

# **Developing Engagement Principles for Climate and Health Research: An Example from a Community-Informed Research Project**

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## **ABSTRACT:**

### *Background*

Characterizing principles of co-learning and stakeholder engagement for community-engaged research is becoming increasingly important. As low-income communities, Indigenous communities, and communities of color all over the world disproportionately feel the social, health, and economic impacts of environmental hazards, especially climate change, it is imperative to co-learn with these communities, so their lived experience and knowledge guide the building and sharing of a knowledge base and the development of equitable solutions.

### *Objectives*

This paper presents recent theoretical and practical support for the development of co-learning principles to guide climate adaptation and health equity innovations. We describe this development process, which included both a literature review and stakeholder engagement. The process and the resultant set of principles are relevant to community health partnerships. Adopting principles to guide design, development, and implementation prior to commencement of community health projects will help to ensure they are non-extractive and achieve maximum benefits for beneficiaries.

### *Methods*

A multi-university research team adopted this approach at the outset of a research endeavor in 2022. The team is currently conducting principle-based field research in non-U.S. locations where climate hazards and structural inequities have created health disparities.

### *Conclusions*

The team's advisory board and its funder expressed enthusiasm about the development of these principles and about the prospect of Western researchers conducting a project in a way that values Indigenous and traditional communities as partners and knowledge-holders and has the potential to bring benefits to the communities involved, including increased capacity for activities promoting health, equity, and well-being.

**KEYWORDS:** Environmental Health, Health disparities, Power, Health, Process, Social Change, Social Conditions

## ***I. Background and Objectives***

Interest in conducting community-engaged research, especially in the climate adaptation and health equity fields, has grown greatly over the past five years (1). The need to characterize the key principles of co-learning and stakeholder engagement is critically important for both climate change and public health research and interventions. As the impacts of many environmental hazards and risks, especially climate change, are disproportionately felt in the Global South, and in Indigenous, lower-income, and communities of color everywhere in the world, community-engaged research efforts will assure that the lived experience and knowledge of these populations are understood and drive equitable climate adaptation and mitigation solutions. Given the historic marginalization of these communities and their disenfranchisement from decision-making processes, there is a critical need to build new approaches for their authentic engagement (2). When research is not thoughtfully and thoroughly engaged with the communities it claims to serve, it may cause more harm than good, damage trust, and stymie project goals (3).

There are a few examples of previously published guidelines for non-extractive stakeholder engagement in research, commonly developed by or in collaboration with Indigenous communities. One such example is Kūlani Noi'i, a set of co-produced guidelines to help researchers establish reciprocal, non-extractive research projects in Hawai'i (4). The Indigenous Advisory Council of the Arctic Rivers Project in the Yukon Watershed in Canada and Alaska also developed knowledge co-production project protocols, which project and research staff agreed to follow, to “ensure that Indigenous knowledge and perspectives are respected, valued, and acknowledged on an equal basis with western science and are included

throughout the entire project” (5). The Civic Laboratory for Environmental Action Research (CLEAR) laboratory in Canada has developed a set of guidelines to help their researchers conduct science more equitably, collaboratively, with collective consent from all involved, and informed by Indigenous knowledge and methods (6). Lastly, the Environmental Justice Practitioners’ Working Group, led by the West End Revitalization Association in North Carolina, put together a Memorandum of Understanding/Memorandum of Agreement for grassroots communities to use when collaborating with universities and formalize equitable, non-extractive engagement (7). We hope that our principles will add to this growing body of work.

The principles of stakeholder engagement presented here were developed to inform the Robert Wood Johnson Foundation-funded project, *Advancing U.S. Adoption of Innovative Strategies to Intersect Health and Equity with Climate Change Action*. The project, conducted between 2022-2024, seeks to identify and translate “bright spots” of efforts outside the United States that incorporate health equity outcomes into climate change action that have the potential to advance sustainable and transformative policy, systems, and environmental change in the U.S. The project assesses the extent to which these approaches offer promising replicability in the U.S. and communicates the potential for replicability to key U.S. government, nonprofit, and foundation stakeholders.

This climate and health-focused project embodies a partnership approach in two ways. First, the project was guided from the outset by a set of advisors representing international community-based organizations and technical/government perspectives. These advisors are consulted as

partners in the design, implementation, and dissemination of the study, and were essential to the development of the principles described in this paper.

Given the interaction with community stakeholders both abroad and in the U.S., this project required guidelines and recommendations for how to pursue research in a way that is sensitive to cultural differences, provides co-benefits for community stakeholders, and is as non-extractive as possible.

For these reasons, the objectives of this paper are to present a focused literature review on co-production of knowledge and non-extractive community engagement and to describe a set of principles for stakeholder engagement that we developed to guide research for a university-led international project focusing on climate adaptation and health equity.

## ***II. Methods***

### ***1. Focused Literature Review***

To identify and summarize recent innovations in the body of knowledge on co-production of knowledge and community engagement principles to inform our work, we focused on articles from the past ten years. We sought out both peer-reviewed and grey literature that addresses co-production of knowledge in the context of community-based projects that work to mitigate negative impacts of climate change as well as address health equity and structural harms. We also recognize that historically marginalized “environmental justice communities” have curated, generated, and disseminated a large body of knowledge on community science, participatory action, and Indigenous practices. Theory and research have built on these contributions, but

Black, Indigenous, and people of color activists and practitioners of color have not always been credited and their work has not been uplifted. As scholars and activists of color work to advance citational justice, we also wanted to ensure we did not just cite scholars of color, but instead use their scholarship to shape our intellectual engagement (8). To ensure we did not replicate extractory practices, we sought out literature written by Black, Indigenous, and practitioners of color for inclusion. In the sections below, we summarize key recent literature in the areas of co-production of knowledge (or co-learning) and non-extractive stakeholder engagement.

#### **a. Co-Production of Knowledge (Co-Learning)**

Research on the principles of co-production of knowledge has grown over the past decade. The definition of “co-production of knowledge” means different things in different contexts and cultures. Nörstrom et. al. (2020) define co-production as “iterative and collaborative processes involving diverse types of expertise, knowledge and actors to produce context-specific knowledge and pathways towards a sustainable future” (9). Co-production, Polk (2015) added, produces socially robust results, which are easier to translate to the public and increase mutual learning, trust, shared knowledge between participants, and the “ability to work together and articulate joint goals” (10). In a recent collection on co-production of knowledge in the *BMJ*, Redman et. al. (2021) elaborated on these earlier principles to clarify that co-production is context-dependent; requires trust, genuine power sharing, and respect for different expertise; and needs a radical funding approach to support long-lasting, complex partnerships (11).

Accompanying this evolving definition, principles and frameworks have been developed over the past decade to guide researchers in the co-production of knowledge with stakeholders

and local communities. In 2014, Akpo et. al. described co-production as a “joint and free collaboration of stakeholders” and emphasized that a common language between all stakeholders is necessary for mutual understanding of the project goals and issues that the project aims to address” (12). Polk (2015) commented that researchers should move research activities out of academic spaces into a joint research-practice space, where all actors share responsibility and a purpose for the work (10). Although a shared understanding is necessary, researchers must understand that stakeholders’ mental models are different, and collaborators may not be in total agreement all the time (13). The pursuit of joint goals cannot merely ignore outliers. Stakeholder engagement principles must acknowledge that discord could arise and include a process to address minority opinions. Almost all authors writing on co-production strongly emphasized that researchers must rework their original ideas of what constitutes “scientific expertise” and be open to new approaches to conducting research (14–16).

Nörstrom et. al. (2020) recommended four principles researchers should use when conducting co-production of knowledge (9). Co-production should be 1) situated within the social, political, and economic context in which projects are embedded; 2) pluralistic and “must explicitly recognize the multiple ways of knowing and doing,” including engaging with power dynamics; 3) goal-oriented, with clearly defined and meaningful goals and a collective understanding and measure of success from all stakeholders, and 4) interactive, with frequent, non-tokenized interactions and dialogue among all participants (9). Many scholars agree that boundary spanners who can navigate both academic and practitioner spaces, while often hard to find, are essential in helping convene multiple different stakeholder groups; translate knowledge across groups; and mediate conflict (9,13,15,17). Engagement of “local



champions” of the project, who are highly regarded and represent diverse perspectives, as well as the flexibility of researchers in implementation, also help facilitate effective co-production (16).

David-Chavez and Gavin (2018) built on this work to create an analytical framework that researchers can use to assess responsible research practice with Indigenous communities. They created a scale for researchers to examine levels of Indigenous community participation in research practice, emphasizing the common theme of involving communities in all stages of research, as “each stage in the research process holds a unique purpose and impact for the participating community members” (18). Prompted by calls from Indigenous activists and scholars, the authors also identified six indicators for researchers to measure the quality of their community engagement. These indicators include access; relevance to Indigenous community members; credit to knowledge holders for contributions; following of ethical guidelines; cause no harm; and outcomes for Indigenous communities (18). David-Chavez and Gavin recommended the widespread adoption of these indicators to avoid harm; increase the benefit of research to communities; and shift research standards and practice to improve the quality and relevance of research to Indigenous communities (18). Latulippe and Klenk (2020) further call for Western researchers to “move over to make way for Indigenous research leadership on Indigenous lands” and give power and privilege to Indigenous scholars, address past harms, and benefit Indigenous nations (19).

Djenontin and Meadow (2018) outlined four key stages of co-production projects in which stakeholders should be meaningfully involved to work toward a common goal (16). These stages

are the setting-up; the development and design; the implementation; and the dissemination and management of outputs. They recommended that the research team be carefully selected to facilitate successful and non-extractive co-production work (16). In the design and development stage, stakeholders must be involved in co-developing research questions and managing financial decisions (16). During project implementation, researchers must continuously include engagement activities and culturally appropriate communication strategies and integrate local knowledge through every step of the process (16). Lastly, in the output management and dissemination stage of the process, Djenontin and Meadow commented that research project outcomes must be accessible to stakeholders (16). These considerations will ensure that co-produced knowledge is viewed as legitimate by both policymakers and stakeholders and that the science produced is usable, actionable, and accessible to the people who will benefit from it the most. We adapted these stages when developing our own principles of engagement.

#### **b. Non-extractive Stakeholder and Community Engagement**

In recent years, foundation funders such as Ibis Reproductive Health and U.S. federal government funders such as the U.S. Environmental Protection Agency (EPA) have encouraged or required stakeholder and community engagement in their grants and researchers have increasingly sought to embed it in their projects. Ibis conducts research to “advance sexual and reproductive autonomy, choices, and health worldwide” and is committed to “building research projects that are community-driven and/or responsive to community needs” (20). Their core research principles include mutual accountability, including sharing credit and research results with community partners; shared decision-making to build power with their partners; and

ensuring that the results of their research make a positive impact on their community partners (20).

Government funders are also increasingly calling for non-extractive stakeholder engagement in their requests for proposals. In a recent Notice of Funding Opportunity issued for grants up to \$20 million to eligible organizations under the Environmental and Climate Justice Community Change Grants Program, the U.S. EPA requires all applicants to develop a community engagement plan and a collaborative governance plan to engage and respond to community members throughout project implementation (21). This funding opportunity also requires applicants to outline how their projects will build community strength and economic prosperity and specifically support populations “who are acutely exposed to and impacted by climate, pollution, and weather-related threats, and / or who exhibit acute vulnerabilities to the impacts of environmental pollution” (21). These are just two examples of growing funder interest in and requirement of non-extractive community engagement in climate and public health research and programming, across both the government and nonprofit sectors.

Key to the success of community engagement efforts is defining a framework for conducting stakeholder and community engagement up front and measuring its impact. While different disciplines define community engagement differently, Pratt and de Vries (2018) recommended that when conducting community engagement in low- and middle-income countries, the earlier researchers engage, the better to minimize the impact of power disparities between community members and researchers (22). Processes of shared decision-making include providing equal opportunities for all parties to express their views and discuss different

perspectives (22). These processes must also center those who are most affected and recognize them as substantive and equal contributors to project design, implementation, and interpretation.

An expert committee at the National Academy of Medicine built on this framework and developed a conceptual model to assess meaningful community engagement and advance health equity, both in the United States and globally (23). They recommended that to drive positive impact in communities, practitioners must measure what is meaningful to the *community* and not limit themselves to what is currently being measured. When designing a model to assess community engagement, practitioners must be flexible; define health holistically and in a way that resonates with the community; embed equity in every step of the project; ensure the community sees itself in the definitions used; and emphasize the outcomes of community engagement. Engagement must be grounded in trust, inclusive, and culturally centered. This will strengthen partnerships, expand knowledge, improve health, and ultimately lead to thriving communities (23).

Crowshoe and Lertzman (2020) note that sustainability-focused work could promise a “shared ethical space” between Indigenous and industrial-settler societies, but only if “authentic intercultural dialogue and exchange” occurs that informs a set of foundational principles from an Indigenized perspective (24). Hood et. al. (2023) describe public health programs that employ “culturally informed community engagement” that intersects asset-based frameworks with Yosso’s Community Cultural Wealth (CCW) framework (25). This “inclusive science” lens intentionally de-centers ethnocentric perspectives and actively seeks to understand and integrate

existing cultural assets that can support health equity and resilience in traditionally marginalized communities (25).

Scholars agree that in both co-production of knowledge and stakeholder engagement, the process is as important as the outcome (22). Researchers must be open to rethinking their understanding of “scientific knowledge,” respect cultural norms and practices, and ensure that shared decision-making with local community stakeholders toward mutually agreed-upon goals is practiced from the design phase of the project. There also is a need to enumerate boundaries for what is *not* appropriate in stakeholder engagement processes. This will ensure not only greater satisfaction in the results from all involved, but also greater accessibility and usability of the research to the community and community-validated and informed policymaking. This will lead to greater impact.

We note caveats. This review is not intended as a complete review of all the major concepts, theories and findings related to these topics. There are several concepts, some of them important to the broader discussions about co-production, co-learning and community engagement, that we did not explore here. It also does not include the large body of literature on Community-Based Participatory Research (CBPR), as the project on which this paper is based was not a CBPR project.

However, some CBPR concepts are incorporated into the list of principles described in the following section. These include aspects of the six principles of CBPR as outlined by the U.S. National Institute of Environmental Health Sciences, including promoting active collaboration

with communities throughout the research; ensuring results are disseminated in usable and actionable formats to communities; creating an environment to foster co-learning; and ensuring culturally appropriate research strategies (26). These guidelines were adapted and expanded on in the principles outlined in Figure 1 to reflect knowledge co-production theory's more holistic and anti-colonial understanding of non-extractive stakeholder engagement.

## ***2. Development of Stakeholder Engagement Principles***

The set of principles for stakeholder engagement in research presented in this paper were informed by the literature as well as input from the project's community and technical advisory groups (CAG and TAG), who represent fields related to this research, including representatives from community-based organizations and Indigenous groups. Djenontin and Meadow's (2018) four stages of co-production first provided the basic structure for the organization of our Principles of Engagement table (see *Figure 1*), as these stages are similar to those commonly used by the co-production researchers cited as well as by our team members (16). We then identified key themes and recommendations for non-extractive stakeholder engagement and co-production of knowledge from each of the papers mentioned in the above literature review, listed, and compared them, and compiled common themes across all papers for inclusion in *Figure 1*. We also included principles mentioned in only one or two papers, such as bringing co-produced research into a joint research-practice space and Indigenizing principles of engagement to prioritize Indigenous leadership, knowledge, and perspectives, if CAG and TAG members also highlighted these principles as important and worthy of inclusion (10,24).

The formation of the two advisory groups was incorporated into the design of the research to keep researchers accountable to the communities with which they were engaging. The CAG members have lived experience of environmental and climate injustice and work directly with communities disproportionately impacted by climate change. They are staff at nonprofit organizations across the United States that work with frontline and fenceline communities to adapt to the effects of climate change, promote environmental justice, and improve health in their communities. CAG members are most critical in providing feedback about how to conduct the research in the least extractive way possible and in ways that provide tangible benefits for the community organizations with whom the project is engaged. The TAG members are internationally-recognized experts on climate change, environmental justice, and health equity. They bring valuable perspectives as researchers who have engaged with community stakeholders on technical climate adaptation and health projects.

The research team created a list of thirty-five candidates for the advisory groups, identified through research and through their own networks, with expertise in community-based climate adaptation and mitigation, public health, health equity, sustainability, and environmental justice. Twelve CAG members and fifteen TAG members were invited to join the research project as paid advisors in October 2022. Eight CAG members and nine TAG members accepted the invitations and meetings began in November 2022.

Twelve advisory committee members provided comments on the principles during open discussion at CAG and TAG meetings, via email, and during one-on-one meetings with project staff. The research team obtained approvals for questions and interview protocols from the Institutional Review Boards of both Rutgers University and Florida State University.

At an advisory committee meeting in the early months of the project, members reviewed the draft set of engagement principles, along with the literature review supporting development of the principles, and provided useful comments. Members were asked “What are your opinions about the draft set of engagement principles? What is missing? What should be modified?” After incorporating that feedback, as described in paragraphs below, the team presented revised principles at subsequent meetings and asked for any remaining objections before approving them as a final set. Strongest concerns had been satisfied, and an assurance that the principles would be a “living” document, with evaluation built into the principles themselves, that could be revisited at any time later in the project, at anyone’s request, was helpful in relieving any remaining concerns about any items that may not have had full consensus. It is important to note that a majority of the advisory committee members viewed the draft principles favorably, some noting that they would apply them to other research projects or share them with students. These members said it “was important to put the principles in writing” and that they were “very well-done.”

A key area of critique revolved around prioritizing consensus-building and respect for differences between stakeholders over an emphasis on a common language between community members and researchers. CAG members stressed that too much emphasis on the creation of a common language between all stakeholders has a homogenizing effect and may minimize needed diversity in the project. Instead, researchers and community stakeholders should attempt to create a shared understanding of the project and prioritize the voices of those most marginalized or



affected by the issue. A member said that it is important “not just to understand, but to design for diversity in stakeholders’ mental models and allow space for wildly differing perspectives.”

CAG members also emphasized the importance of ownership of local knowledge, with one member commenting that “co-creating knowledge does not acknowledge that the knowledge already exists.” The team revised language in the principles to reflect a strong acknowledgement of local knowledge.

Advisory members also highlighted the importance of a well-thought-out conflict resolution process that prioritized the needs and voices of those most marginalized. Specifically, one member noted “I miss a specific bullet point on fair and just conflict management and resolution that centres those most affected or marginalised.” The team then modified the Principles of Engagement table to include this bullet. Another noted that the principles should describe how “discord and mistrust will be approached or acknowledged.” A final important area of feedback was on the issue of resources provided to community partners in research. One member reflected that, though, there is “no way to pre-determine the resources that should be budgeted to ensure a fair and thorough process, given every project is different.” One member discussed that a research team could provide three categories of resources: wisdom, work support, and wealth. The advisor went on to suggest that researchers must think carefully about what contributions are feasible, including “hard conversations” with funders about what is possible, and be transparent with community representatives about what is offered before requesting any interviews. The research team responded that it will be important to bring resources and connect community organizations with funders to sustain local action.

Incorporation of all of the feedback from CAG and TAG members into the set of principles ensured that the principles were relevant, non-extractive, and grounded in lived experience of those doing participatory research with communities. The principles provide a foundation for non-extractive stakeholder engagement and co-production of knowledge in research projects that affect local communities. In this project, the principles will be used to guide how researchers conduct key informant interviews, evaluate case studies, and communicate results to stakeholders. Thus, the principles are organized into a nested set of four categories/types: those that 1) are overarching and apply throughout the project (umbrella), and those that fall “under the umbrella” and are guided by the overarching principles, but modified to apply specifically in the 2) design, 3) delivery, and 4) dissemination and evaluation stages of the project. (See *Figure 1*).

The “Overarching” category refers to principles that researchers should continually adhere to throughout the duration of the project and actively consider during each of the project stages. The “Design” category refers to principles that researchers should consider when designing a research project, including compiling a research team, developing research questions and the study design, recruiting a study population, and conducting initial outreach to involved communities. The “Delivery” category refers to principles that researchers should use during the implementation of their projects, while the “Dissemination and Evaluation” category contains principles that researchers should adhere to after the formal research period ends, when compiling and sharing the results of their work and evaluating its impact on research and community outcomes.

### *III. Recommendations and Future Directions*

In the development and implementation of community health partnerships and of research devoted to understanding community health and environmental impacts and climate adaptation strategies, the following recommendations can help to assure non-extractive methods that facilitate co-learning and co-production:

- From the earliest stages of fund-seeking and project design, build in a process to create a set of principles for ethical and non-extractive engagement of affected communities;
- Build the principles from the most recent theory and on a foundation of recent empirical experience, prioritizing literature from Indigenous scholars and scholars of color;
- Involve members of the affected community, if possible, or those who can represent their perspective, in every aspect of the principles development process; and
- Actively promote awareness and adoption of engagement principles to other researchers and project implementation teams.

We expect that future research in community health partnerships and other related projects that engage communities in co-learning to address the disproportionate impacts of climate and environmental hazards on health will build on the foundation of principles such as those presented here. Particularly when those partnerships include Indigenous communities and people affected by the legacy of European colonization, it is critical that researchers adhere to non-extractive and respectful approaches in learning from this diverse base of

knowledge. This will help future research projects be more equitable and work toward a more just future.

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**Overarching**

- Iterative and collaborative process that requires adequate time and resources:
  - Two “loopback” processes: (a) stakeholders are consulted on outcomes and project decisions, and (b) stakeholder insights are shared with researchers in a timely manner to inform research design.
  - Situate within the context in which the project sits.
  - Move research activities out of academic spaces into a joint research-practice space.
  - End engagement efforts when appropriate for stakeholders, not just when funding ends.
  - Funders must accommodate project timelines to enable time for trust-building.
  - Build compensation into project budgets from the outset.
- Transparency about the goals and origins of the research and who it is in service of:
  - What will communities get out of the project: wisdom, wealth, recognition, or work support?
- Stakeholders are subject matter experts.
- Trust is built and maintained through relationships over time:
  - A shared understanding of project goals between stakeholders is necessary and shared decision-making is imperative.
  - Researchers must take steps to understand and mitigate the power imbalance between them and local stakeholders.
  - Researchers should understand heterogeneity and power differentials between stakeholder groups.
- Prioritize fair and just conflict management and resolution that centers the most affected.

**Design**

- Include stakeholders in the design of stakeholder engagement efforts:
  - Involve stakeholders in co-developing research questions and managing financial decisions.
  - Involve stakeholders in designing useful and accessible data and information platforms.
- Define equity, diversity, inclusion, and accessibility and deliberately build these principles into research methods:
  - Address histories of racism, colonialism, marginalization, and mistrust.
  - Projects should be solutions-oriented and attempt to measure and address what is meaningful to the community.
  - Project outcomes should include facilitating right relationships among stakeholders.
- All researchers must be able and willing to facilitate non-extractive work:
  - Researchers should intentionally identify and engage with power dynamics.

**Delivery**

- Engagement should provide meaningful benefits to communities:
  - Minimize barriers to participation: respecting work schedules and cultural norms and slowing down the process to build trust.
  - Ensure engagement and communication activities are culturally appropriate, accessible, and integrate local knowledge.
  - Ensure frequent, ongoing interaction among all participants.
- Partner with trusted local organizations and/or community members to improve sustainability and ownership of outcomes:
  - Work with local champions to facilitate effective engagement that respects and adheres to cultural norms.
  - Coordinate efforts to engage stakeholders to avoid stakeholder fatigue.
  - Recognize that stakeholders have diverse views and lived experiences. Find equitable ways to reconcile divergent opinions that thoughtfully represent stakeholder views.
    - When divergent opinions emerge, center the perspectives of those most marginalized.

**Dissemination & Evaluation**

- Research outcomes must be accessible and relevant to stakeholders:
  - Share results with communities in a way that is beneficial to them.
- Continually evaluate the process and impact of outputs and results:
  - Develop metrics and targets to track the extent to which engagement processes honor the above principles.
  - Measure progress against those metrics at regular intervals.



*Figure 1. Principles of Engagement for Climate Adaptation and Health Research. (Language has been condensed in the figure due to space considerations).*