundwater; a Sherwin Williams resin and paint facility in southeast Chicago cleaned up a Brownfields site located about a mile from the facility; and the City of Atlanta acquired and maintained protected areas along selected portions of streams and established a SEP Advisory Committee to ensure that input from minority communities – mainly African American and Hispanic American – would be provided on an ongoing basis.

Unfortunately, in 2020, the Department of Justice under President Trump abolished SEPs at EPA. In a written [memorandum](#), the Department contended that SEPs in effect commandeer resources that would otherwise go to the US Treasury, in violation of a law called the Miscellaneous Receipts Act. This legal reasoning seems dubious at best, as the statute seems to be intended to make sure that federal officers who receive funds for the US Treasury do not abscond with or otherwise misuse the funds. The statute does not speak to the discretion of enforcement agencies to use SEPs in settlement agreements, and no court has held that SEPs are prohibited by this law. Moreover, it is well established that enforcement agencies like EPA have wide discretion to enter settlements, and one of the benefits of a settlement is that it allows the parties to craft solutions such as SEPs that go beyond the minimum penalties established by law.

Because SEPs have such a strong possibility of benefitting EJ communities, and because the Trump administration’s repeal of the SEP policy seems to lie on such weak foundations, EPA should reinstate the policy favoring SEPs. Reinstatement would also give EPA the opportunity to consider strengthening the EJ component. For example, EPA could loosen the geographic nexus restriction to allow violators to fund EJ-related SEPs and compile a list of communities that might benefit from such a project and target those communities that most need help. EPA could also give extra credit (*e.g.*, double credit) for SEPs that are performed in, or specifically benefit, EJ communities and emphasize the need to involve the benefitted community in the design, implementation, and monitoring of the SEP.

A focus on using SEPs to fund beneficial projects in EJ communities could be a powerful tool. Over five years ([2019, 2018, 2015, 2014, and 2013](#)), EPA collected on average \$800 million per year in fines and penalties. (We excluded 2017 and 2016 because they were anomalously high and would distribute the sample unevenly between the Trump and Obama administrations). If just a third of those penalties were directed to EJ-related SEPs, this would fund

approximately \$270 million worth of environmentally beneficial projects in burdened neighborhoods *per year*. In comparison, EPA notes on its [website](#) that its Environmental Justice Grants have totaled \$29 million *since 1994*.

SEPs are also a best practice at the state level. In California, for example, a statute allows state enforcement agencies to dedicate half of a penalty toward a SEP. Cal EPA solicits SEP project ideas from communities and elsewhere, then compiles them into a list published on the website at Cal EPA, which can then be used by enforcement entities to bring potential SEPs into the discussion.

C. Integrating cumulative burdens into permitting decisions

A recurring problem, and one experienced personally by one of the authors when serving as an environmental regulator, is the lack of legal tools to address cumulative and disproportionate environmental burdens. This void arises, for example, when the proponent of a project with potentially undesirable impacts seeks to locate that project in an EJ community. The proponent will typically be required to perform some level of environmental analysis before receiving the necessary permits, but unless the project causes an exceedance of a specific standard, the permitting agency typically must approve the project, even when it is clear from a distributive justice and overall environmental health standpoint that the community in which that project is to be sited is already overloaded. Compounding this is the fact that environmental laws are heavily siloed—one law will address air pollution, another water pollution, another solid waste, or hazardous waste on land—but the government agencies who administer such laws don't necessarily communicate with one another or may face limits to sharing data, and there is no one law or universal approach to measure overall community burdens. For these reasons, changes in environmental laws are needed to enable more complete consideration of environmental burdens.

One promising approach is found in New Jersey's recently enacted [Senate Bill 232 \(20R\)](#). This law governs the issuance of permits by the state DEP for large scale potentially polluting facilities such as power plants, sewage treatment plants, incinerators, landfills, and other major sources of pollution. The law applies when a proponent seeks to build such a facility within a "burdened community," defined as communities in which 35% of the residents are of low-income, or 40% are minorities or tribal members, or 40% have limited English proficiency. If a proponent seeks to locate a facility covered by this law in a burdened community, additional procedural and substantive protections kick in. The law specifies that the applicant must prepare an assessment that analyzes the cumulative burden upon the community if the project were allowed and the New Jersey DEP must hold a public hearing in the community to take comment. Substantively, and most importantly, the DEP may deny a permit application in a burdened community upon a finding that "approval of the permit, together with the cumulative impacts posed by the proposed new or expanded facility, would constitute an unreasonable risk to the health of the residents of the burdened community and to the environment in that community." In addition, when evaluating the project under this standard, DEP is required "to assess community support for the proposed new or expanded facility" and "consider such support, or the lack thereof, in its decision to grant or deny a permit."

This law is path-breaking and addresses many of the legal gaps that have historically undermined EJ. In effect, the law requires the DEP to focus on cumulative impacts, and to ask the key question—how many environmental stressors can a community fairly be asked to bear? In answering that question, the DEP is obligated to consider the views of the community.

While the law is in its infancy, and the somewhat vague standards in it will need to be clarified through implementation, this law is clearly a step forward, and we would expect that other states will follow New Jersey's lead to give them better tools to address environmental injustice through their permitting authority. For example, Massachusetts just enacted a [climate bill](#), which contains strong EJ provisions requiring developers of projects to assess the issue of disproportionate environmental burdens and agencies to weigh those factors in their permitting decisions.

Congress is currently considering various bills that resemble the New Jersey bill. For example, the "Environmental Justice for All Act" would require permitting decisions under the Clean Water Act and Clean Air Act to account for

the "cumulative impacts" of harmful emissions and allow private citizens in EJ communities to seek redress for discrimination under Title VI of the Civil Rights Act. Additionally, Senator Cory Booker of New Jersey has introduced a bill that would replicate several of the New Jersey law's provisions, including robust consideration of cumulative and disproportionate impacts upon burdened communities in permitting decisions made under the federal clean water and clean air acts.

IV. Measuring Success

A. Evaluating Environmental Justice Policies

This section of the paper focuses on the need for rigorous evaluation of whether policies and strategies are effectively benefitting EJ communities. Our research reveals that such a mechanism is generally lacking at the present time, for reasons described below.

Policy evaluation considers the full range of impacts of a policy – its success in achieving stated aims, effect on stakeholders, other costs and benefits, and any unanticipated outcomes. When policymaking occurs in contexts of limited time and funding, as is the case for EJ offices, it is critical to understand whether policy outcomes are meeting stated goals because, if they are not, resources can be redirected to other approaches that are more effective.

Policies that improve environmental equity can be categorized according to the type of justice they aim to deliver. Procedural justice, for example, may look like increased stakeholder engagement in environmental decision-making as discussed in Section IV, while a policy addressing distributive justice may require consideration of pollution burdens for siting new industrial processes, redistributing pollution away from EJ communities – components of EJ addressed in Section III. Rarer but increasingly relevant are the concepts of justice-as-access, a sub-type of procedural justice that pertains not just to decision-making, but also to resources, and restorative justice, which incorporates remuneration for communities that have experienced historic environmental injustice through mechanisms like reparations. This report is specifically concerned with measuring the effect of EJ policies. However, evaluation of progress toward these EJ objectives can be incorporated in all policy evaluation, and to meet EJ goals and prevent further environmental injustice, it is important to consider the extent to which policies that are not explicitly focused on EJ contribute to or detract from EJ objectives.

Reflecting the multiple factors defining EJ communities and multi-faceted goals of EJ, the process of identifying and measuring all policy impacts can be complicated. EJ policies may simultaneously set ecological conservation or restoration, and social equity targets. While agencies like EPA have a long history of technical environmental conservation or restoration evaluation through processes like Environmental Impact Assessments, policies implementing social equity have a much shorter history and a much more diverse range of actions that can meet set targets.

Evidence from EJ policy evaluations can inform evidence-based policymaking. Evidence-based policymaking, an approach to policy that aims to increase transparency and effectiveness, was formally established as a best practice for US Federal agencies including EPA in the [Foundations for Evidence-Based Policymaking Act of 2018](#). State policymakers, too, are increasingly applying evidence-based policymaking to inform policy and budget decisions ([NCSL, 2020](#)). A core component of evidence-based policymaking is collecting evidence on the effectiveness of existing policies through the practice of ex-post evaluation. Evaluating existing policies to identify what is effective or not creates a policy feedback loop that contributes to policy innovation, design, and investment decisions.

B. Environmental justice evaluation in states

Environmental policies that incorporate equity and justice considerations have been enacted at the state level since the late 1990s, with a noticeable increase post-2014 ([EPA, 2016](#); [Redd and Jacobs, 2020](#)). States are implementing these policies, but evaluations of EJ policies are not currently conducted at the state level. Personal communications with several state EJ staff suggest both practical and conceptual reasons for this gap.

In practice, many current state EJ policies are relatively recently enacted and have not yet been substantially implemented. In this case, there is limited project data to evaluate. For policies that are more long standing, EJ agencies may lack the resources needed. Evaluation cannot occur without human and financial resources, especially in state bureaucracy where there is no directive to incorporate evaluation into EJ implementation with accompanying funding. Access to relevant data is also a concern: for example, effects of environmental injustice often include health impacts, such as respiratory concerns from air pollution, but health data is highly protected. Relevant data is not always available, and even when it is collected it may not be shared between organizations or agencies.

Conceptually, EJ, especially climate justice, has historically been highly process-based and citizen-led, as shown by the emphasis on EJ policies that address procedural and distributive justice. This does not necessarily align with the typically top-down and outcome-based evaluation agenda. Additionally, information on the interconnected and often qualitative impacts of EJ is difficult to obtain, measure, and compare. The issue of establishing an evaluation framework is exacerbated by the responsive nature of EJ: each project implemented under an EJ policy may address vastly different and complicated environmental and social issues.

C. Evaluation in practice

This research team found no evidence of evaluation of state EJ projects, a finding confirmed by personal communication with several state EJ practitioners. Although EJ communities feel and can document the effects of EJ failures, the lack of governmental evaluation suggests that there is a limited official or systematically-collected evidence base showing the impacts of EJ policies on affected communities. This information would help governments more rigorously assess the impacts of their EJ policies, from whether project funds are being spent effectively to whether EJ interventions are successfully improving environmental and social conditions in target communities.

However, several state EJ practitioners are aware of this gap and are working toward evaluation efforts in their states, including collaborating with other relevant agencies. In discussions, they identified conceptual evaluation goals including:

- identifying alternative approaches within legal boundaries of agency action
- assessing the agency's approach to project barriers
- developing and measuring cumulative impact metrics
- tracking change over time and following up with affected communities
- understanding what did or didn't work
- learning how to amplify positive results
- identifying opportunities and paths for collaboration across agencies

Specific impacts of interest were highlighted, such as community resilience, increased health access, where and how project funding is being spent and by whom, and the extent of public participation. When considering efforts to evaluate EJ in their states, some practitioners highlighted barriers including limited staff, limited financial resources, and limited policy support for EJ evaluation.

One approach to developing an evaluation that is flexible enough to apply to a broad range of policy goals could be a project-specific Theory of Change framework. As opposed to the outcome-based Results Framework for evaluation, practitioners using a Theory of Change approach develop a theoretical causal chain of how policy implementation will lead to policy goals, helping to establish the relevant mechanisms through which a policy leads to outcomes, and therefore what information is relevant to collect for evaluation while implementing the policy. EJ regulators and practitioners without evaluation experience may find it helpful to seek support from evaluation researchers and academics during this process.

Finally, evaluating EJ requires data and an analytical process to compare data. While a theory of change may help to identify relevant impacts, meaningful stakeholder participation is crucial for identifying unintended or unexpected impacts in the community to improve evaluation accuracy. Participatory processes can support agency efforts to define impacts and determine appropriate methods and units for measurement. However, enabling sustained

community engagement for a high level of participation in a technical process can be challenging, especially for communities that do not have existing relationships with practitioners, access to knowledge about how environmental issues affect them, or power to make decisions. Building relationships through sustained and mutual engagement by purposively disseminating accessible, targeted information on environmental impacts, seeking informed and substantive community feedback for decision-making, and listening to community leaders such as through advisory councils are all examples of approaches that can address this challenge and potentially lead to more empowering EJ policy processes that better address community needs.

Qualitative impacts are also important to consider in EJ evaluation; many EJ goals are qualitative and may not be easily quantifiable, but qualitative outcomes are still relevant project impacts and should be included in an evaluation of a policy's success. Similarly, the analytical process used to assess data should reflect the goals of the policy being evaluated. If one of the policy goals is to include stakeholders in EJ project design and implementation, it may be relevant to incorporate the amount and quality of stakeholder engagement in evaluation. Project evaluations can incorporate adjusted ex-ante EJ evaluations with updated data to identify what has changed since the project was implemented, with support for causal claims from the theory of change, adding other indicators relevant to policy goals, project processes and outcomes, and any other unexpected or relevant stakeholder-identified impacts.

V. Recommendations for strengthening environmental justice policymaking

The authors of this paper believe that we are at an “inflection point:” EJ concerns that have been raised for decades are finally being prioritized, and policymakers are developing policies to address them. Ultimately, success will hinge on major new investments in EJ communities, which is mostly the province of congress and state legislatures. But there is also a key role that agencies such as EPA can play alongside legislative action.

To increase the likelihood of success in new policies, we recommend the following, again with maximum input from and collaboration with affected communities::

- To prioritize investments and enforcement, EPA should develop an overall definition of EJ communities, and empower its ten regional offices to develop definitions. The development process should include substantial, good-faith consultation with state and local government, the National Environmental Justice Advisory Council, and EJ activist groups with dedicated representation by poor, Black, Indigenous, and other people of color. EPA should also strive for some level of uniformity even as regional differences may require some flexibility. In developing EJ definitions, EPA should look to states that have developed comprehensive, science-based definitions, such as California, and include energy, climate, and land use indices.
- EPA should conduct an internal assessment of how much EPA program funding has been invested in EJ communities and release this information publicly. Transparency and accountability is essential to advance environmental justice because of the long history of government policy that has facilitated environmental injustice in many communities, leading to community distrust.
- Environmental regulators should help equip residents of EJ communities to use and scale up “citizen science,” an emerging approach with access to local, site specific data on environmental harms.
- Environmental regulators should cultivate a holistic, community-based law enforcement regime in which community residents working in tandem with law enforcement agencies that represent all sources of pollution can bring significant pollution-reduction results.
- The Department of Justice should rescind its abolition of supplemental environmental projects, and EPA should issue new guidance on the use of SEPs which encourages their use to benefit EJ communities.

- Permitting laws and regulations at the federal and state levels should be amended to allow regulators, when considering new land use proposals, to consider the cumulative effect of pollution within an environmental justice community, and to deny permits to proposals that substantially aggravate or perpetuate an existing unfair burden even if a project does not itself exceed a specific permitting threshold, unless there is strong and demonstrated community acceptance of the project.
- Policymakers implementing new policies and programs should integrate and fund rigorous evaluation frameworks (based on Theories of Change) and mechanisms with stakeholder engagement so that EJ project impacts and progress toward stated goals, especially in marginalized communities, can be tracked and used for subsequent policy development and improvement.

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