

TOOLS *for* EQUITABLE
CLIMATE RESILIENCE

FOSTERING
COMMUNITY-LED
RESEARCH AND
KNOWLEDGE





River Network connects local watershed organizations across the country, empowering them with tools, training and resources.

For over 30 years, we have expanded, trained, and supported a Network that works collaboratively to protect and restore both communities and the waterways that serve them. A key area of our work highlighted in River Network's strategic plan—[The Power of Our Network: 2018-2022 Strategic Plan](#)—is “Strong Champions.” Building strong champions means we are dedicated to building and sustaining the capacity of our member organizations through our work on community watershed science, policy and civic engagement, organizational sustainability and planning, leadership development, and professional development.



With the support of the Kresge Foundation, River Network embarks on the journey of exploring climate resiliency strategies and equitable engagement of communities in climate resilience work. This two-part toolkit presents community-led research and knowledge and leadership development as essential tools for addressing the diverse risks posed by climate change (see “[Fostering Community Leadership](#),” the accompanying tool). Each respective tool provides case studies regarding community-led research and leadership development, as well as comprehensive descriptions of the theory and practice of each strategy. These tools are grounded in showcasing the experts who are already implementing such strategies successfully in their communities, and bringing their experience to the table for the benefit of other community leaders who are championing similar efforts.

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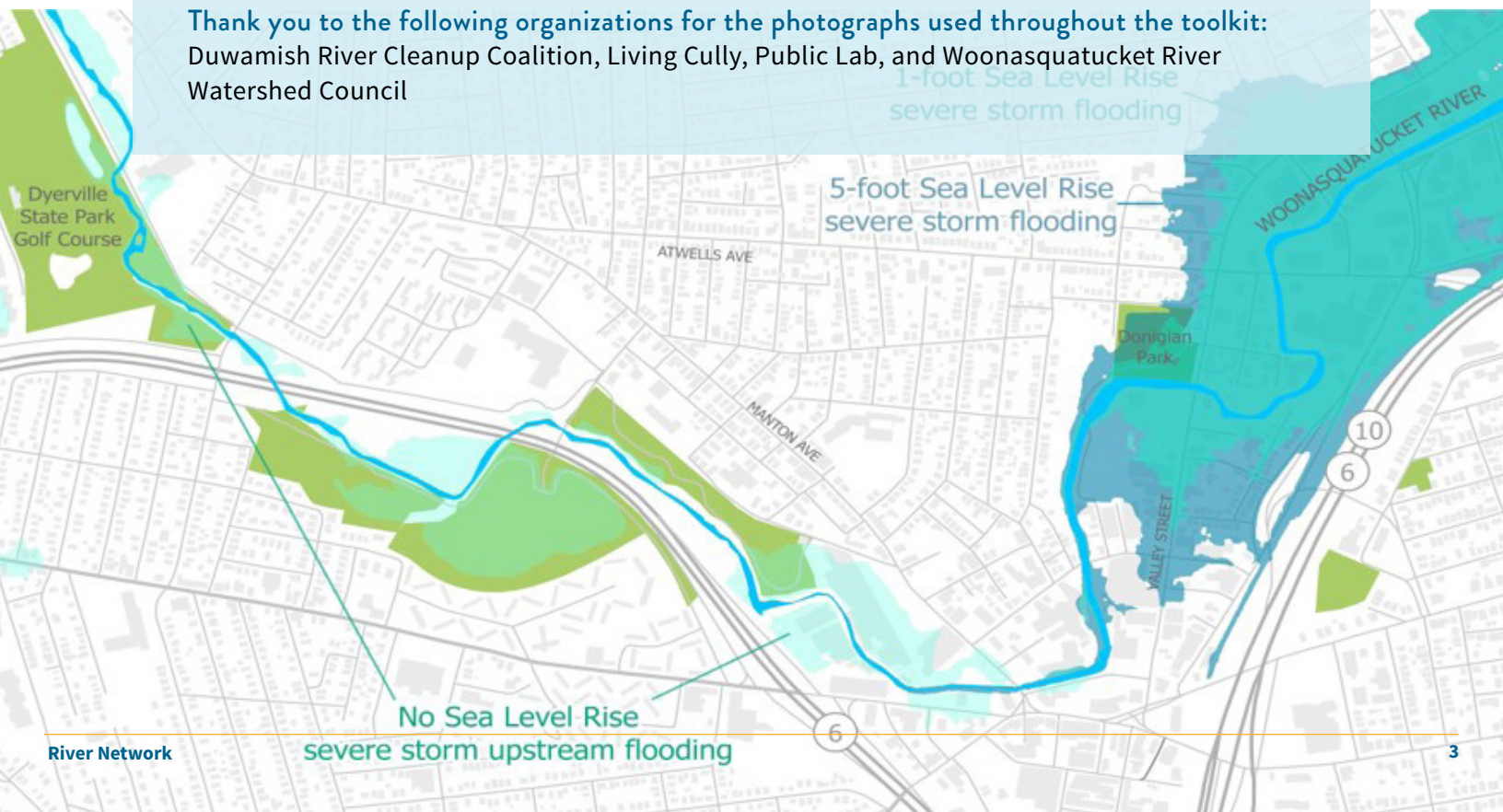
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We also want to thank the many organizations, institutions, and individuals leading community-based research and developing and sharing resources to support and encourage community-led research. In [Appendix 3](#) of this tool you will find links to invaluable community-led research resources and examples, many of which informed the content of this tool.

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NOTHING ABOUT US WITHOUT US

INTRODUCTION



Communities across the United States are more and more frequently impacted by climate change and increasingly face problems like property damage and health and safety issues as a result of flooding and extreme heat. Inadequate wastewater treatment and lack of access to safe and affordable drinking water in many communities compound these threats.

The community-based organizations River Network supports work to address these impacts on residents and advocate for solutions to make their communities safer, healthier, and more resilient. These organizations have repeatedly emphasized that to equitably and successfully carry out climate resilience solutions, it's imperative to directly engage with community members to deeply understand how the problems directly impact them. Likewise, to formulate solutions that are equitable and truly work—and to get utilities and city officials to prioritize equitable investments in under-invested areas—you must directly engage with members of the community when identifying solutions.

We developed this toolkit for network members who asked for step-by-step guidance and lessons learned on how to effectively engage with community members to understand climate impacts and to develop climate resilience strategies.

In this toolkit you'll find best practices from both researcher-led and community-led processes to gather and utilize community-generated data to effectively solve problems impacting communities. We share them with you—leaders of community-based organizations, watershed groups, and environmental justice groups—to support your grassroots, ground-up, community-led processes to better understand water issues, impacts, and threats in your community, and support advocacy efforts to get them addressed.

As you use this toolkit, we encourage you to reach out to River Network staff if you have questions or need support.

WHAT IS COMMUNITY-LED RESEARCH AND KNOWLEDGE?

For the purposes of this toolkit, we define Community-Led Research (CLR) and Knowledge as:

“A process through which community members come together to gather and synthesize their collective wisdom and knowledge in order to more fully understand how a problem—or set of problems—impact their community, to identify solutions that will work best for their specific community, and to build a case for support.”

Community-Led Research (CLR) works best when it is approached as an inclusive, community-driven and -centered process where all segments of the community’s residents are represented and engaged in the research process, with special attention to lifting up voices that have historically been left out of community decisions. This means, residents have leadership roles in:

- **The decision to do CLR in the first place**
- **The design of the CLR project**
- **The implementation of the CLR project**
- **The analysis of the community-generated data**
- **The decision(s) on how the community-generated data will be used**

Community-generated data can ultimately bolster advocacy, communications, and outreach to equitably solve problems.

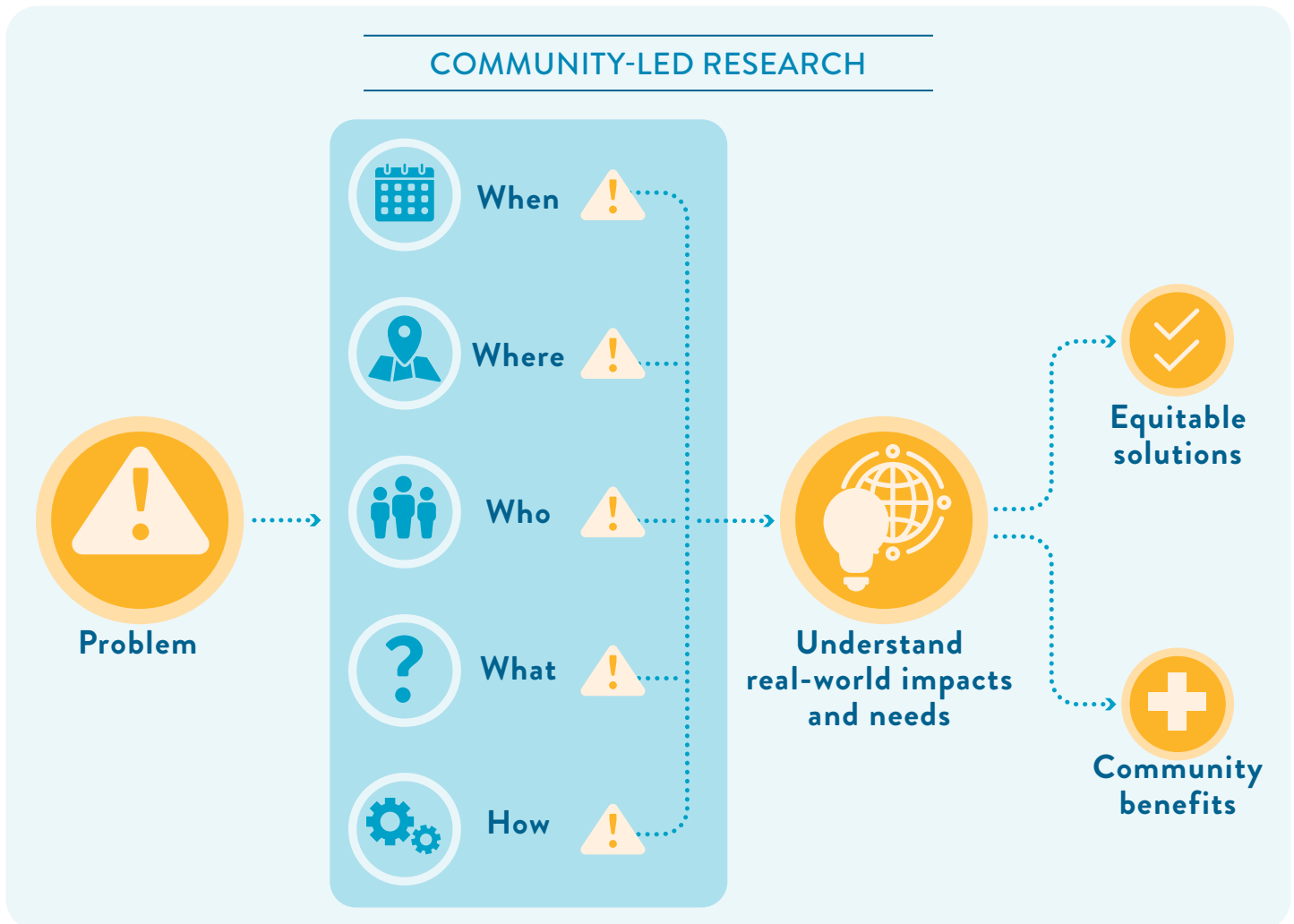
A COMMUNITY-CENTERED & COMMUNITY-DRIVEN PROCESS



CLR can also identify community assets. While this toolkit focuses on using CLR to understand problems impacting the community and to generate solutions, CLR can also identify and map community assets that you want to protect, lift up, or leverage for greater community benefit.

“Community Watershed Science” is another important method to collect community-generated data. Typically, community watershed science involves residents “monitoring” and collecting data on the health of local water resources including rivers, streams, wetlands, restoration projects, and green infrastructure. Fortunately, many tools exist to support community groups and individuals with community watershed science initiatives, such as River Network’s [“Science Connection” portal](#), the [Water Data Collaborative](#) and [Public Lab](#).

WHY SHOULD YOU DO COMMUNITY-LED RESEARCH?

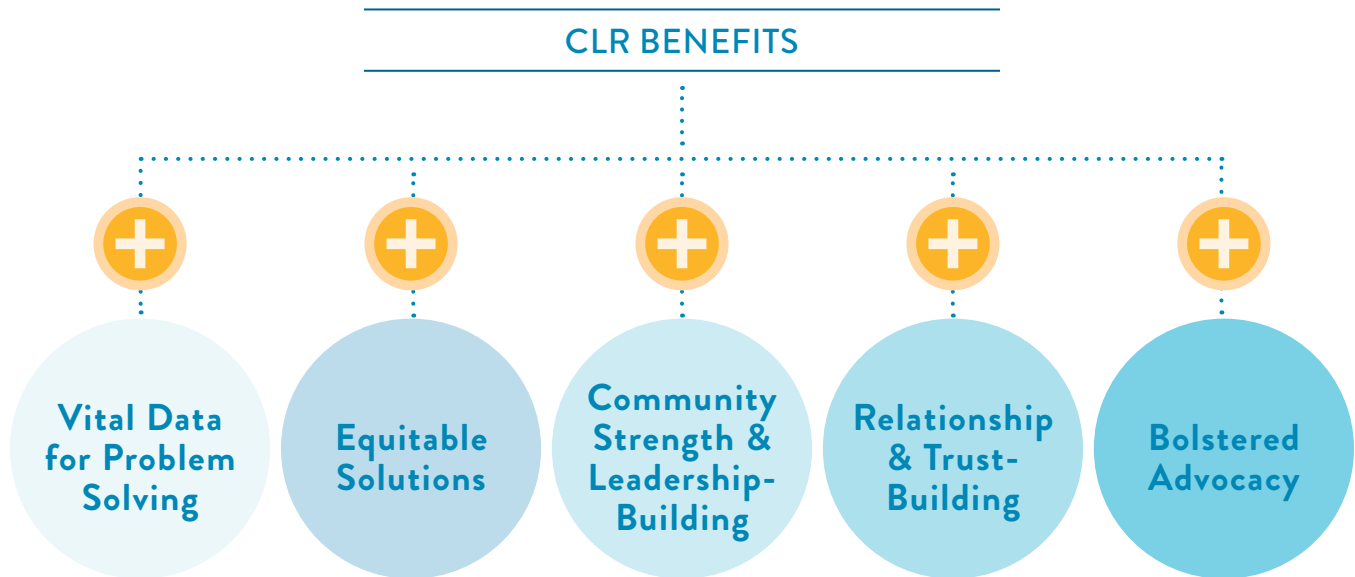


Repeatedly, members of our network and other partners emphasize how important it is to engage directly with community members to deeply understand how problems impact residents. Likewise, to formulate solutions that are equitable and truly work you must also directly engage with members of the community.

CLR provides an approach to more completely understand the nature of problems impacting a community—from the perspective of the people who directly experience it—and before solutions are identified and

implemented. This is important because too often this step is overlooked altogether. CLR is rooted in the principle that community knowledge is essential to solve problems.

Examples where CLR could lead to more successful and equitable outcomes include climate resilience, green infrastructure, stormwater management, and infrastructure investment assessments and planning. The CLR process can also elevate the importance of issues within the community and build a foundation for future advocacy.



- +** CLR can yield vital data to demonstrate how a specific problem, or set of problems, impacts members of your community. The data collected through CLR and its analysis can support your advocacy to get resources invested and solutions implemented to address the problem(s) impacting your community.
- +** CLR can help develop the deep community engagement needed to ensure that initiatives to promote climate resilience are planned and implemented equitably. CLR provides a framework to lift up the community's priorities, especially in communities that have been disenfranchised and denied access to decision-makers.
- +** CLR can lead to long-term community investment and stewardship in the project, making long-term success much more likely.
- +** CLR can help elevate the profile of existing community groups and networks; form new, long-term, sustainable networks within communities; establish coalitions and systems that remain in place to address future problems; build the grassroots advocacy strength of the community; and yield other social and cultural benefits.
- +** CLR can build local knowledge and get important information to members of a community. Sharing community-generated data can strengthen community engagement on the issues overall, as well as engagement to take action in response to the information collected.
- +** CLR data and analysis can be shared directly with elected officials and other decision-makers who have the power to address problems and implement solutions in your community. CLR data and analysis can also be shared with members of the media to amplify your findings and build public pressure to move elected officials and decision-makers to take action to address community problems.

Conversely, if you choose to not do CLR, you miss opportunities to tap into these important benefits and risk making decisions and implementing solutions that do not work for the community or cause additional harm.

HOW DO I CONDUCT COMMUNITY-LED RESEARCH?

COMMUNITY-LED RESEARCH STEPS

1 Establish Project Team



2 Define Project Purpose



3 Scope Project



4 Design Project



5 Implement Project/Collect Data



6 Analyze Data/Take Action



To begin, there are several existing community-led or -based research frameworks you may want to consider when designing your research project. These include [“Community-Owned and Managed Research,”](#) [“Community-Engaged Research,”](#) [“Community-Based Participatory Research,”](#) [“Participatory Action Research,”](#) and [“Community Based Participatory Action Research,”](#) among others. While some of these frameworks come from academia, you don’t have to be PhD, a college professor, or a university researcher to carry-out community-led research. However, community organizations will sometimes collaborate with university researchers to do community-level research. At times, community-level research is also initiated and/or conducted by researchers who are external to the community.

This toolkit is designed to support those who want to facilitate community-led research and are new to the process. The content of this toolkit is informed by the work of many organizations, institutions, and individuals who pioneered community-led research processes and frameworks and documented their work and developed resources to support and encourage more community-led research. In



Appendix 3 of this tool you will find links to numerous resources and examples, many of which informed the content of this tool.

Before you begin with your CLR project, we also encourage you to carefully consider the following:

It is important to ask if the data you are looking to collect already exists, especially if other research projects have already taken place in the community. If so, examine whether you can compile and synthesize the existing data to support your problem-solving, decision-making, and/or advocacy efforts, rather than collecting similar data again. This avoids placing undue burden on community members.

While community-level research efforts often provide valuable benefits for the community, some research efforts have been criticized for collecting data from a community, but not following up with actions designed to address the problem(s) that were studied. This type of research is often considered “extractive,” i.e. taking data from the community with no return benefit for the community.

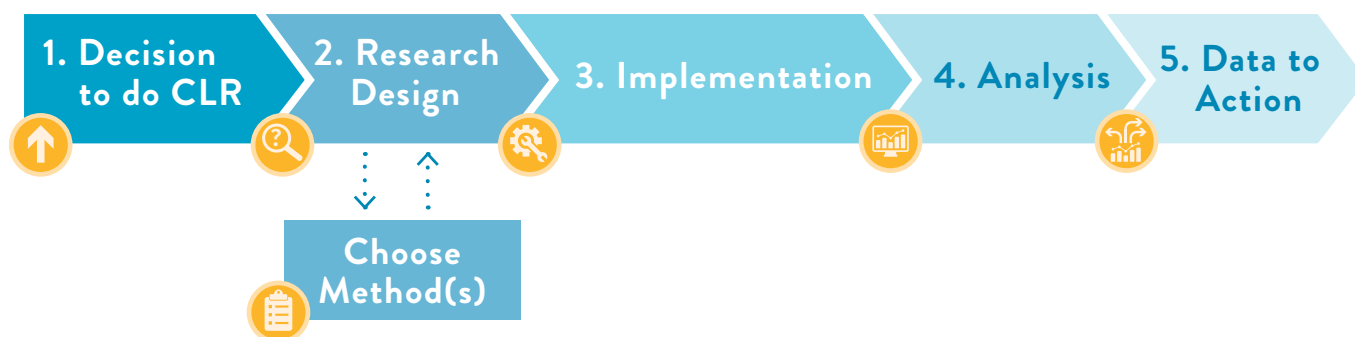
Also, as stated above, effective and equitable CLR centers the community and is community-led, so that the community members are represented and engaged in significant ways throughout the project. Before you proceed with a CLR project, carefully consider whether you, or your organization, are best positioned to lead it. Organizations and leaders who are already firmly rooted in the community are the most effective

leaders of community-centered, community-focused, non-extractive CLR because they bring foundational relationships and experience that are essential to the project’s success. Examine your organization’s current position in the community. Is it rooted in the community? Is your leadership representative of the community? If the answer to any of these questions is no, carefully examine your reasons for wanting to lead a CLR project.

Further, to be truly community-driven and -centered, every stage of the project must have robust community engagement. If you find robust community participation is lacking in any of the steps outlined in the following pages, especially from key community leaders, examine why. Before proceeding, focus on building the relationships and engagement you will need to ensure robust community buy-in.



CLR STAGES OF COMMUNITY ENGAGEMENT



1. Decision to do CLR

To be truly community-driven and -centered, community leaders should participate in the decision to move forward with a CLR project, including:

- Agreement that the problem you will study is a top priority for the community.
- Agreement that CLR is necessary in order to fully understand the problem or to address it.
- Agreement on how the data you collect, and resulting analysis, will be used.
 - How fine or granular will your final data and analysis be? Are there any privacy concerns or could there be unintended backlash or repercussions for residents or the community when you share your findings? Agreements made at the beginning must be honored later—see Stage 5 below.



2. The design of the CLR project

To be truly community-driven and -centered, community leaders should participate in the design of the project, including opportunities to:

- Help conceptualize the CLR project.
- Critique and give feedback on draft CLR project plans, and have their feedback used to improve CLR project plans.
- Support the final CLR project plan.



3. The implementation of the CLR project

To be truly community-driven and -centered, community members should be given the opportunity—and empowered—to participate in the implementation of the project, including opportunities to:

- Contribute their own data in the data collection process.
- Help collect data from other members of the community, either directly or through a number of supporting roles.



4. The analysis of the CLR data

To be truly community-driven and -centered, community leaders should participate in the analysis of the CLR data, including opportunities to:

- Participate in the analysis process
- Review, critique, and give feedback on preliminary, intermediate, and final analysis.
- See the data and analysis first, before it is shared with others inside or outside the community.



5. The decision on how the final CLR data is used

To be truly community-driven and -centered, community leaders should help decide how the CLR data is used, including opportunities to:

- Help determine who the data and analysis is shared with, e.g. elected officials, other decision makers, or members of the media.
- Help identify privacy concerns and find ways to address them, e.g. will participants or the community face any unintended backlash or repercussions when you share your findings?

SUPPORT ROBUST COMMUNITY INVOLVEMENT THROUGH ALL STAGES

To ensure community members are centered and empowered to participate, you must actively break down the barriers that restrict involvement, including:

- Time of day people are asked to participate: provide participants with opportunities to engage at different times of day to accommodate different schedules.
- Transportation: if people are asked to travel to participate in the project or to attend in-person meetings, provide transportation for those who need it.
- Internet and smartphone access: if people are asked to participate remotely, provide other means of participation if internet and smartphone access are significant barriers.
- Multiple demands on time, such as jobs and childcare: provide multiple methods of participation and offer childcare when possible. Also, demonstrate you value people's time by providing compensation in the form of stipends, gift cards, meals, etc.
- How information is presented: break down complex issues and concepts so those who are new to the topic(s) don't feel the subject matter is either "over their head" or that they are being "talked down to."
- Multiple community priorities: demonstrate how the project is relevant, why it is a priority for the community, and how the project will help solve high-priority problems in the community.

At its core, CLR is a strategy to solve critical community problems. CLR without action can burden and alienate community members and leave them feeling frustrated, used, ignored, and/or their time was wasted. Equitable CLR project implementation from design to action is vital to build and maintain the public's trust in you.

CLR METHODS

In this toolkit, we describe three key methods to collect community data when designing and implementing your research:

1 **Remote Crowdsourcing** – residents share data with you remotely. You don't go to them and they don't come to you; instead, they share their data from where they are.

2 **Community Mapping Exercises** – you host one or more events where residents come together in one location (virtual or in-person), to share and gather data.

3 **Person-to-Person Surveying** – you collect data from residents, where they are.

METHOD 1: REMOTE CROWDSOURCING

Remote crowdsourced data collection is a participatory method of building a dataset with the help of a large group of people.¹ In this context, a large number of people are recruited to share information remotely, usually via the internet and/or smartphone apps, to collectively build a dataset which demonstrates a community problem that needs addressed.

Advantages of Remote Crowdsourcing

- Potential to collect large amounts of data from a large number of contributors.
- Potential to collect data from a large geographic or dispersed area.
- Data can be collected in real-time.
- Data can be collected on an ongoing basis.
- Data collection can require less time and costs for paid person-to-person surveyors or community mapping facilitators
- Doesn't require people to come to you or you to go to them—people can participate from where they are.

Disadvantages of Remote Crowdsourcing

- Limited ability to verify the accuracy of the data submitted.
- Potential for bias due to inequitable access to your data collection technology or the skills/ability to use it.

- Potential costs/expenses for developing applications (“apps”) or other technology, or for the use of existing apps or technology, needed for remote data collection.
- Limited direct interaction with residents, potentially leading to less relationship-building and long-term engagement with data-contributors.

Considerations for Choosing This Method

- Analyze the trade-offs between the amount of data and the reliability of the data you will potentially collect.
- Analyze the amount of participation you need to generate, how you will generate the needed level of participation, and what you will do if participation lags.
- Analyze possible technology barriers and how they may impact who can participate and the types and amounts of data you are likely to collect.
- Analyze your relationship-building and community engagement goals and if/how you will achieve those if using remote crowdsourcing.
- Identify the predominant languages spoken in your research area and assess whether you can offer your crowdsourcing tools in those languages.
- Analyze costs of technology, time, staff, marketing, and outreach.

¹ https://dimewiki.worldbank.org/wiki/Crowd-sourced_Data

METHOD 2: COMMUNITY MAPPING EXERCISES

Community mapping is a participatory mapmaking process where a group of people who have a shared interest collaboratively develop a map(s), based on their knowledge of an issue. Participatory maps can illustrate more than just geographic information; they can also illustrate important social, cultural, and historical knowledge. These may include information related to current or historic land-use, occupancy, mythology, demography, ethno-linguistic groups, health patterns, and wealth distributions. Participatory maps often represent a socially or culturally distinct understanding of a particular place such as a neighborhood, and include information often excluded from mainstream maps, which usually represent the views of the dominant sectors of society. Participatory maps can present an alternative to the languages and images of the existing power structures and become a medium of empowerment by allowing local communities to represent themselves and lived experiences spatially.²

Advantages of Community Mapping Exercises

- Can help build community knowledge about an issue. Participating and contributing knowledge in a group gives participants the opportunity to learn from each other and build their collective understanding of an issue.
- Can help build community engagement on an issue. Participating and contributing in a group gives participants the opportunity to become engaged in next steps, build alliances, and form relationships and networks to stay connected to take future action on the issues.
- Requires very few resources. Community mapping has been done with paper and pencil



and outdoors by sketching maps on the ground. However, the addition of resources can be beneficial to the process and outcomes.

Disadvantages of Community Mapping Exercises

- The amount and types of data you collect is dependent on who participates in the mapping exercise and what they can recall or produce at that moment in time.
- Requires people to participate at designated dates and times, which can be limiting due to:
 - Multiple demands on community members' time such as work and childcare responsibilities.
 - Time of day, or day of the week, your exercise is held.
 - Transportation required to participate, if held in-person.
 - Technology required to participate, if held virtually.
- Requires significant effort and resources to minimize these barriers to participation.

Considerations for Choosing This Methodology

- Analyze whether you can recruit skilled facilitators to design and facilitate an equitable process that engages all participants in achieving your community mapping goals.
- Analyze the turnout and representation you need at your event(s) to ensure the data collected will represent the true scope and scale of the issue you are researching and whether you can recruit the numbers and representation you need.
- Identify the predominant languages spoken in your research area and assess whether you can recruit mapping facilitators who speak those languages.
- Analyze the barriers to participation, and if you can, avoid or minimize them.
- Analyze the costs of event space, technology, AV equipment, mapping materials, facilitators, staff, volunteer time, food and drink, and providing childcare and transportation options.

² https://www.ifad.org/documents/38714170/39144386/PM_web.pdf/7c1eda69-8205-4c31-8912-3c25d6f90055

METHOD 3: PERSON-TO-PERSON SURVEYING

Person-to-person surveying is a process to collect data from the community using a standardized set of questions, in which the surveyor meets community members where they are—whether by knocking on the doors of residents' homes or approaching community members near common gathering places in the neighborhood (e.g. places of worship, popular convenience and grocery stores, laundromats, farmers' markets, etc.).

Person-to-person surveying requires identifying the specific data you want to collect, the amount of data you need, determining who to collect data from, developing a set of questions that unearth the needed data, and training and supporting surveyors to undertake the process consistently, ensuring the needed data is captured accurately and consistently, regardless of who is conducting the survey. Through person-to-person data collection, you can control which specific geographies you collect data from. The process also gives you an opportunity to get to know more residents in the community and build relationships. Meeting residents in person also gives you an opportunity to share information, engage them in the issues you are addressing, and offer them opportunities to stay involved and participate in next steps.

Advantages of Person-to-Person Surveying

- Participants are not required to go anywhere to participate.
- Participants do not need access to any special technology or skill set to participate.
- You can collect targeted data from specific geographies.
- You can collect nuanced and/or in-depth data by using carefully crafted questions and training surveyors to ask follow-up questions.
- You can more easily verify data via follow-up questions.
- You can build relationships and get to know members of the community.

- You can build community engagement on issues and provide information on how residents can stay involved in the issue.
- You can grow the visibility and approachability of your organization.
- You can approach individuals at different times of day and different days of the week when they are home, shopping, or going about their daily activities, regardless of their schedules.

Disadvantages of Person-to-Person Surveying

- Significant human resources are required to train and support surveyors.
- Significant financial resources are required to train and support surveyors (especially if you are paying surveyors).
- The data you collect is dependent on what participants can recall at that moment in time.

Considerations for Choosing This Methodology:

- Assess how much data you need, from where, at what days and times, and across what geography, to get data you need.
- Assess whether you can—and how you will—train and support your surveyors.
- Assess if you should/can financially compensate your surveyors.
- Analyze costs including surveyor compensation, staff and volunteer time, surveyor training, and participant compensation (if any), survey materials.
- Identify the predominant languages spoken in your research area and assess whether you can recruit surveyors who speak those languages.
- Assess if you want to—and can—structure your survey project to build lasting relationships with members of the community and how to build community members' engagement on the issues you're researching.
- Conduct surveys at varying times and dates to offer more opportunities for involvement.

MIXED-METHOD APPROACHES

Many organizations find using two or all three of these methods in a coordinated way allows for the most robust participation and gives residents flexibility to participate in the way that best works for them.

CASE STUDY

Woonasquatucket River Watershed Council

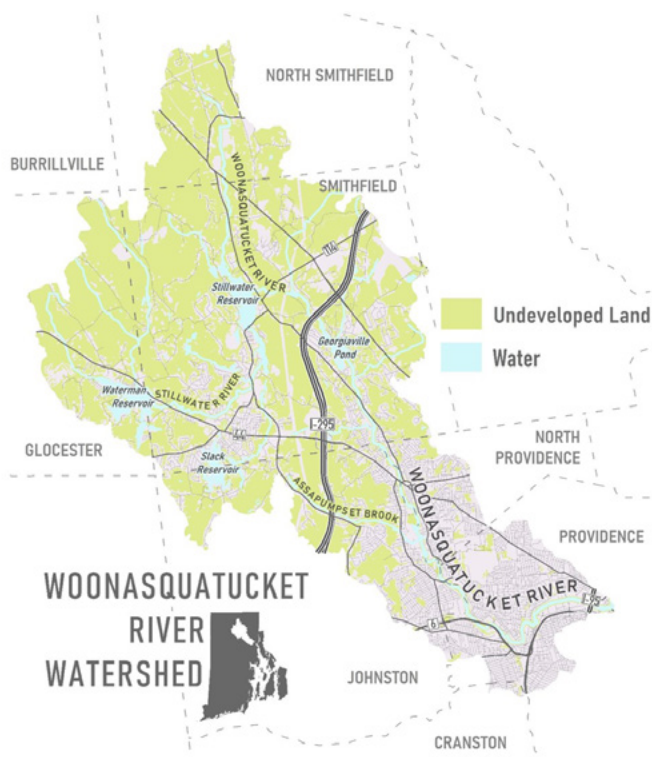
The Olneyville neighborhood of Providence, Rhode Island is regularly impacted by floods. Due to topography, lack of sufficient stormwater control, sea-level rise and storm surge, even storms that produce as little as one inch of rain can cause flooding. In 2010, Olneyville experienced a **devastating flood** that destroyed businesses, homes, and private property in the neighborhood.

To mitigate the effects of flooding and other climate threats in Olneyville, a climate resilience project is underway. The project is funded as part of the **Central Providence Health Equity Zone** (CP-HEZ), an effort to address public health disparities. The **Woonasquatucket River Watershed Council** (WRWC) serves on the CP-HEZ Climate Resilience team alongside local public health and affordable housing organizations such as One Neighborhood Builders, Providence Housing Authority, and the Steel Yard.

The goal of the project is to increase the community's resilience to climate change. To do that, the WRWC connects residents of all ages, races, and socio-economic statuses to their local waterways and greenspaces and helps build the community's "water literacy." This includes ensuring residents are knowledgeable about stormwater, flooding, and the science behind resiliency. WRWC also helps residents—youth and adults alike—become agents of stewardship and decision-making in their neighborhood through school-based and community environmental education training programs.

Understanding Local Perceptions of Flood Risk Using Community-Led Research

As a first step in the climate resilience project, the WRWC implemented a research project to gather data from Olneyville residents to understand what they knew about local flooding. Data was collected using in-person and online surveys. To carry out their research project, they:



- Hired two well-known bilingual (Spanish/English) members of the community to conduct door-to-door surveys. Spanish is the first-language of nearly 60% of Olneyville residents and the surveyors' ties to the community helped open residents' doors to them.
- Paid surveyors \$25/hour and provided training from a seasoned canvasser on how to conduct the surveys, how to make people feel at ease, and how to stay safe by working in pairs on the same block. The surveyors wore clothing that identified who they were with and what they were doing.
- Developed surveys with the assistance of other CP-HEZ members. The Providence Racial and Environmental Justice Committee designed questions to draw out health impacts of climate change. The Providence Emergency Management Agency and Rhode Island Department of Health identified questions based on their experience working in communities following flooding disasters.
- Developed an online version of the survey to reach residents that could not be reached in-person. Resident associations and business and property owners in the flood zone helped publicize the survey.
- Compensated survey participants for their time and knowledge with a \$15 gift card to a local grocery store.

Through the survey, the WRWC collected information from residents on four topics: their knowledge and perceptions of climate change; their emergency and hazard preparedness; their personal stories; and their demographic information. In total, ninety residents participated in the survey. Forty-three residents were surveyed by going door-to-door and forty-seven residents took the survey online.

The research project provided valuable insights to help inform efforts to increase the community's knowledge about local water resources and climate threats and to build the neighborhood's climate resiliency. The project findings included:

- Due to many residents being new to the community and moving in and out of the neighborhood quickly, many did not know about past flooding events, that catastrophic flooding was a threat in the neighborhood, or the high likelihood of flooding happening again in the near-future.
- Climate change was not an issue in the forefront of residents' concerns.

The WRWC is using the research data to inform several community outreach and education initiatives, including:

- The production of “[After the Flood](#),” a film that illustrates and informs the community about past flooding and the likelihood of future flooding. The film features well-known community leaders that are trusted by residents. WRWC shows the film at local churches, libraries, laundromats, PTA meetings, and schools, along with their [Flooding Story Map](#).

- Installing bilingual signage in their green infrastructure projects that describe each project, what it is meant to address, and how it will help improve the community's climate resilience
- Organizing tours for community members and leaders to learn about climate resilience strategies.

Currently, the WRWC is running youth-led climate presentations in the community, working with the Olneyville Green Justice Zone to ensure climate resilience is done equitably, and supporting a cohort of “Flood Fighters” who will work with the community to assess climate resilience needs, increase awareness and engagement, and learn what the community wants. They have secured funds to assure the long-term sustainability of these efforts through the Environmental Protection Agency, from Environmental Education Awards and Collaborative Problem Solving awards. The cohort will be working together to identify priorities in the community regarding climate resilience, and build leadership around environmental issues.

The WRWC emphasizes their 25-year engagement in Olneyville as key to their research project's success. In fact, the organization was selected to lead the project due to their well-established relationships with entities that provide health care, housing, recreation, and youth programs in the neighborhood. This extensive network was one of the main reasons the neighborhood was selected as a HEZ and the climate resilience work was funded. Equitable climate resilience is not possible if you do it alone.



CASE STUDY

Duwamish River CleanUp Coalition

The Duwamish River Cleanup Coalition

(DRCC) centers the fundamental belief that community members should be the ones making decisions that impact them directly. This belief guides the DRCC's work with the community living in the Duwamish River Valley, a highly developed urban and industrial center south of downtown Seattle, WA that includes 80% of the city's industrial lands, and, in particular, the 8,000 residents that live along the 5-mile stretch of river that has been listed as a Superfund Site for nearly two decades. Those most impacted by the toxic pollution are some of Seattle's most marginalized and impoverished communities: the BIPOC community, homeless residents, immigrants and refugees. In addition, three Native American tribes use the river for fishing and/or cultural ceremonies, while low-income, immigrant and homeless families from the area harvest fish for subsistence. For all these reasons, attaining environmental justice is one of the driving forces shaping the community's river cleanup and advocacy efforts on environmental and climate justice issues.

Building Informed and Empowered Duwamish Valley Communities

DRCC's vision is "an empowered Duwamish Valley community thriving in a healthy and just environment." Since its inception, the organization has promoted multiple community participatory empowerment strategies. For example, DRCC has a long standing Duwamish Valley Youth Corps (DVYC) program which educates youth about environmental justice, conducts community science projects, teaches leadership advocacy skills, and supports them taking action to improve community conditions. For example, the DVYC has collected and prepared moss samples as bio-indicators of air pollution and learned foundational concepts about human health, air pollution, and urban forestry through the process. At the community level, DRCC regularly facilitates community capacity



building and listening sessions using "Community Advisory Teams" (CATs). The CATs ensure that the community is directly informed about every project, and they prioritize concerns, and develop vision and action plans for both community development initiatives and policy-level interventions. DRCC runs an Environmental Stewardship program to educate community members about green infrastructure to beautify the neighborhoods. They also run a Healthy Home Assessment program where community members learn ways to improve indoor air quality conditions. At the policy level, DRCC has been directly involved in changing environmental policies at the city, state, and county level. For example, DRCC was heavily involved in training community members to advocate for a Community Benefits Commitment with the Port of Seattle. These efforts led to passage of a [Duwamish Valley Community Equity Resolution](#) by Port Commissioners in 2019, as well as adoption of the City of Seattle's [Duwamish Valley Action Plan](#).

Recognizing the need for an informed and organized community to advocate for the most comprehensive, health-protective river cleanup possible, the DRCC works to center residents' voices, concerns, and vision in the development of cleanup plans and to support their participation in the process. For example, to help community members understand a highly technical proposed cleanup plan, the DRCC developed a Lego blocks exercise that was visual, hands-on, and made the proposal understandable to residents regardless of language (community members speak more than 30 languages), age, or education and socio-economic background.

Understanding Impacts to Residents' Health through Community-Led Research

To understand the impacted community's lived experiences and vision for their neighborhood, DRCC also developed and conducted community mapping exercises to identify how issues manifest in people's homes, on their block, and in their neighborhood. With funding from an EPA Environmental Justice Research grant, the DRCC conducted a **Cumulative Health Impacts Analysis** (HIA) for the Duwamish Valley to identify potential unintended health consequences of the Superfund cleanup plan and to recommended strategies to minimize health impacts, maximize benefits, and reduce inequities in the surrounding communities.

With the help of a community project advisory committee, Paulina Lopez, DRCC's Executive Director and community resident, designed a mapping exercise where community members were asked "What makes the neighborhood healthy and unhealthy?" The DRCC took poster-sized maps to community centers, neighborhood association meetings, PTA meetings, parks, the local food bank, and library, where they used the maps to engage residents in discussions about the health of their community.

DRCC used two separate maps, titled "What makes your community HEALTHY?" and "What makes your community UNHEALTHY?" They asked neighbors and the community at large to identify activities, actions, physical spaces, and other aspects of their community that either made it a healthy and happy place to live or that damaged, harmed or contributed to poor health in their community. They then asked participants to draw and write on both maps, encouraging them to be creative.

The community assets and concerns identified by the residents were later incorporated into the HIA. This research initiative not only incorporated the community's knowledge into the analysis of health impacts, but it built the community's technical capacity and engaged residents in actions to address the identified disparities. DRCC gives credit to this approach for increasing community support and buy-in by tapping into residents' experience to identify a set of solutions.

Figure B1. What makes South Park **healthy** and **unhealthy**?



The DRCC also found it critical to report the findings back to the community so that they were the first to hear what was learned, and to let them decide how they wanted the information used and how they wanted their story to be told to—and by—the media.

Overall, the DRCC aims to empower the community with the information they need to advocate for themselves. They work to ensure community members feel acknowledged, while lifting up the voices of those who have been historically underrepresented. In their experience, outside consultants and researchers often lack the ability to relate to the community, so it's important to instead rely on leaders who are already trusted in the community. Community-led research, when done right, creates more equity by centering community knowledge so that residents' perspectives are recognized and they become true partners in the process.

CASE STUDY

Living Cully

Understanding the phenomenon of **“green gentrification”** is essential to those doing work to address pollution, mitigate flooding, increase access to parks and green space, and promote climate resilience. While addressing these problems is essential to the health and well-being of current community residents, it is also crucial that advocates for environmental restoration and investments in green amenities also call for anti-displacement strategies to ensure these initiatives do not result in forcing community residents out of the neighborhood.

In the Cully neighborhood of Portland, Oregon, the **Living Cully** coalition strives to balance environmental investments, equitable development, and anti-displacement goals. They work to ensure that neighborhood change and investment creates more opportunities for people of color and low-income households to live and thrive in Cully and beyond, rather than leading to their displacement as housing costs increase. The Living Cully coalition is a partnership of four community development organizations active in the Cully neighborhood: Habitat for Humanity, Hacienda Community Development Corporation, Native American Youth and Family Center (NAYA), and Verde.

Using Participatory Approaches to Design a Unique TIF District

The coalition is using participatory-research methods to support Cully residents’ participation in a newly proposed **Tax Increment Financing (TIF) district**. The proposed district is an innovation on this commonly-used mechanism to publicly finance community redevelopment—in this case, the district would be under community control in order to direct new funds to designing and structuring anti-displacement strategies for the benefit of local residents.



Seven community organizations are partners in the project, and all have deep relationships and trust in the community. The partners’ long-term work, engagement, and relationships in the community are a key condition for this project to proceed successfully. Their advice to individuals just beginning their work in a community is to start small, focus on building relationships, and build investment in your work by people in the neighborhood first and to remember that an organization is what happens when people organize. Living Cully came out of the community, is led by community members, and that is how they are positioned to tackle problems at this bigger scale.

Together, the partners are facilitating a community-led, culturally responsive process that includes:

- Community outreach activities to increase residents’ awareness and understanding of the factors contributing to gentrification and displacement, as well as proven anti-displacement strategies
- Participatory research approaches to identify local residents’ goals for their neighborhood and their priorities for future investments
- Engagement of community members and organizational partners in a collaborative process to outline the desired governance and administrative structure of the proposed Cully TIF district
- A governance model that puts decision-making power in the hands of community members

Living Cully is planning and implementing a variety of methods to engage with community members in this process. As they implement these activities, they plan to track residents' involvement and make adjustments along the way to ensure robust and diverse representation. These strategies include:

- **Community Education** – In order for community members to provide meaningful input into the TIF District, they first need to understand what a TIF district is and how gentrification happens. Living Cully is developing an education curriculum that they will deliver via online meetings, by mail, and by going door-to-door in the neighborhood.
- **Community Input** – Living Cully seeks to learn what residents' dreams and hopes are for their neighborhood now and in the future and use that input to develop the plan. They will engage residents in this process by hosting a series of focus groups, guided one-on-one interviews, and training a team of community leaders to survey members of their own networks. In addition, they are contracting with a local artist to develop ways for residents to share their vision for the neighborhood through artistic and cultural expression.

To encourage broad participation, Living Cully uses recommended practices like providing a meal and childcare during community gatherings, and offering cash or gift cards to thank participants for

their time. They also plan to engage with residents in locations where people are already meeting and organizing—e.g. PTA, churches, the food bank, and the local grocery store.

Living Cully is deliberately prioritizing its outreach and engagement among Black and Indigenous residents, people of color, immigrants, renters, mobile home residents and other community members who are at risk of displacement. They advise to not be afraid of conflict around who does and doesn't have power in your process, and to instead embrace it. They take the stance that if people who have power are opposed to what you are doing, you should take encouragement that you are doing something right. They keep their primary focus on their community and let that direct where they invest their time and energy.

The Nexus Between Participatory Research and Leadership Development

A larger goal of the project is to build community members' long-term ownership of the TIF plan and to secure their engagement in overseeing the plan's implementation over the next 20 years. Living Cully sees community-led planning as an important community organizing process. Through the planning effort, they are creating more inclusive governance processes and building community knowledge and expertise by creating avenues for people to step into leadership in new ways. They are also building neighborhood identity and cohesion across the diverse residents who see their future bound-up together.

This approach was developed with the help of individuals with backgrounds in urban planning and community organizing, as well as lessons learned through previous community projects. For example, Living Cully understands the importance and value of incorporating art in a community where residents come from different cultures around the world, speak a variety of languages, and have different abilities to engage with the "technical" aspects of a planning project. They also know the importance of using approaches that are relevant to the diverse range of cultures represented in the neighborhood.





CONCLUSION

Community knowledge is essential to equitably and successfully solve problems. CLR can be an effective way to tap into community knowledge about the nature of problems impacting your community and the most feasible solutions—from the perspective of the people who directly experience it. By incorporating CLR into your climate resilience, green infrastructure, stormwater management, and infrastructure investment assessments and planning you can help ensure more successful and equitable outcomes for the community.

For more detailed guidance on how to carry-out a CLR project from start-to-finish, we developed a **CLR PROJECT PLANNING AND FACILITATION GUIDE** which you will find In [Appendix 1](#) of this toolkit. In this guide, you will find detailed guidance on where to start, how to carry out each of three CLR methods we focus on in this toolkit, how to analyze the data you collect, and how to leverage your data for action.



APPENDIX 1:

CLR PROJECT PLANNING
AND FACILITATION GUIDE

1 Establish the Project Team

- ☐ Who will serve on the Project Team and help lead the CLR Project? How will the community help decide who serves on the Team?
 - e.g. impacted community members, community leaders, experts to bring additional validity to your results, etc.
- ☐ What are the Team Members' responsibilities?
 - e.g. attend regular meetings, help plan the project and make decisions throughout the process, support the project's implementation, encourage community members' participation in the project, etc.
- ☐ Will team members be compensated and, if so, how?
 - e.g. salary, grants, stipends, or other ways to compensate team members for their time
- ☐ Who will make decisions and how?
 - e.g. decisions may be made by the project lead or by some or all team members, using consensus, majority vote or, other processes
- ☐ How often will the Project Team meet or check-in, and how will you communicate about the project?



2 Define the Purpose of Your CLR project

- ☐ Answer the following questions with your team and, possibly, other community representatives:
 - Why are you doing a CLR project?
 - What community needs will this CLR project help meet?
 - How will the team and others in the community use the data collected?
- ☐ What methods and strategies will you use to ensure robust community engagement in defining the project's purpose?



3 Scope your CLR Project

- ☐ Answer the following questions with your team and, possibly, other community representatives:
 - What outcome do you seek from your CLR Project? What data will you collect?
 - What data and information will you need to gather in order to fulfill the purpose(s) outlined above?
 - What question(s) do you want your data to answer?
 - How much data do you need to collect?
 - How many data points are required to sufficiently answer your research question(s)?
 - Who should you collect data from?
 - Who needs to provide data to ensure your data sufficiently represents the range of experiences in your community?
 - Where (what geographic area(s)) does the data need to be collected from?
 - Where do you need to collect data to ensure your data sufficiently represents the range of experiences in your community?
 - How frequently will you want to collect data? (e.g. one-time, ongoing for a defined period, real-time)
 - What's your budget?
 - Consider developing an iterative budget process that considers low-medium-high budget scenarios and income generation scenarios.
 - How much person-power do/can you have?
 - How much bandwidth—time, interest, competing priorities, etc.—does your community have to participate?
 - To what degree do you need to verify the validity of the data collected?
 - To what degree does your target audience have access to the technology they'll need to participate (e.g. computers, smart phones, and internet access), if any?
 - To what degree do you want/need to engage directly with community members to form and strengthen relationships, share information, and/or build community engagement?
- ☐ What methods and strategies will you use to ensure robust community engagement in scoping out the project?
- ☐ How are you planning for long term success and continual engagement?



4 Design Your CLR Project

☐ Choose your **CLR Method(s)**

- Using the scoping questions above, and considering the advantages and disadvantages of each of the three methods outlined in the Community-Led Research Toolkit ([Remote Crowdsourcing](#), [Community Mapping Exercises](#), and [Person-to-Person Surveying](#)), which method(s) is/are most aligned with your project needs?
- What methods and strategies will you use to get community input into selecting a CLR method?

☐ Plan Your Project

- Thinking ahead to the analysis of the data you will collect; consider the implications of the types of questions you ask and the answers you'll receive. Asking open-ended questions will lend itself to storytelling and will require qualitative analysis. Providing answer choices (e.g. multiple-choice, scales, rating, etc.) will lend itself to producing graphs and charts and will require quantitative analysis.
- What methods and strategies will you use to ensure robust community engagement in designing the project?

Method 1 – Remote Crowdsourcing Planning Steps

A Research and select your crowdsourcing platform

- ☐ Who can you recruit to your Project Team to advise you on selecting your crowdsourcing platform?
- ☐ What features and technology do community members recommend?
- ☐ Based on the answers to the scoping questions above, should you develop your own custom platform or use an existing platform to collect data from your audience?
 - Research [existing platforms](#) and options for developing custom platforms, consider pros and cons of options including:
 - Cost vs. budget
 - Time/difficulty to set-up/launch platform
 - Ease of use by your audience
- ☐ Test your preferred option. Before making a final decision on your platform, test it for:
 - Ease of use by your audience
 - Access to, and format of, data on the back-end
 - Suitability of data for data-analysis
- ☐ Select the platform you will use to collect data

B Determine the human resources needed to carry out your project and develop a staffing/ volunteer recruitment plan

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Method 1 – Remote Crowdsourcing Planning Steps (continued)

C Develop quality assurance protocols to ensure the quality, and confidence in, your data. Some protocols to consider include:

- ☐ Require “data contributors” to register and provide contact information that you validate before they are given permissions to contribute data on your platform
- ☐ Require “data contributors” to attend training and/or become “certified” before they contribute data on your platform
- ☐ Regularly review a subset of the data submitted to ensure it meets your standards for the type of data and quantity and quality of data you want from your target audiences
- ☐ Validate a certain subset of the data to assess quality and reliability
- ☐ Follow up with a certain percentage of “data contributors” after they submit data to ask questions and learn more about them, their interest in participating, and their data collection and submission process

D Develop your crowdsourcing platform

- ☐ Develop easy-to-use methods for your audience to share the desired data at the frequency you want them to share it (e.g. online forms, smart phone applications, etc.)
- ☐ Develop methods to meet the secondary goals for your project, e.g. form/strengthen relationships within the community, share information with the community, encourage community engagement/advocacy in the issues, etc.

E Plan for robust community participation in your crowdsourcing project

- ☐ Develop an outreach and mobilization plan to ensure sufficient participation to support your goals and intended outcomes (e.g. number and demographics of participants, location of participants, amount of data shared by participants, etc.) e.g.:
 - What audiences do you want/need to participate? Who do you need to participate to get the data you need? Consider various demographics including age, race, socio-economic status, languages spoken, and location
 - How often/when do you want your audience to submit data?
 - How you will connect your project to your audience’s values, i.e. how will your project—and their participation—support something they find important or value?
- Develop the following to mobilize your target audience(s) to participate at the desired level:
 - *Message – Craft a call to action that connects with your audience’s values*
 - *Messenger – Recruit a messenger(s) your audience trusts to deliver your call to action*
 - *Delivery – Deliver your call to action in spaces - online, in the community, person-to-person—where your audience is likely to receive them and at a frequency that compels them to participate as often as needed*
 - *Access – Make submitting data through your crowdsourcing project easy and simple, with as few steps, as possible*
 - *Find ways to reward participation*

Method 2 – Community Mapping Planning Steps

A Design your community mapping process

- ☐ Based on the answers to the scoping questions above, what process will you use to gather data at your community mapping event(s)?
- ☐ What human resources are needed to carry out your community mapping process?
 - Develop a staffing/volunteer recruitment plan to meet your needs
- ☐ Who will facilitate your community mapping process?
 - Skilled facilitators can help design and facilitate an equitable process to engage all participants in achieving your community mapping goals
- ☐ How will you ensure that your process is equitable and allows all attendees to fully participate?
- ☐ What base maps will you use, if any?
 - If using “base” maps to build your community maps, determine what features they should include and consider:
 - any unintended consequences that may emerge from features you include
 - readability/usability of your base maps by your audience, making sure they are user-friendly
- ☐ What languages do your participants speak/read?
 - Plan to have materials and facilitators who speak/use those languages
- ☐ How do you need your attendees to prepare in advance, to come equipped to share the data you need? How will you communicate this with them?
- ☐ What methods will you use to meet the secondary goals for your project, e.g. form/strengthen relationships within the community, share information with the community, encourage community engagement/advocacy in the issues, etc.
- ☐ What QA/QC protocols will you use to ensure the quality, and confidence in, your data. Some QA/QC protocols to consider, include:
 - Require participants to register and provide contact information so you can follow up, ask follow up questions, etc.
 - Provide training at the beginning of your mapping session to develop shared understanding of the process and QA/QC protocols you want participants to follow
 - Monitor the mapping process to ensure participants are sharing the type of data and quantity of data you are looking to gather
 - Have participants “tag” the data they share so you can contact them for follow up questions
 - Validate a certain percentage of data that is contributed to assess quality and reliability

B Plan for robust participation in your community mapping project

- ☐ Develop an outreach and mobilization plan to ensure sufficient participation to fully support your intended outcomes and goals for participation, such as participant numbers, demographics, representation, etc.) e.g.:
 - What audiences do you want/need to participate? Who do you need to participate to get the data you need? Consider various demographics including age, race, socio-economic status, and geography/residence

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Method 2 – Community Mapping Planning Steps (continued)

- How you will connect your project to your audience’s values, i.e. how will your project—and their participation—support something they find important or value?
- Develop the following to mobilize your target audience(s) to participate:
 - *Message* – Craft a call to action that connects with your audience’s values
 - *Messenger* – Recruit a messenger(s) your audience trusts to deliver your call to action
 - *Delivery* – Deliver your call to action in spaces—online, in the community, person-to-person—where your audience is likely to receive them
 - *Assess the barriers to participation in your community mapping process and find ways to avoid or minimize them*
 - *Find ways to reward participation*

Method 3 – Person-To-Person Survey Planning Steps

A Design your person-to-person survey process

☐ Based on the answers to the scoping questions above:

- How many people will your survey?
- Who will you survey?
 - Identify target audiences you want/need to participate, e.g. demographics of participants; location/address/neighborhood/geography of participants; participant experience/knowledge; etc.
- Where will you approach residents?
 - Determine whether surveyors will go door-to-door to residents’ homes, approach people outside community gathering places such as popular stores, markets, schools or places of worship, or a mix of the two.
- What questions will you ask?
 - Are questions clear, concise, and easy to understand without a science background?
- What languages do your participants speak?
 - Plan to have surveyors who speak those languages and ask questions in those languages

☐ What human resources are needed to carry out your project?

- How many surveyors will you need?
- What skills/experience do your surveyors need?
 - How will you recruit surveyors with required skills/experience?
 - How will you train surveyors in your survey methodology?
- What other human resources are needed to carry out the project?
 - Develop a staffing/volunteer recruitment plan to meet your needs

☐ How will you ensure that your process is equitable and allows all participants to fully participate?

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Method 3 – Person-To-Person Survey Planning Steps (continued)

- ☐ What methods will you use to meet the secondary goals for your project, e.g. form/strengthen relationships within the community, share information with the community, encourage community engagement/advocacy in the issues, etc.
- ☐ What QA/QC protocols will you use to ensure the quality, and confidence in, your data. Some QA/QC protocols to consider, include:
 - Provide ongoing training and mentoring to surveyors
 - Regularly review a percentage of data collected to ensure it meets your standards for the type of data and quantity of data you want from your target audience
 - Validate a percentage of data that surveyors collect to test for quality

B Plan for robust participation in your person-to-person survey project

- ☐ Develop a pitch to ensure sufficient participation to fully support your intended outcomes and goals for participation (number of participants, demographics/representation of participants, etc.) e.g.:
 - How you will connect your survey to your audience's values, i.e. how will your project—and their participation—support something they find important or value?
 - Develop the following to encourage your target audience(s) to participate at the needed level:
 - *Message – Craft a request to participate that connects with your audience's values*
 - *Messenger – Select surveyors your audience trusts*
 - *Analyze the barriers to participation in your survey and find ways to avoid or minimize them*
 - *Find ways to reward participation*



5 Implement Your CLR Project

- ☐ While you implement your CLR Project, follow basic project management protocols and adjust as needed to ensure you are meeting your goals throughout the implementation phase, including asking the following questions:
 - Are you meeting your participation goals related to number of participants, level of participation, and participant demographics? If not:
 - What adjustments can you make to your outreach plan including message, messenger, and message delivery?
 - What are the barriers to participation, and can you further address them?
 - Are there other, or additional, ways you can reward participation?
 - Are you getting the quantity and type of data you need, and if not, what adjustments can you make?
 - Are QA/QC protocols being followed? Do you have confidence in your data? If not, what adjustments can you make?
 - Are your project expenses and income aligned with your budget? If not, what adjustments can you make?
 - Are you meeting secondary objectives you've identified for your project? If not, what adjustments can you make?
 - Are you following up with participants, or interested participants, to answer questions, solve problems, maintain engagement, etc.?
- ☐ What methods and strategies will you use to ensure robust community engagement in this step?



6 Data Analysis and Data-to-Action

- ☐ Do you have, or do you need to recruit, experts to support your analysis?
- ☐ Will you do quantitative or qualitative analysis?
 - Qualitative analysis for answers to open-ended questions—identification of common themes and sub-themes and stories that illustrate common experiences, unique perspectives, and ideas
 - Quantitative analysis for answers to questions with pre-selected choices (i.e. multiple choice, scales, rating, etc.)—calculations of averages, means, or sum totals of your data
- ☐ How should you organize the data for your analysis? e.g.
 - By question
 - By answer
 - By location of individual providing data
 - By demographic
- ☐ What is the best way to visualize the data you collected? e.g.
 - Maps
 - Storytelling e.g. video, audio, written word
 - Charts or graphs
 - Infographics
- ☐ When and how will you share your CLR data and analysis with the community? What opportunities to provide feedback will you offer and how will you incorporate feedback received?
- ☐ How will you integrate CLR data and analysis into your advocacy and campaigns?
 - Who is/are your target audience(s) and how do you want to communicate what you learned to help them build a deeper understanding of the community's lived experiences?
 - Who has decision-making power to address/fix your issue(s)?
 - How will you use your data and analysis to motivate decision makers to address/fix your issue? e.g. share your data/analysis with the media, grassroots advocacy campaign, paid media campaign, etc.
 - How will you mobilize project participants and other community members to participate as advocates?
- ☐ What methods and strategies will you use to ensure robust community engagement in this step?

APPENDIX 2:

PUBLIC LAB: A COMMUNITY OF SUPPORT FOR PEOPLE IN ALL STAGES OF THE ENVIRONMENTAL INVESTIGATION PROCESS

Public Lab is a worldwide community and platform where people collaborate on local environmental issues. From asking initial questions on topics of concern, through designing and implementing monitoring techniques, to developing advocacy pathways, Public Lab is a community of support for people in all stages of the environmental investigation process. People come to Public Lab to find and share knowledge, equipment, and techniques for their environmental investigations, and to connect with others.

Public Lab was founded in the wake of the 2010 BP oil disaster during an information blackout for residents and the rest of the world. In response, a group of concerned locals, environmental advocates, designers, and social scientists lofted “community satellites”—instruments built using balloons, kites and digital cameras—over the area of the spill to collect real-time data about its impact. Through an open source platform, contributors stitched over 100,000 aerial images into maps of the Gulf of Mexico coastline before, during, and after the oil spread. These high-resolution maps were featured by BBC and New York Times, among others, allowing residents to speak their truth about what was happening on the Gulf Coast. The success of this grassroots mapping effort galvanized the group to found Public Lab as a research and social space for the development of low-cost tools and practical methods to support community-based environmental monitoring and assessment.

The Public Lab website is a hub for community-based researchers to:

- Learn new ways to investigate and document issues seen in the local environment.
- Plan field work, analyze results, and learn how to report environmental impacts.

- Explore and improve techniques for documenting environmental issues.
- Follow environmental topics of interest.
- Network with others across different geographies, types of expertise, and backgrounds.
- Ask and answer questions about environmental concerns.
- Increase visibility on local environmental issues.
- Share research and data.

There are a number of ways to get started on Public Lab:

- Join an **Open Call** that is hosted weekly to welcome newcomers and connect people to resources and ideas available on Public Lab.
- Join a monthly **Open Hour** call for a discussion on a selected topic.

The Public Lab website offers an immense set of resources and support:

- Post a question using the **Question & Answer** forum.
- Post an **Issue Brief** to share about an environmental concern and reach out to others for ideas.
- Search **methods** for environmental monitoring ideas.
- Read stories from across the network on **the Public Lab Blog**.
- See the latest activity across the site on **the Dashboard**.
- Contribute ideas and support other people’s environmental exploration by **following tags** on topics that interest you or checking out the **requests** people have posted.
- **Donate** to Public Lab and help to grow the community and resources available.

APPENDIX 3:

REFERENCES AND RESOURCES

COMMUNITY-LED RESEARCH

- [Stormwater Infrastructure Resilience and Justice Laboratory](#) – [Dr. Marccus Hendricks](#), Director (University of Maryland School of Architecture, Planning, and Preservation)
 - [Participatory Action Research: Tools for Disaster Resilience Education](#)
 - [Interdisciplinary Citizen Science and Design Projects for Hazard and Disaster Education](#)
- [Community Engagement, Environmental Justice, and Health Laboratory](#) – [Dr. Sacoby Wilson](#), Director (Maryland Institute for Applied Environmental Health)
 - [Use of community-owned and -managed research to assess the vulnerability of water and sewer services in marginalized and underserved environmental justice communities](#)
 - [The West End Revitalization Association’s community-owned and -managed research model: development, implementation, and action](#)
- [International Accountability Project](#)
 - [Community Action Guides](#)
- [The Urban Institute](#)
- [Community Research Toolbox \(Advancement Project\)](#)
 - [A Short Guide to Community Based Participatory Action Research](#)
 - [Community Research Toolkit](#)
- [Research Justice Institute \(Coalition of Communities of Color\)](#)
- [The Public Science Project](#)
- [Popular Education](#) – “a people-oriented and people-guided approach to education” (Paulo Freire)
- [Arnstein’s Ladder of Citizen Participation](#) (Sherry Arnstein)
- [Differences Between Community-Based Research, Community-Based Participatory Research, and Action Research](#) (San Francisco State University)
- [Community-Owned and Managed Research \(COMR\): Policy recommendations for capacity building of community-based organizations to address health disparities and risks created by environmental hazards](#) (Dr. Omega Wilson)
- [Community-Engaged Research Primer](#) (US Environmental Protection Agency)
- [Participatory Research: Strategies and Tools](#) (Ajit Krishnaswamy)
- [Developing and Sustaining Community-Based Participatory Research Partnerships: A Skill-Building Curriculum](#) (University of Washington)
- [Handbook of Community-Based Participatory Research](#) (Oxford University Press)
- [Detroit Urban Research Center](#)
- [CBPR Institute](#)
- [Understanding Participatory Action Research: A Qualitative Research Methodology Option](#) (Cathy MacDonald, Dalhousie University)
- [Clearing The Path – Citizen Science and Public Decision Making in the United States](#) (Commons Lab, Wilson Center and Environmental Law Institute)

- [Public Participation in Scientific Research: a Framework for Deliberate Design](#) (Shirk, Ballard, Wilderman, Phillips, Wiggins, Jordan, McCallie, Minarchek, Lewenstein, Krasny, and Bonney)
- [Citizen Professionals: The Effective Practices of Experts Helping Community Organizations](#) (Sarah Hippensteal Hall)

COMMUNITY MAPPING

- [Best Practice Briefs: Community mapping](#) (Michigan State University)
- [Community Mapping Toolkit](#) (Preston City Council)
- [Equitable Development Toolkit: Community Mapping](#) (Policy Link)
- [Good Practices in Participatory Mapping](#) (International Fund for Agricultural Development)
- [National Community Mapping Institute](#)
- [National Community Mapping Institute and Mapper](#)
- [Mapping the Hidden Hazards: Community-Led Spatial Data Collection of Street-Level Environmental Stressors in a Degraded, Urban Watershed](#) (Na’Taki Osborne Jelks, Timothy L Hawthorne, Dajun Dai, Christina H Fuller, Christine Stauber).
- [Maps for Community Organizing](#) (Advancement Project)
- [Open Forum on Participatory Geographic Information Systems and Technologies](#)
- [Practical Ethics In Participatory Geographic Information Systems](#) (available in 12 languages via this link)
- [Stakeholder Engagement Strategies for Participatory Mapping](#) (National Oceanic and Atmospheric Administration (NOAA))

PERSON-TO-PERSON SURVEYING

- [Community Assessment for Public Health Emergency Response \(CDC\)](#)
- [Preparing and Fielding High-Quality Surveys \(Urban Institute\)](#)
- [The Ultimate Guide to Effective Data Collection \(SocialCops\)](#)

REMOTE CROWDSOURCING

- [The Challenge of Verifying Crowdsourced Information – A better way to sift through a river of data](#) (Columbia Journalism Review)
- [Crowd-Sourced Data Wiki](#) (World Bank)
- [Mobile and Smart Phone Ownership by Demographic statistics](#) (Pew Research Center)
- Remote Crowdsourcing Platform Examples
 - [Bird’s Eye View GIS](#) – trains and uses Fulcrum to conduct Community Health Maps (CHM) which provides information about low/no cost mapping tools. It was developed by the [National Library of Medicine \(NLM\)](#) with a focus on increasing capacity within under-served and other at-risk communities.
 - [Fulcrum](#) – Create iOS & Android mobile forms in just minutes for fast, easy data collection anywhere, anytime
 - [Google Forms](#) – Develop and deploy surveys to collect and organize information
 - [Survey 123 for ArcGIS](#) – Part of the ESRI Geospatial Cloud, Survey123 for ArcGIS is a form-centric solution for creating, sharing and analyzing surveys. Use it to create smart forms with skip logic, defaults, and support for multiple languages. Collect data via web or mobile devices, even when disconnected from the Internet. Analyze results quickly, and upload data securely for further analysis.
 - [Ushahidi](#) – a social enterprise that provides software and services to numerous sectors and civil society to help improve the bottom-up flow of information. They believe if people who have been marginalized are able to easily communicate to those who aim to serve them... then those organizations and governments can more effectively respond to their communities’ immediate needs... while simultaneously bringing global attention to their problems through the aggregation of their voices.
 - [Water Reporter PRO](#) – Manage data collection campaigns and rapidly deploy custom data collection forms

ADDITIONAL COMMUNITY-LED RESEARCH EXAMPLES

- [Community engagement for climate-ready communities: The role of community based participatory research \(CBPR\) in local climate adaptation planning and evaluation](#) (Exeter, New Hampshire)
- [Community Research Collective and “Mapping the Water Crisis”](#) (We the People of Detroit)
- [Constructed Efforts – Building Resilient Communities in the Los Angeles Gateway Cities](#) (CalPoly Pomona Department of Landscape Architecture)
- [Food Dignity: Action Research On Engaging Food Insecure Communities And Universities In Building Sustainable Community Food Systems](#) (Food Dignity)
- [From Floyd to Matthew: Vulnerable Populations Respond to Flooding in Eastern N.C.](#) (Jasmine Hayes, MPH)
- [Healthy Neighborhoods Study](#) (Conservation Law Foundation and Massachusetts Institute of Technology Department of Urban Studies and Planning)
- [Hey Duwamish](#)
- [I See Change](#)
- [Identifying Violations Affecting Neighborhoods \(IVAN\) Online](#) (Comite Civico Del Valle)
- [Jamaica Bay Community Flood Watch Project](#) (Science and Resilience Institute at Jamaica Bay)
- [King Tides Project](#) (University of North Carolina)
- [Our People, Our Planet, Our Power – Community Led Research in South Seattle](#) (Got Green and Puget Sound Sage)
- [Promoting Healthy Public Policy through Community-Based Participatory Research: Ten Case Studies](#) (Policy Link)
- [Sea Level Rise Phone App](#) (Wetlands Watch)
- [Using Community-Led Research to Address Environmental Injustice](#) (Conservation Law Foundation)
- [What’s your water level?](#) (NOAA)