



# Frontline Momentum Catalyzing Community Science

Issue 4: Spring 2024

# **A Letter from FRI's Acting Director**

As part of my doctoral studies at Tulane University, I assessed air quality and self-reported health outcomes in Louisiana communities. The community of Norco, located about 25 miles northwest of New Orleans, drew most of my attention. In 2003, the Norco community was directly adjacent to a Shell Chemical plant and Motiva Oil refinery. These plants shared a fence line with many homes in the predominantly white section of Norco and the predominantly black subdivision of Diamond. Many Black community members in Diamond were becoming very ill and dying, while the White residents in Norco were living well into their 80s and 90s. What was causing these disparate health outcomes?

My research findings led to an "aha" moment. Norco sits on only 2.9 square miles of land, so air quality across the community was essentially the same. But the self-reported health outcomes varied wildly, with residents of Diamond reporting worse outcomes. Access to health care, quality housing, transportation, and quality education — these protective factors, among others, were present in greater Norco and often missing in Diamond. This finding led to my realization that social determinants of health can have a profound impact on health and well-being.

This work taught me the power of data. But data alone is not enough. We need to make connections between the data and people's lived experiences and then leverage data to solve problems. This is one reason why the issue of data accessibility is deeply personal to me. Yet accessing scientifically sound, publicly available data is a challenge for the average community member or community-based organization.

At EDF, we have built a tool called the <u>U.S. Climate Vulnerability Index (CVI)</u>. The CVI looks at 184 publicly available, national data sets that cover a comprehensive array of social determinants of health. The tool is particularly powerful for people on the front lines and fence lines of climate change because it not only considers environmental factors, but vulnerability as well.

While we are proud of this tool and its potential, it is not as user-friendly as we would like it to be. So, one of the things that FRI will be doing this year is conducting a pilot of the CVI in different communities across the United States. Our goals are twofold: to make sure the CVI is measuring what it is supposed to measure and obtain feedback from the communities about how to make it easier to use. Accomplishing these two things will pave the way for us to unlock the CVI's vast potential as a valuable resource in advocating for environmental and climate justice.

#### In This Issue

#### Page 2

Partner Spotlight: Community and College Partners Program

#### Page 4

Community Science: Empowering Frontline Communities to Engage in Meaningful, Community-Driven Research

#### Page 6

Harnessing Science for Community-Driven Solutions: The Basics of Starting Research Initiatives for Community-Based Organizations Dr. Margot Brown

Margot Brown



## **PARTNER SPOTLIGHT Community and College Partners Program (C2P2)**

The Community and College Partners Program (C2P2) was founded in March 2020 by Michael Burns. Headquartered in Locust Grove, Georgia, C2P2 provides pro bono technical assistance to poor and underserved communities based on their self-identified needs. C2P2 works with a network of more than 80 partner organizations, including colleges, universities, and several NGOs and governmental agencies, that are well equipped to offer support across a wide range of issues, from climate change and sustainable development to energy efficiency. To date, C2P2 has completed over 150 projects in 20 states, empowering multiple communities and giving them a chance to compete for resources on an equal playing field with larger, urban cities.



Executive Director of C2P2

#### MEANINGFUL CONNECTIONS AND COLLABORATION DRIVE WORK WITH COMMUNITIES

C2P2's motto is Building Bridges to Connect People to Progress. That's exactly what they do and what sets them apart from their peers. C2P2 takes a hands-on, collaborative approach to ensure frontline communities get the support and resources they need. This approach starts with posing a simple question to communities seeking C2P2's assistance: how can we help you? C2P2 never comes in and tells a community which issues they will work on. Working on issues that are important to the community and address their greatest needs is where the lasting benefit and greatest impact lies. Just as important as asking what communities need is C2P2's commitment to provide those services pro bono. Communities have never and will never pay a dime when working with C2P2 on a project.

Once a community identifies the issue or need that they would like to address, C2P2 reaches out to its network to find the best possible partner to support the community. Because their network includes such a diversity of organizations, C2P2 can more easily pair partners with communities

based on the issue at hand. Oftentimes, partners aren't necessarily located in the same locality or region of the country as the community they are working with. Before making the partnership official, C2P2 sets up a meeting between the community and the potential partner to ensure a good fit. If both the community and the partner choose to move forward, then project parameters are set and regular meetings are scheduled to keep the project on track. Points of contact are established to make sure the partner and the community can communicate, exchange information, and touch base when needed. If the partner happens to be a college or university, C2P2 requires that students visit the community at least once to help them understand the community and its needs better and get to know the people who call the community home. Upon project completion, the partner shares the end product (e.g., cost-benefit analysis, economic development plan, health impact assessment) with the community and gives а slide presentation. The presentation provides an opportunity for community members to ask

questions and make sure the project met their needs and was completed in the way that they intended. The end of a project doesn't mean the end of the relationship between C2P2 and the community. C2P2 is not a "one and done" kind of organization. Communities understand that they can come back to C2P2 in the future to ask for assistance, whether it's for the same issue or something completely different.

#### C2P2 PROJECTS BENEFIT COMMUNITIES ON MULTIPLE SCALES

C2P2 is particularly grateful to engage in projects that not only benefit the community they are working with, but also have the potential to impact other communities across the country. Two recent projects illustrate how C2P2's work in local communities is having a broader national reach.

In spring 2023, C2P2 connected the city of Jackson, Mississippi with students at Columbia University to create a communication plan for the city. The resulting <u>54-page plan</u> covers all forms of communication, including radio, TV, and social media platforms. The city loved the plan and is using the ideas in it to bring Jackson's communities together in a way that they hadn't been able to do before. The plan has also been shared with some of C2P2's partners and with communities across the country, including in California, Missouri, and Florida, to model and adapt to meet their own unique needs.

In May 2023, C2P2 connected the University of California, Santa Barbara with the South River Watershed Alliance in Atlanta, Georgia to develop a case study of how the Clean Water Act's triennial review can be used to promote and achieve water quality improvements in urban rivers. The alliance had used the triennial review process to assess water quality standards and request a reclassification upgrade to "recreational use" for a number of river miles in the state of Georgia. Their successful efforts increased the number of urban river miles suitable for recreation from 16 to 423 miles. The case study was completed in September 2023, and C2P2 is sharing it with other watershed alliances across the country to help them understand the power of using that provision to increase water quality standards for urban rivers. C2P2 also presented the case study at the National Environmental Justice and Training Conference in Washington DC in April 2024.

#### WANT TO LEARN MORE ABOUT WORKING WITH C2P2?

The National Environmental Justice and Training Conference is just one of many conferences, meetings, and seminars that C2P2 attends to share information about their organization and make sure people know who they are and what they can do.

C2P2 welcomes communities to contact them through <u>their website</u> and encourages community-based organizations, nonprofits, NGOs, and governmental agencies to share their website with communities who could benefit from their assistance.

*i*) <u>Click here</u> to learn more!

# NEWSLETTER FEATURE Community Science: Empowering Frontline Communities to Engage in Meaningful, Community-Driven Research

Article informed by interview with Natasha Udu-gama, Ph.D., Director, Community Science Advancement and Sustainability, AGU Thriving Earth Exchange

Completing a greenhouse gas inventory. Engaging in air and water quality monitoring. Conducting flood vulnerability assessments. What do these activities have in common? They are all examples of ways in which frontline communities are engaging in community science.

Community science involves communities and scientists working together to advance community priorities. "Doing science" includes defining questions, designing protocols, collecting and analyzing data, and using scientific knowledge in decision-making. What distinguishes community science from more conventional scientific research is the centering of the community and their knowledge and context throughout the process. This enables community voices to be heard and acknowledged in a way that does not typically happen when conducting scientific research.



Natasha Udu-gama, Ph.D., Director, Community Science Advancement and Sustainability, AGU Thriving Earth Exchange

#### COMMUNITY SCIENCE LENDS VOICE AND AUTONOMY TO COMMUNITY CONCERNS

Most scientific research involves scientists coming into a community and completing projects that revolve around their research agendas. Community engagement is typically limited to bringing in community voices at certain points of the project, mostly late in the game when major decisions have already been made.

Community science with projects start community voices, are guided by community knowledge, and end in community impact. This is especially important in frontline communities, who are often left out of the scientific research process. Community members have collective knowledge of and can provide historical context about the issues and concerns affecting their communities. This kind of information is critical in identifying research priorities and projects that are meaningful to the community and its AGU's Thriving Earth Exchange residents. program has been engaging in community

science projects since its founding in 2013. Thriving Earth Exchange connects communities with scientists and supports them as they work together to tackle local priorities related to natural hazards, natural resources, climate change, environmental health, pollution, resilience, and sustainability. As of December 2023, Thriving Earth Exchange has launched 314 projects in 11 countries, positively impacting over 60 million people.

Thriving Earth Exchange's approach to community science has evolved over the last decade. In the beginning, the program asked scientists to identify which of their projects were having an impact in communities. They soon realized that these projects, however well intentioned, were still advancing scientific priorities over community priorities. The program began to work with a consultant who had strong connections to communities across the country. The consultant talked with community leaders to better understand what kinds of issues they were dealing with and encouraged them to identify a project that could benefit from the support of Earth or space scientists and fell within one of the aforementioned areas. Although it was a step in the right direction, the program was still not gaining the traction it needed to reach underserved and marginalized communities. Thriving Earth Exchange had its first breakthrough in 2015. The program started partnering with community-serving organizations (i.e., organizations that boast large networks of communities of place, interest, advocacy, faith, etc.) to build the program's reputation with the organizations' networks and help them identify and encourage communities to participate in the program. This shift helped Thriving Earth Exchange better reach and serve frontline communities, implementing projects that have had a tangible impact.

#### **COMMUNITY-DRIVEN RESEARCH DRIVES MEANINGFUL RESULTS, IMPACT**

The following examples illustrate how Thriving Earth Exchange is using community science to help communities address a wide range of issues, from hydraulic fracturing (fracking) and wildfires to flood risk mitigation.

#### OHIO RIVER VALLEY

Ohio River Valley residents had been suffering symptoms such as sore throats, nausea, fatigue, and headaches. They suspected these symptoms were triggered by pollution from fracking. Working with Thriving Earth Exchange, residents began to collect air quality data using low-cost sensors to prove whether fracking was causing their health issues. The data collected has been used by residents to identify and regulate sources of the pollution as well as take proactive measures like wearing masks. Project volunteers published and presented their findings which helped them secure approximately \$500,000 from the U.S. Environmental Protection Agency to continue their work.

#### **CARMEL, CALIFORNIA**

Residents of Carmel, California approached Thriving Earth Exchange for help in connecting community members with local fire and government agencies to find ways to address the increasing risk of wildfires in the region. Experts from 11 agencies worked together to develop a five-part webinar series and accompanying fact sheet to provide residents with actionable strategies and information to help them prepare for and respond to wildfires.

#### OTTAWA COUNTY, OKLAHOMA

Ottawa County is home to multiple tribal nations. It is also the location of a Superfund site, and increased flooding in the region has been spreading harmful contaminants, like lead. This led community members to work with Thriving Earth Exchange to create an interactive map that shows the potential impacts of flooding in the area. Now, community members are using the map's data to advocate to policymakers and regulators as well as using the maps themselves to improve models of future flooding and establish the region's eligibility to participate in federal remediation programs.

#### **BRINGING COMMUNITY SCIENCE TO YOUR COMMUNITY**

Community science is an impactful way to bring real, meaningful results to frontline communities. Despite its potential, creating an equitable space where communities and community leaders feel comfortable sharing their context, knowledge, and expertise with scientists and technical experts is still a work in progress. If your community is interested in pursuing a community science project, take the time to listen actively and deeply to what your community is saying about the issue. Then connect their insights with the science to develop a shared understanding of the priorities you can pursue together. Endeavor to educate your organization and your community about the science behind the issue at hand. Community science is all about co-production and co-creation. Projects cannot proceed without community context and knowledge being included, valued, and respected.

#### LOOKING FOR ADDITIONAL INFORMATION ABOUT COMMUNITY SCIENCE?

Reach out to <u>Thriving Earth Exchange</u>. They have many resources and tools on their website and are currently developing additional tools and resources geared toward communities and community leaders. You can also learn about their many projects and find out what steps to take to join their program.

### **GUEST AUTHOR Harnessing Science for Community-Driven Solutions: The Basics of Starting Research Initiatives for Community-Based Organizations**

Dr. Onyemaechi C. Nweke, United States Environmental Protection Agency



**Dr. Onyemaechi Nweke,** Senior Science Adviser to the Office of Environmental Justice, US EPA

Scientific research is the systematic collection, interpretation, and evaluation of data. It is a mechanism for gaining new knowledge. In the context of environmental justice, scientific research is a powerful tool for gathering local data that may not be readily available to decision-makers. Scientific research is important in environmental justice because it can be used to characterize the nature, causes, and impacts of an environmental problem and the factors that exacerbate the problem; it can be insightful about immediate and long-term solutions to the problem and their potential to be effective. Community-led research topics can range from identifying and quantifying contaminants in environmental media such as air and water to evaluating the health impacts of a community's exposures to environmental stressors. If you are interested in launching a research initiative around an environmental issue in your community, here are some starter points for consideration.

#### **CLARIFY THE PURPOSE OF YOUR RESEARCH.**

This is your "why" or the ultimate goal (i.e., what the community wants to achieve with research). Clarifying purpose is a process of naming the problem and what the community would like to do about the problem. Achieving clarity in purpose early on informs the direction, scope, and context of a research project. For example, a community may want to influence a policy decision regarding permitted emissions from a polluting source. This "why" may require that they collect monitoring data. It can influence the type of data collected, how the data is collected and analyzed, the types of monitoring equipment used, and who the community engages among local policymakers. Figuring out the "why" helps to determine critical aspects of your project.

#### **IDENTIFY A FOCUS FOR YOUR RESEARCH.**

Research is a process of collecting valuable new information. It is also resource-intensive. Before starting your project, it is important to identify what new information your community needs to achieve its stated purpose. Defining the focus of the research project can benefit from the lived experiences of community members regarding the identified problem at hand, interactions with subject matter experts including policymakers who may need to rely on the outputs of the research, and a review of existing data sources to know if the information that will be produced through research already exists and is accessible and usable. For example, let's say your community is worried about rusty-colored water for household use. You may know, from observation, that the water is rusty-colored, but you do not know why. Figuring out why can be a focal point for your research.

assistance and technical Resources are available if you need help thinking through your research project. A great start would be the U.S. Environmental Protection Agency's (EPA) Regional Environmental Justice programs. Each of EPA's ten regions has an environmental justice program staffed with experts who are familiar with the environmental issues in that region and related prior or current activities.

#### EPA'S ENVIRONMENTAL JUSTICE RESOURCES

The U.S. EPA offers several resources and tools to support community researchers:

- <u>Regional Environmental Justice Contacts</u>
- <u>Thriving Communities Technical Assistance Centers</u>
- Environmental Justice Funding Opportunities
- EJScreen Mapping Tool
- TRI Toxics Tracker

#### FIND THE RIGHT RESEARCH PARTNERS.

A research partnership is an important means to access multiple types of expertise and resources. Research partners can be volunteer scientists in institutions of higher learning or K-12 schools in your community, paid collaborators on a grant, or members of the community with technical expertise. They contribute to the technical aspects of your research project via activities such as developing and refining research questions, collecting samples and data, and analyzing, interpreting, and presenting scientific data. Minority-serving institutions and other academic institutions in your community are access points to research partners.

#### CREATE A FORMAL STRUCTURE TO REINFORCE COMMUNITY LEADERSHIP AND CO-CREATION

Establish ground rules with your research partners from the onset. Lack of structure and documentation can create uncertainty over leadership and execution and result in blurred lines of authority between the community and its partners. Consider creating a community-led working group to establish channels of communication with the community. Davis and Ramirez-Andreotta (2021) found that having community members hold formal leadership roles in community-based research partnerships was more likely to result in policy change.

Discuss and agree on expectations, roles and responsibilities, project leadership, and a decisionmaking structure with partners. Memorialize agreements using partnership tools such as a memorandum of understanding or a partnership agreement. Ensure the community's needs and expectations are communicated and understood on all issues, especially on issues such as the ownership, use, and presentation of data.

#### **DEVELOP A PLAN FOR YOUR DATA.**

Before you start your research, understand how acquired data will be used. Planning includes identifying who will analyze the data and where and how it will be stored. Also, think about the intent of the data. For example, do you want your data to influence a regulatory process?

A data plan ensures that your time, effort, and resources are not wasted. Different agencies and institutions can have very strict expectations and requirements for how the data they use should be collected. Lastly, a clear set of protocols around data use can protect your community's privacy and autonomy, especially if personal information is involved.

#### CONCLUSION.

Environmental research is an important means for communities to generate local data to drive environmental policymaking. Get organized, name the problem, identify the focus for your research, network to learn and connect, find the resources, identify and recruit partners as needed, and formalize your plan and operational structure for a great start.

Dr. Onvemaechi C. Nweke is the Senior Science Adviser to the Office of Environmental Justice at the United States Environmental Protection Agency and has been at the agency for 23 years. Her work centers on strengthening the scientific foundation for integrating environmental justice into environmental policy.

#### THANK YOU FOR BEING A PART OF FRI'S NETWORK!

**O** @frontline\_resource\_institute



@frontline\_RI

in Frontline Resource Institute

