

Here's How Digital Technologies Are Advancing Environmental Justice

For Environmental Law Institute President Scott Fulton, the inability of the United States' environmental policies and programs to bestow benefits across communities of color and the disadvantaged stands as a major shortcoming of our environmental protection system to date. But, as discussed at ELI's 7th GreenTech webinar, on "Technology and Environmental Justice," the explosion of monitoring technologies, big data, expanded analytical abilities, and other technologies raises the possibility, albeit with caveats, that those developments can help solve longstanding environmental justice (EJ) challenges. Discussing the issues during the July 29, 2021, webinar were the following featured experts: White House Council on Environmental Quality (CEQ) Senior Director for EJ, Dr. Cecilia Martinez; California EJ Alliance (CEJA) Green Zones Program Manager, Tiffany Eng; Tennessee State University (TSU) Associate Professor Dr. David Padgett; Chesapeake Bay Foundation (CBF) EJ Staff Attorney, Taylor Lilley; and ELI Visiting Scholar LeRoy C. (Lee) Paddock.

Panelist Martinez began with an overview of the Biden-Harris administration's whole-of-government EJ agenda, describing it as probably the most historic EJ agenda of any administration. Grounded on more than 160 listening sessions with EJ communities nationwide, the administration's aim is to implement the most progressive agenda possible for achieving EJ and equitable federal investments. Under the critically important "Justice40 Initiative," all key federal agencies are targeting 40 percent of their climate and energy investments toward benefitting the historically most underserved communities.

Just-issued White House guidance will help agencies define communities that most need investments. To identify the communities most in need, CEQ is developing the first national "Climate and Economic Justice Screening Tool" to supplement tools created by California, New York, and other states. Federal developers want to ensure the tool has no inherent rural, urban, regional, or other biases, so well-vetted data are essential. To that end, federal developers are investigating communities' on-the-ground realities to ensure that they are appropriately reflected in the data. As federal agencies seek to identify "distributional impacts" of technological developments, "equity analysis" is being embedded in research and development and other technology-related activities across agencies.

In her remarks, Eng described the California Environmental Protection Agency's (CalEPA) CalEnviroScreen (CES). For CEJA, the CES has been an important tool to help identify EJ communities for the purposes of investment and for stronger protections and enforcement actions. The CES ranks communities based on their cumulative pollution burden, a measure of how exposures to different pollution sources, economic stressors, and public health vulnerabilities combine to impair the well-being of community residents. The CES tool "changed the game," providing a scientifically robust tool backed by California authorities that citizens can use "in a very flexible and practical way" to locate EJ communities. It includes 20 different indicators, such as ozone and fine particulate matter (PM) concentrations, drinking water contaminant levels, and other environmental quality and socioeconomic factors affecting

communities statewide. To incorporate the most up-to-date census tract data, CalEPA updates the CES periodically and version 4 with the latest rankings is due at the end of 2021.

Describing diverse CES policy applications, Eng noted, for example, that California has used the tool to target cross-media enforcement, to develop an abandoned Underground Storage Tank Initiative, and to implement SB 1000's statutory requirement for incorporating EJ elements in community development Master Plans. Eng also touched on challenges both in creating and implementing the CES tool. For example, politicians have inaccurately said that the CES "picks winners and losers" in defining which communities should be assessed as disadvantaged and receive funding. In addition, some rural communities have less robust data because of their lower populations and limited air quality sensors. Generally, involving communities in developing accurate data is essential.

Padgett, who founded TSU's geographic information system (GIS) laboratory in 2000, reviewed some of his current work, including with Robert Bullard, the father of EJ research, and Beverly Wright at the Deep South Center for EJ (DSCEJ). Noting that, in majority schools, conflict can often arise over whether academics should help solve community problems or remain neutral, he said that service is part of the tradition for historically black universities and colleges (HBCUs). When he joined DSCEJ, its leaders created the HBCU community-based organization Gulf Equity Consortium. Padgett provided GIS expertise to defend historically black communities facing a slew of EJ issues, most recently the Turkey Creek community in Gulfport, Mississippi. GIS data were used to challenge a proposed inland port facility abutting Turkey Creek, which was zoned for industrial development at a time when black communities could not vote in Mississippi. GIS mapping created with raw data input from the community clearly showed people resided in the "industrial community," and the initially unsuccessful case against the Defense Department, State of Mississippi, and others is now under appeal.

Another project involving GIS that Padgett is working on is "democratizing geospatial technology" under the auspices of the American Geographical Society and Omidyar Network EthicalGEO Project. His project aims to make technically difficult GIS tools usable even by ordinary grassroots citizens. Padgett also demonstrated an asset map he is creating with community involvement for the Air Alliance Houston, which has obtained funding for air quality sensors and now must decide where to place them to most effectively measure pollution in the community. He is also working on a National Aeronautics and Space Administration project aimed at helping to calibrate satellite PM2.5 readings.

Lilley discussed her litigation and advocacy work responding to industrial facilities coming into EJ communities throughout the Chesapeake Bay. Part of the effort involves using technology to identify EJ communities, to tell their stories, to assess impacts, and to identify technologies that might limit new facilities' adverse effects. However, Lilley cautioned that CBF is wary of letting technology "tell the whole story." In rural Buckingham, Virginia, technology proved harmful when regulators reviewed an air permit for a facility using EJSCREEN to identify EJ communities. The tool found only 38 percent of the community was minority, leading regulators to conclude

no further EJ steps were needed. But a door-to-door study showed the residents were 82 percent minority.

On the positive side, Lilley described how CBF effectively used technology in Baltimore, where sewage was released through outfalls to watersheds and the Bay. Identified as a Clean Water Act violation, the outfalls were closed off, causing communities to experience sewage backup. CBF created a story map to show where and how often backups were occurring, information that was used in a Baltimore program to reimburse residents who experienced the problem. On-the-ground data are essential to tell the whole story. In addition, as communities explore decisions approving new facilities “with modifications,” they are looking to Best Available Control Technology to define appropriate facility modifications and thereby limit community impacts.

Final presenter Paddock discussed the important emerging role of citizen science, noting that huge gaps in existing government monitoring networks have long restricted their usefulness. Increasingly, citizen science is filling those gaps, providing information on community-level conditions and toxic pollution that is especially relevant to EJ concerns. Paddock cited an early Los Angeles study that identified diesel PM as a critical concern and resulted in important statewide regulatory changes. CleanAIRE North Carolina, a non-profit coalition, has deployed air monitors around Charlotte, North Carolina, to compensate for state government reductions in monitoring. Some emerging citizen science technologies, such as PM sensors, are highly accurate, but ozone tools need further development to achieve accuracy. Such tools can be used to raise community awareness, to help agencies set priorities, and to help target enforcement and compliance, more recent applications.

It is not well known that during the Obama administration, Congress on a bipartisan basis passed a law allowing and encouraging agencies to use citizen science, and EPA’s Inspector General and National Advisory Council for Environmental Policy and Technology have both urged EPA to adopt approaches that would support citizen science. Citizen science is a worldwide movement in which ordinary people are using new technologies to help governments tackle environmental problems and can play a large role over the next decade.

For information on Citizen Science at the EPA, visit: <https://www.epa.gov/citizen-science>. ELI’s recent research on the use of citizen science by environmental agencies can be viewed at this EPA webpage: <https://www.epa.gov/citizen-science/citizen-science-work-state-tribal-and-local-environmental-agencies>.