

The Community-Engaged Research Process

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While chapter 3 addressed how researchers prepare themselves to embark on community-engaged research (CER) for environmental justice (EJ), this chapter describes critical issues that arise in each stage of the research process that must be negotiated between researchers and their community partners. We show how these collaborators can build healthy working relationships by cooperatively addressing power relations, defining the community relevant to the study, managing conflict, forming community advisory boards, building community partners' research capacities, sharing control over funding, drafting formal agreements on roles and responsibilities, implementing actions in response to findings, engaging in project evaluations, and disseminating knowledge in multiple venues. In this process, researchers and their collaborators can address the four dimensions of justice common to CER and environmental justice (see table 4.1).

ADDRESSING POWER

At its root, CER is a relationship between community and academic partners who co-produce knowledge for social action. CER aims to undo the traditional relations of power in research, in which academic and government researchers apply their knowledge to communities, which are seen as lacking expertise, resources, and rights to produce knowledge about themselves (Tajik and Minkler 2006). Instead, CER aims to develop researcher-community relationships that are carefully and deliberately built on co-learning, reciprocity, shared governance, and reflexivity. Figure 4.1 presents a series of questions that can guide researchers and community partners to design partnerships that are conscious of how power

TABLE 4.1. Community-Engaged Research Process for Environmental Justice

Dimension of Justice	In the CER for EJ Research Process
Distribution <i>Who ought to get what?</i>	Ensuring fair sharing of resources and work among researchers and communities, and developing agreements, managing conflict, and building community capacities for an equitable partnership
Procedure <i>Who ought to decide?</i>	Community participation in and power to design and conduct research, including defining the community, forming community advisory boards, performing participatory evaluation, and establishing roles, responsibilities, and rights to control data
Recognition <i>Who ought to be respected and valued?</i>	Recognizing the validity of and differences among local, experiential, and Indigenous knowledges in defining the community and its representatives, and throughout the research process
Transformation <i>What ought to change, and how?</i>	Collaboratively disseminating results and implementing actions to repair harms to, and create just relations with, EJ communities and nature

manifests in every aspect of the research process. Discussion of these questions within the partnership can address power imbalances, addressing known conflicts over the roles of professional researchers and community partners. This discussion can transform research relationships from *power over*, or the application of dominance, to *power with*, or the horizontal development of shared values and strategies among different interests for social equity (Eyben et al. 2006). However, because power manifests and is reproduced through processes of socialization, CER collaborators need to return to these questions throughout their partnership, to monitor and maintain equitable power relations at each stage of the research (Lucero, Boursaw, et al. 2020).

DEFINING COMMUNITY AND PARTICIPATION

Defining the community that is the focus of a CER study is one of the most powerful decisions that researchers and community partners make. To say that research is *community based* may mean that (a) the research is conducted primarily in a community setting, (b) community issues or problems are the focus of the research, or (c) a community, rather than individuals, forms the unit of analysis (Israel et al. 2013a). The community may be defined by geography, occupation, race or ethnicity, or many other factors (in Indigenous communities, for example, the community may include plants, animals, and ancestors). Reflexive CER researchers do not assume that a community is a natural, homogeneous, or harmonious entity that a single organization or public agency can represent, but recognize differences of power and interest within communities, and that the least powerful members need a voice in research (Raphael 2019b). Researchers must learn about a community's situation, context, and internal diversity (see chapter 3).

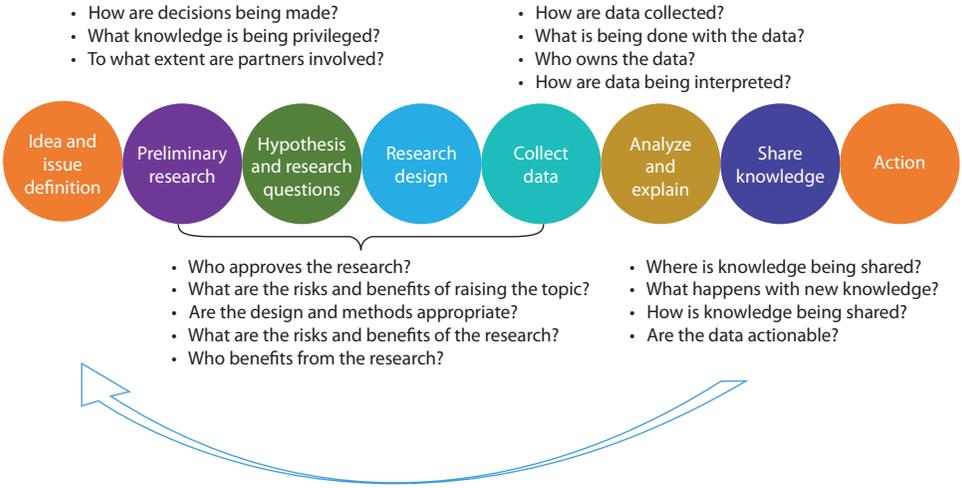


FIGURE 4.1. Research process and questions to address power for mutually beneficial research partnerships.

In the interests of procedural and recognition justice, researchers should consult widely with diverse community organizations about how to define the community in terms that reflect community affiliations, cultures, interests, and needs that are relevant to the research. It can be valuable to have both insiders and outsiders attempt to define the community and compare their definitions to uncover and question power-laden assumptions about who belongs where (Eng et al. 2013). Community advisory boards, discussed below, can also play a primary role in the process of community definition.

Defining the role of researchers and community participants in the study is another foundational decision about how power is allocated in CER. The degree of researcher engagement with community partners can vary considerably, including in breadth, duration, and reciprocal influence. Some research projects may interact with a broadly representative collection of leaders or residents, while other projects engage narrowly with a single organization or a segment of a community (Huntjens et al. 2014). In some cases, nonprofit, advocacy, and service groups or programs are enlisted as intermediaries between researchers and community residents. This role is unique, complex, and even contradictory, which is why defining roles is critical. The relationship of the intermediary to the community is often leveraged for research purposes, and the organization is expected to deliver on the research team’s promises to maintain a favorable reputation. Additionally, research tasks are often added to an intermediary’s daily job responsibilities, rather than integrated into them (Caldwell et al. 2015).

Commitments and degrees of engagement also vary. Some collaborations may involve short-term projects of several months, while others require long-term

commitments that stretch for many years. Partnerships can be transactional, involving mostly one-way outreach from research institutions aimed at affecting communities, or transformative efforts aimed as much at changing the research institution's role in the community and the institution's research priorities (Saltmarsh and Hartley 2011).

Procedural justice depends on researchers and community partners forging agreements on the degree of community participation. Table 4.2 modifies the International Association of Public Participation's (IAP2 2018) widely used spectrum of public participation in decision making to present the degree of community engagement in a range of research approaches, only some of which fully realize CER (adapted from Raphael 2019a). Each approach suggests different roles for community partners in the research process and aims for different outcomes. Envisioning these approaches along a spectrum helps to distinguish them, while avoiding an unnecessarily simplistic or prescriptive definition of the community's role in CER.

EJ research that incorporates some public participation, but that does not fully practice CER, includes research aimed at *informing* the public of risks and enhancing public understanding of science. This typically occurs when the research involves efforts to provide accurate information to communities in response to focus groups, surveys, and other means of gauging residents' needs and interests. Researchers may communicate this information, or may rely on intermediaries to the community, such as service providers, community workers, or advocates. In these approaches, researchers or their intermediaries build brief relationships with communities based on mutual recognition of each other's legitimacy.

Ethnography, and informal research for governmental public consultation, can promote fuller participation by *consulting* community members about their views and experiences up front and confirming researchers' analyses and recommendations through follow-up public engagement. Ethnographers' reports back to participants of interim findings, also called member checks, can be especially effective at comparing researchers' understandings against community interpretations. An iterative and sincere consultation approach can yield valid interpretations of community views and experiences, and responsive conclusions and steps toward action. However, consultation does not fully practice CER if this approach does not enlist community input on framing research questions. In addition, consultation typically ends with researchers exerting final control over drawing and disseminating conclusions, or with government agencies writing final reports and issuing decisions based on them.

CER is realized more fully by *involving* community members themselves in conducting research. This can be accomplished through crowdsourced citizen science projects, in which participants gather data but do not help analyze or disseminate findings. In action research commissioned by government agencies or nonprofits, participants typically take the lead on defining the study's goals

TABLE 4.2. Spectrum of Community Engagement in Research

		The Community Is . . .			
	Informed	Consulted	Involved	Collaborated With	Leading
Process	<ul style="list-style-type: none"> • Researchers share information with the community, customized to its needs or interests • Mutual recognition • Brief encounter 	<ul style="list-style-type: none"> • Researchers seek community input, views, voices, and feedback on analysis before dissemination • Dialogue • Short-term and medium-term relationships 	<ul style="list-style-type: none"> • Researchers enlist community partners or work for clients, who contribute to study design, data gathering, and/or execution • Cooperation • Short-term and medium-term relationships 	<ul style="list-style-type: none"> • Researchers share resources and control over all stages of study with community • Co-production of knowledge • Long-term partnership 	<ul style="list-style-type: none"> • Community controls resources and has final say over all stages of study • Community-led production of knowledge • Long-term partnership
Outcomes	<ul style="list-style-type: none"> • Tailored transmission of research findings to community strengthens their relevance and impact 	<ul style="list-style-type: none"> • Community perspectives and information strengthen interpretive validity of research, responsiveness of action steps 	<ul style="list-style-type: none"> • Relationships strengthen research study design, access to data, validity, community and organizational problem solving 	<ul style="list-style-type: none"> • Cooperative learning partnership strengthens research and community problem solving, mobilization, transformation 	<ul style="list-style-type: none"> • Co-ownership strengthens research and community capacities for further research, mobilization, transformation
Approaches	<ul style="list-style-type: none"> • Risk communication • Public understanding of science 	<ul style="list-style-type: none"> • Ethnography • Community needs assessment • Public consultation (public comments and hearings) 	<ul style="list-style-type: none"> • Crowdsourced citizen science • Action research and professional consultancies for organizations 	<ul style="list-style-type: none"> • Participatory citizen science and community science • Participatory action research • Community-based participatory research 	<ul style="list-style-type: none"> • Community-owned and managed research

and providing access to data sources, while researchers choose the methodologies and analyze the data. These cooperative partnerships can strengthen the research's quality and practical value but can fall short of fully involving community partners in each phase of the research and engaging a broad swath of community members.

Participatory citizen science and community science, participatory action research, and community-based participatory research typically lend themselves to higher degrees of participation and the fullest expressions of CER. These approaches often include researchers and community organizations *collaborating* to manage funding and other resources, and co-designing and co-conducting each aspect of the research. Local community knowledge often exerts as much epistemological authority as professional and disciplinary expertise. In rare cases, the same approaches extend to community partners *leading* by maintaining final control over, and financial ownership of, all elements of the research. Some partners prefer to call this community-owned and managed research (Wilson, Aber, et al. 2018). Collaboration and community leadership approaches aim to activate community members to mobilize themselves based on the findings, inspire their efforts for community-level change, and develop communities' own abilities to launch future studies.

While useful, a neatly arranged research model such as this can present dangers. It can tempt researchers to substitute choosing the most attractive label for their work for careful negotiation of the most appropriate terms of collaboration for a particular community context and project. While this spectrum of approaches can help researchers and communities clarify their relationships, it does not excuse them from examining the intent and impacts of collaborations during each phase of a partnership by discussing the questions listed in figure 4.1 repeatedly, not simply at the outset. In a world in which terms such as *participatory research*, *community engagement*, and *shared power* have been widely co-opted by institutions that do not accept substantive community influence (see Cooke and Kothari 2001 and chapter 2), each study must be evaluated based on how fully researchers share power with community partners at all stages of the research.

CONFLICT MANAGEMENT

As partners in CER build their relationships, conflict is to be expected, and partners need to plan to address it throughout their collaboration, rather than reacting to it after it arises. Much of this conflict stems from power differences between research institutions and community organizations that face environmental injustices (Lucero and Wallerstein 2013). Partnerships typically level power imbalances by creating empathy, building trust, and developing cultural understanding among participants (Lucero, Emerson, et al. 2020; Neubauer et al. 2020). Table 4.3 summarizes some well-documented sources of conflict in CER partnerships that

TABLE 4.3. Reasons for Conflict in CER Partnerships and Descriptions

Reasons for Conflict	Description	Ways of Addressing	Reference
Communication differences	Language differences	Create multilingual spaces with translation	Lucero and Wallerstein 2013
	Direct communication style (saying what one means, with no hidden messages) versus indirect style (couching or hiding meaning to avoid discomfort)	Know your own communication and conflict style Design a communication structure for partnership	Yonas et al. 2013
Differences in worldviews and ways of knowing	Differences in or lack of knowledge about conversational norms, rituals, or cultural rules (e.g., turn taking, interruptions, gestures)	Understand core differences between worldviews	Loh 2016
	Differing worldviews, or sets of beliefs and values, arising from cultural backgrounds (e.g., the belief that humans rule the natural world versus the belief that humans are part of the natural world)	Develop a set of values for the partnership	Yonas et al. 2013
	Differing views about privileged knowledge (e.g., lived experiences, formal education, cultural knowledge)		Tajik and Minkler 2006
Coordinating collaboration	Different timelines and conceptions of time (annual calendar, academic calendar, cultural calendar) that interrupt research activities	Consult community advisory boards about community priorities	Loh 2016
	Positive or negative expectations about researchers, based on community partners' experiences	Draft memoranda of understanding (MOUs) among partners	LeClair, Lim, and Rubin 2018
Balancing research and action	Misalignment of priorities (e.g., of which research topics and benefits are important to researchers and community partners)	Conduct formative evaluations during research projects	Mayan and Daum 2016
	Competing pressures on community partners (e.g., to pursue other organizational priorities besides research, such as providing services)	Draft MOUs among partners and with funding agencies	Loh 2016
	Competing pressures on researchers (e.g., to publish rather than implement action)	Provide research training for community partners	Tajik and Minkler 2006
Governance	Competing expectations of the funding agency (e.g., to disseminate research to academics rather than community members and policy makers)	Collaboratively plan the dissemination of data in accessible and actionable formats (fact sheets, policy briefings, etc.)	Fletcher, Hammer, and Hibbert 2014
	Unclear or inequitable decision-making processes, data sharing, and data usage policies	Draft agreements about governance, resource sharing, and data sharing; develop community leadership of the project	LeClair et al. 2018
			Lucero, Boursaw, et al. 2020
			Mohammed et al. 2012
			Yonas et al. 2012

address EJ and other issues, major examples of these conflicts, steps that partners often take to address these conflicts (all of them discussed later in this chapter), and relevant sources in the literature where readers can learn more.

ADVISORY BOARDS

Within community-academic partnerships, project oversight or guidance structures take many forms, such as community coalitions, steering committees, community action teams, and advisory boards. The most common structure is the *community advisory board* (CAB), comprising community members who share a common identity, history, and culture and are knowledgeable about the research topic and/or priority population (Israel et al. 1994). Selection of CAB membership should be deliberate and based on the goals of the partnership and project (Green 2001). The composition and role of the CAB should also be guided by efforts to include community-based knowledge and expertise, and to ensure that community representatives exercise voice and influence in decisions.

Just as the oversight leadership structure can vary, so can the purpose of the CAB. CAB members serve as research partners and sources of leadership. Leadership can occur for individual projects, the overall partnership, or a combination of projects and partnerships (Newman et al. 2011). A common criticism of CABs is that members are only allowed to offer advice, and researchers have the discretion to integrate advice or not. However, if CAB members are genuine research partners, then the advice they provide will be discussed, negotiated, and reflected in how decisions are implemented. CABs can facilitate ethical research processes by informing research protocols (Strauss et al. 2001) and offering valuable community perspectives on the research topic and design, risk and benefits of research, recruitment strategies, data collection methods, and how to make data actionable (see box 4.1).

BOX 4.1. THE NEVADA MINORITY HEALTH AND EQUITY COALITION (NMHEC) COMMUNITY ADVISORY BOARD

The NMHEC is a statewide coalition that “promote[s] the health and well-being of diverse communities by pursuing research, capacity building, and advocacy that recognizes the unique cultural and linguistic differences of Nevadans” (<https://nmhec.org/our-mission>). The coalition has addressed issues at the intersection of health and EJ, such as the disproportionate impact of COVID-19 on Nevada’s communities of color and low income because of background environmental injustices, such as crowded housing conditions, reliance on public transportation, lack of workplace occupational safety and health protections, and racial stigma. To incorporate the voices of diverse sectors that contribute to health, NMHEC is guided by

(Continued)

BOX 4.1. (CONTINUED)

an 11-person advisory board who reside across the state and represent for-profit, nonprofit, school, and government organizations. The advisory board was formed to (a) identify community needs; (b) contribute to interdisciplinary research; (c) determine needs and support capacity building in areas of policy, advocacy, research, and grant development; (d) provide input on policies and practices that address social determinants of health; and (e) identify community members to participate on project steering committees, which direct each research, education, or outreach project. Steering committees include coalition members and external members recruited to join the coalition over time to fill emerging gaps in knowledge and expertise (Nevada Minority Health and Equity Coalition 2021). CAB members chose consensus-based decision making as an important value.

CAPACITY BUILDING FOR RESEARCH PARTNERS

To participate fully and influentially in research partnerships, CAB members and other community-based research partners must also have opportunities to build their capacities—a topic not widely addressed in the literature. Much of the relevant peer-reviewed literature comes from training programs, such as the CBPR Partnership Academy (Coombe et al. 2020), Sharing Power with Communities (Pratt 2021), Transformative Co-Learning Model (Loh 2016), Building Equitable Partnerships for Environmental Justice Curriculum (UCDEHSC and UMLEEDC 2018), and Holding Space Toolkit (Lucero, Emerson, et al. 2020). Collectively, these trainings and toolkits are a means for partnerships to develop all members' abilities to guide and conduct research.

The EJ movement also has a long history of providing capacity building to its members. National organizations and networks (such as the Highlander Center and the Environmental and Economic Justice Project) provided popular education and research trainings for the emerging movement. Over time, grassroots EJ organizations combined research trainings with organizing and advocacy to build in-house research capacity. These efforts often provide an understanding of the deep historical and cultural causes of local environmental injustices in structural racism, colonialism, and economic exploitation. Trainings also include engaging in individual and partnership reflection, developing community and institutional leadership for CER, introducing the research process and specific training in how to do CER, training in protection of human subjects in research, initial and refresher training on project topics and outcomes, identifying funding mechanisms, and grant writing. To link CER to organizing and developing community leadership, EJ organizations typically aim to include community members in these trainings, not simply service providers or advocates for the community. Thus, researchers who want to work with EJ organizers should be prepared to

engage residents directly and develop their leadership in the research project. Additionally, routine training should create an ongoing passage for new leaders to emerge when turnover occurs among organizers and residents.

PROJECT FUNDING AND BUDGET SHARING

Practicing distributive justice means ensuring that research partners and participants are compensated for their time and knowledge, and that all partners are comfortable with how funding is controlled. Funding agencies often expect or require that the academic partner will submit the grant application and be the principal investigator, who manages the grant money. In some cases, this is appropriate; academic institutions have administrative infrastructure for project reporting, institutional review boards, and the ability to spend funds when a contract is based on invoicing. In other cases, it is appropriate for the community organization to be the primary agency, especially when it takes responsibility for the bulk of the work. Supporting community partners to apply for their own research grants is a valuable contribution to building their capacities over the long run.

Regardless of which organization becomes the primary agency, a realistic review of the funding amount needed to accomplish proposed work should be undertaken. Hoefft et al. (2014) guide readers through the process of understanding costs needed for research activities such as travel, communication, meeting and food, time, research activities, and how to equitably compensate community partners. CER partnerships can consider providing the community partner with funding that is proportional to their scope of work in a memorandum of understanding or other contractual agreement, and/or providing key academic and community research personnel a similar amount of funds to be applied to their salaries. CER partners need to have potentially hard conversations about fair compensation early in the research process.

Ensuring that community partners are compensated equitably can be accomplished through subawards to partner institutions, hiring partners as consultants, or creating new positions for partners. Subawards and consultancies may be appropriate for sharing funds with experienced EJ organizations that have paid researchers on staff. While subawards typically define clear deliverables and due dates, consultancies can allow for more flexibility about how partners contribute to projects. For example, an individual consultant may only be responsible for carrying out a training while a subawardee would be responsible for the training development, implementation, and evaluation. Furthermore, consultants may be less expensive, as they may not require facilities and administrative costs. Creation of new positions for community partners is another approach that can meet project needs while valuing community knowledge. Black et al. (2013) developed a community engagement model that centers community research fellows (CRF). The CRF criteria and position description was a joint endeavor of academic and community partners of the North Carolina Translational and Clinical Sciences

Institute, which funded a variety of health and EJ focused projects. A noteworthy criterion was the “ability to transfer skills to both community and faculty” (265). Similarly, some academic institutions have developed tribal liaison positions that facilitate relationships with local Indigenous communities to promote education, research, and engagement, and demonstrate institutional commitment to decolonization. In these examples, the hiring criteria are as rigorous as in traditional academic positions, yet researchers’ skills and knowledge stay in the community to provide capacity for future initiatives.

AGREEMENTS ON ROLES, RESPONSIBILITIES, AND DATA SHARING

Creating agreements on roles and responsibilities is a CER best practice, which may also be required by some universities’ institutional review boards or offices of grants and contracts. These agreements are forms of governance that aim to create procedural justice for all partners in CER. The process of drafting agreements can also advance recognition justice as partners learn about each other’s goals, experiences, and capacities, rather than simply negotiating with each other in a transactional manner. CER often involves several kinds of agreements. A memorandum of agreement (MOA) is an official agreement and legal contract that outlines roles, responsibilities, and expectations of each party. A memorandum of understanding (MOU), on the other hand, is not legally binding but is formal, carries a degree of seriousness, conveys mutual respect, and addresses expectations, as well as roles and responsibilities of each party. Another joint agreement option is a written collaborative research agreement, such as a project charter that provides details of partnerships. Any formal partnership document names all organizations involved and outlines partnership goals, operating norms, expectations, responsibilities, contingency plans, and ownership of data (Mayan and Daum 2016).

Data-sharing agreements and management plans—the policies, protocols, and procedures related to the handling of data—are extremely important governance tools for community partners (Woodbury et al. 2019). Many Indigenous scholars have taken the lead on this topic by interrogating policies and procedures as they relate to human subject research, including data security and de-identification of participants, and data ownership (see chapter 5 and Harding et al. 2012; Hiratsuka et al. 2017; Marley 2019). This includes concerns that data and biologic specimens that participants contribute for one research purpose are not used for secondary research without their informed consent. Secondary use of data and specimens can also violate the confidentiality and privacy of individuals and communities, risking harm to their reputations, economic viability, and well-being. These risks demand data-sharing agreements and appropriate ongoing forms of consent beyond general permission.

Included within data-sharing agreements are terms of prior review of materials and manuscripts by CABs or other oversight boards like tribal institutional review

boards (IRBs), publications, and public dissemination. Data-sharing agreements stipulate conditions under which researchers can collect, share, disseminate, and return data, including specimens (Harding et al. 2012; Lucero, Emerson, et al. 2020; Woodbury et al. 2019). There is a need for dialogue between researchers and community members, and possibly the funding agency, as to whether data is openly shared or shared with restrictions and what those restrictions entail (Harding et al. 2012). While NIH and other funders require a data-sharing plan, they rarely provide specific guidance. Fortunately, groups like the Colorado Clinical and Translational Sciences Institute have shared best practices, recommendations, and step-by-step development guides (Backlund Jarquín 2012). Researchers and their partners also need to anticipate how data sharing and ownership may affect the project's ability to make data actionable to maximize community benefit. For example, Indigenous community partners typically require restrictions on release of sensitive data about their sacred sites, to protect them from looting and vandalism (Ban et al. 2018).

FROM DATA TO ACTION

Advancing knowledge and driving community change are equally important in CER. Partnerships aim to create actionable data that informs how programs, policies, campaigns, and practices are designed and implemented. Actionable data bridges research and practice, and academic and community concerns. Collaborators need to discuss from the outset how community needs and priority issues will guide which data will be collected, how they will be measured and analyzed, and how they will be expressed in a format that can be used effectively for the end purpose of the project (whether it is a legal case, policy proposal, organizing campaign, community mural, and so on). Zakocs and colleagues identify five characteristics that increase the likelihood of acting on data: the data answer questions that are important, are credible, are reported in a concise and understandable manner, are shared before decisions are made, and are available to stakeholders in time for them to reflect on findings, implications, and possible action (Zakocs et al. 2015).

Careful decisions need to be made about what data will be collected and how they will be used. Stephen Luck succinctly summarizes the issue: “You can’t manage what you can’t measure” and inversely, “you can only manage what you do measure” (quoted in Pine and Liboiron 2015, 3149). In CER, these decisions are acts of power sharing, which include community partners in analyzing and interpreting data—to build community capacities, learn from partners’ unique knowledge, and draw on their insights about how to make results actionable for their communities. EJ researchers can learn from collaborative data analysis strategies pioneered by human rights activists to fill in gaps in official data (Alvarado Garcia et al. 2017), from CER that has involved community partners in analyzing data gathered via multiple qualitative and quantitative methods (Cashman et al.

2008), and from practices such as research reflection meetings, data analysis workshops, and consensus-building activities to arrive at shared findings (Godden 2017).

For example, the Nevada Minority Health and Equity Coalition (NMHEC) led the #OneCommunity campaign, a COVID-19–focused community-engaged outreach and education project in communities most impacted by the pandemic. As noted above, environmental injustices such as crowded housing, lack of personal protective equipment in workplaces, and racial violence made communities of color and low income especially vulnerable during the pandemic. Furthermore, the pandemic thrust community members, leaders, and scientists into developing time-sensitive safety and mitigation responses. To inform these responses, the NMHEC worked alongside community leaders to conduct focus groups across the state in seven diverse populations—Hispanic/Latinx, Black, American Indian, Asian, Pacific Islander, LGBTQ+, and Deaf and Hard of Hearing. Partners co-led the development of focus group questions and surveys to best address community needs and facilitated focus group sessions with community members. Over 23 focus groups, exceeding 200 participants, were conducted over six weeks. The data were collaboratively interpreted with community partners to create culturally tailored messaging for each priority population to address unique concerns and misconceptions. Project partners led dissemination efforts into their communities. Most importantly, the importance of COVID-19 to each community facilitated the mobilization of ten funded local partnerships to take action to reduce the disproportionate impact of COVID-19 in their communities.

Data form understanding of an issue, lead to decision making, and provide the cornerstone for action-oriented approaches, such as building capacity among stakeholders, informing diverse audiences, and driving action (Alvarado Garcia et al. 2017; Pine and Liboiron 2015). Data can describe the scale and scope of a problem by describing how a condition, physical or social, can manifest itself in the population. Furthermore, data support the interpretation of community problems and the process of addressing them. Thus, making data actionable to address community concerns requires more than simply collecting data to identify environmental and other disparities. It requires a strategic approach to interpret the data to drive decision making (Alvarado Garcia et al. 2017).

PARTICIPATORY EVALUATION

Given its practical emphasis, much CER for EJ involves evaluation research, which assesses the effectiveness and power-building capacity of community-based programs, interventions, campaigns, or activities. In traditional approaches to evaluation, researchers or funding agencies define the evaluative criteria, “objective” observers from outside the community conduct the evaluation, and data are often restricted to narrow quantitative measures of outcomes. In contrast, *participatory evaluation* is better suited to CER for EJ, because this approach emphasizes

TABLE 4.4. The Evaluation Process

Evaluation Type	Formative Stages		Summative Stages	
	Needs Assessment	Process Evaluation	Outcome valuation	Impact Evaluation
Occurs	Before program begins	Throughout the program implementation	As immediate and intermediate outcomes occur	As long-term intended effects occur
Question Asked	What is the need? What can be done to address the need?	Is the program or intervention operating as planned?	Is the program achieving its objectives?	What predicted and unpredicted impacts has the program had?

Adapted from <https://meera.snre.umich.edu/evaluation-what-it-and-why-do-it.html>.

community partners' right to take part in research (participatory justice) and the value of their knowledge (recognition justice). In participatory evaluation, community partners and members collaborate fully and equally with researchers to identify evaluative criteria according to the community's values and priorities, and these co-evaluators may examine a broad range of qualitative and quantitative measures, guided by professional standards and local knowledge (Wiggins et al. 2017). While the goal of traditional, top-down evaluation is often to hold community organizers and service providers accountable for their performance to funding agencies, participatory evaluation aims to strengthen community organizations' capacities to define their own measures of success, and to research how they can best improve residents' living conditions and build power to make change (Neubauer et al. 2020; Wiggins et al. 2017). These measures often go beyond project-specific objectives to include strengthening an organization's capacities for self-governance, community organizing and power building, coalition building and movement building, and other organizational and political goals.

There are two major categories of evaluation—formative and summative—both of which help optimize the success of a project. Table 4.4 shows the two categories of evaluation, subtypes, when each type of evaluation occurs, and what types of questions each evaluation type answers. *Formative evaluation* is an opportunity to engage community partners to establish a need for the project, shape how it is designed, and monitor its progress (Dehar, Casswell, and Duignan 1993). Formative evaluations also include *process evaluations*, which are used to ensure that proposed activities are implemented to reach the targeted audience and achieve the expected outcomes (Saunders, Evans, and Joshi 2005). As an iterative process, process evaluation is conducted throughout the implementation of the research activities and includes feedback mechanisms for improving achievement of short- and medium-term outcomes. *Summative evaluation* measures both immediate and long-term impacts of a program or intervention.

A citizen science partnership led by the Science Museum of Virginia provides an example of how formative and summative assessment can strengthen CER for EJ (Hoffman 2020). The three-year partnership in Richmond, Virginia, aimed to

educate and spark action among residents to build climate resilience by reducing temperatures in urban heat islands, which are especially hot areas in cities that are disproportionately located in neighborhoods of color and low income. Formative assessment of the project's initial educational programming, in the museum and online, showed that these traditional methods failed to meet the project's goal of helping residents connect climate change to their own surroundings and take action to promote resilience. In response to these failures, the project launched a citizen science project, mobilizing residents to drive across the city taking temperature measurements throughout the day. Community partners suggested locations to measure based on their local knowledge of hot spots around the city and recruited drivers to the study. Researchers combined the measurements with data on risk factors that increase residents' susceptibility to heat (such as poverty, and rates of cardiovascular and respiratory diseases) to produce heat vulnerability index maps of the city's neighborhoods. The maps became a focal point of the museum's redesigned interactive programming and of new efforts to engage residents through community-based organizations, such as a program with community partner Groundwork RVA to engage public high school students to plant vegetation in especially vulnerable neighborhoods to reduce temperatures and improve air quality. Summative assessments found these new aspects of the project based on CER improved the project's ability to educate and mobilize residents to act for climate resiliency, and the Science Museum's capacity to collaborate with local organizations.

KNOWLEDGE SHARING AND DISSEMINATION

Dissemination of knowledge in CER is guided by two famous phrases: "we speak for ourselves" (popularized by the EJ movement) and "nothing about us without us" (which has been adopted by activists in many oppressed and stigmatized communities). Both phrases assert community partners' procedural rights to communicate research findings and recommendations for action to their communities and other decision makers, rather than relying on outside researchers or advocates to speak on the community's behalf.

Although dissemination is typically done at the end of the research process, it should be considered at the beginning of a study and is a critical step in trust building throughout the research process. As an exchange of learning, research conducted *with* communities rather than *on* them needs to be shared widely with the community and others who can help improve conditions. A well-thought-out communication and dissemination plan can build awareness, create understanding, and drive action (Harmsworth and Turpin 2000) if the plan includes several elements (Carpenter et al. 2005):

- involvement of community members in drafting and implementing the plan
- relevance to the community's self-defined priorities, needs, and interpretations of research

TABLE 4.5. CER for Communication Campaigns

Elements of Campaigns	CER Activities	Example Research Products
Strategizing	Identifying goals and organizing plans	Comprehensive campaign plan: goals, objectives, organizing and communication strategy
	Target and power analyses	Fundraising applications to support campaign implementation and evaluation
	Framing and cutting issues	
	Choosing communication sources (such as organic community leaders), channels, and messages	
	Identifying funding sources	
Implementing	Research to support outreach, mobilization, and/or advocacy	Reports and white papers on problems and solutions
	Information sharing and coordination with allies	Score cards on the performance of targeted industries and government agencies
		Organizing toolkits, fact sheets, training curricula
		Development and testing of frames, messages, and tools (apps, databases, etc.)
		Presentations, testimony, participatory media

Adapted from DataCenter (2015b).

- clearly defined objectives, such as mobilizing the community to change policies, practices, funding allocations, and so on
- understanding of the priority audiences and the contexts in which they live to tailor information and persuasive messages to their values, priorities, and needs in appropriate, accessible language(s)
- tailoring of communication to the plan's goals, including choosing appropriate channels, using messengers trusted by community members, and employing appropriate timing of communication
- evaluation of the impact and reach of messages

In EJ organizing, communication plans often take the form of campaigns to educate, persuade, and mobilize (Raphael 2019a). EJ campaign goals may include promoting individual attitudes and behaviors but typically focus on bolstering community capacities, mobilizing support for policy and legislative change, or directly enacting changes in corporate and government practices.

CER can support campaign strategy and implementation by informing many kinds of communication products (see table 4.5). CER can help organizers identify

TABLE 4.6. Non-digital Tools for Dissemination

Outreach	In-person tabling at community events allows researchers to engage directly with residents. Educational meetings, workshops, and town halls can share findings via multiple media and visual aids. Phone trees can activate groups by efficiently spreading brief messages to many people. Direct mail campaigns can provide targeted information directly to a person's place of residence
Street Organizing	Street theater can use drama to communicate findings and recruit participants for organizing, while demonstrations can gather people to share information and make demands
Broadcast Media	Television and radio ads, announcements, and programs can broadly share a consistent message about findings
Print Materials	Flyers and brochures can share findings to communities in multiple languages. Organizations' newsletters and networks can elicit authentic community engagement with research findings
Billboards	Billboards can inform people in private vehicles and public transportation
Communications to Decision Makers	Organizations and residents can communicate findings to public officials and other leaders via letters and testimony
Academic Publications, White Papers, Policy Briefs	These publications can provide more technical information for diverse stakeholders and decision makers

Adapted from Marquez, Smith, and Perez (2022).

campaign targets, whose agreement is needed to implement the campaign's solutions, and map power relationships that can be used to leverage change (Data-Center 2015a; UCDEHSC and UMLEEDC 2018). Research findings and recommendations can benefit from being cut and framed to reflect the views of specific constituencies (Center for Story-Based Strategy 2017). For example, a campaign to reduce household lead exposures may generate broader participation if presented as an issue of children's health to families, of preserving the habitability of rent-controlled apartments to tenants, and of securing low-interest loans for lead abatement to homeowners and small landlords (Staples 2016).

Translating research into campaigns also depends on choosing credible sources and effective communication channels. In EJ communities—where residents are often people of color and of low income and/or are first-generation immigrants—it is important to take advantage of non-digital dissemination methods that engage people who have limited internet access and computer literacy and speak multiple languages (see table 4.6). Dissemination should also employ digital channels to share information quickly to people in any location, including their homes. Decision makers in government, corporations, and other institutions can be reached by both kinds of channels (see table 4.7). Academic publications and policy papers are also important publication venues. Because the position of the storyteller is

TABLE 4.7. Digital Tools for Dissemination

Social Media	Social media platforms can inform, consult, and involve the community in conversation and organizing through their personal networks
Email, Digital Newsletters, and Texts	Findings can be shared via digital newsletters and emails to community-based list servers that have credibility with residents. Text messaging and messaging apps can share information quickly and broadly, especially as residents forward it to their networks
Websites	Websites can share online brochures, flyers, scorecards, and toolkits with community members
Webinars	Webinars and virtual town halls can educate the community, solicit feedback about plans, and provide insight about common community concerns
Videos	Videos can publicize findings to people with limited literacy by incorporating residents' experiences, telling stories, dramatizing issues, and teaching people how to take practical steps

Adapted from Marquez, Smith, and Perez (2022).

one of power, it is important for academic researchers to include community partners as co-authors on these publications to ensure the story of the research is being told accurately, share credit for the work, and recognize all contributors' expertise (Mulrennan, Mark, and Scott 2012).

CONCLUSION

This chapter has provided an overview of the major issues that arise in the CER research process. We have focused especially on the need for collaborators to address power relations among community partners and researchers at each step. Power threads through choices about defining the community relevant to the research, addressing conflict among partners, creating accountability to community advisory boards, developing the team's research capacities, sharing resources, crafting agreements on roles and responsibilities, mobilizing action in response to findings, integrating evaluation throughout the project, and disseminating knowledge in multiple venues to make change. Paying attention to power is important for understanding how each choice that partners make implicates one or more dimensions of justice, including how partners share resources, exercise voice and influence over the research, respect community knowledge as well as professional research expertise, and transform relationships among researchers and communities to promote EJ together.