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Corresponding author:
Michael Weisberg;
Email: weisberg@phil.upenn.edu

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Community-based participatory climate action

Andrea Restrepo-Mieth[1], Jocelyn Perry[2], Jonah Garnick[3] and Michael Weisberg[4,5]

[1]Edward J. Bloustein School of Planning and Public Policy, Rutgers, The State University of New Jersey, New Brunswick, USA; [2]Blavatnik School of Government, University of Oxford, Oxford, UK; [3]Stuart Weitzman School of Design, University of Pennsylvania, Philadelphia, USA; [4]Perry World House, University of Pennsylvania, Philadelphia, USA and [5]Department of Philosophy, University of Pennsylvania, Philadelphia, USA

Non-technical summary. Improving the flow of information between governments and local communities is paramount to achieving effective climate change mitigation and adaptation. We propose five pathways to deepen participation and improve community-based climate action. The pathways can be summarized as visualization, simulations to practice decision-making, participatory budgeting and planning, environmental civic service, and education and curriculum development. These pathways contribute to improving governance by consolidating in governments the practice of soliciting and incorporating community participation while simultaneously giving communities the tools and knowledge needed to become active contributors to climate change adaptation and mitigation measures.

Technical summary. Community participation is considered a key component in the design of responses to climate change. Substantial engagement of local communities is required to ensure information flow between governments and communities, but also because local communities are the primary sites of adaptation action. However, frontline communities are often excluded from decision-making and implementation processes due to political choices or failures to identify ways to make participatory frameworks more inclusive. Climate action requires the active engagement of communities in making consequential decisions, or what we term *deepened participation*. We propose five pathways to deepen participation: visualization, simulations to practice decision-making, participatory budgeting and planning, environmental civic service, and education and curriculum development. The five pathways identify strategies that can be incorporated into existing organizational and institutional frameworks or used to create new ones. Shortcomings related to each strategy are identified. Reflection by communities and governments is encouraged as they choose which participatory technique (s) to adopt.

Social media summary. Climate action requires the active engagement of communities. Learn five pathways to get started deepening participation.

The international community has adopted a goal of 'public participation in addressing climate change and its effects and developing adequate responses' (UN, 1992). This goal is often echoed in international, national, and local responses to climate change: the public must become acquainted with the dangers of a changing climate in order to act and build resilience in the face of the climate emergency. We believe this goal is an essential one, but efforts to realize it are often superficial or merely formal. In this article we argue that the best expression of public participation for climate action is *community-based participatory action*. We argue for new or renewed efforts by state and non-state actors to elevate community voices to predominant or, in some cases, equal roles in planning and implementing adaptation or mitigation processes.

1. Adaptation, mitigation, and the need for deepened community engagement

Climate action, both mitigation and adaptation, takes place at many scales, and requires engagement at each of these scales. This article focuses on engaging individual people in communities, those that generally have little voice in international agreements beyond the act of voting. We believe that substantial engagement of local communities is required both to ensure information flow between governments and communities, but also because local communities are the primary sites of adaptation action.

Community engagement improves the flow of climate knowledge between governments and communities. Governments need mechanisms to share knowledge with communities, and to send a strong signal that the time for resilience planning and the implementation of interventions has come. This involves information flowing from the government to the people and establishing strong trust conditions so that it will be received and believed. Communities are often aware of the climate-induced changes happening around them but may have limited knowledge of the causes and expected long-term effects of the changes they are observing.

Education can help integrate expert-generated projections into community-based adaptation projects (Ayers & Forsyth, 2009). Disseminating knowledge and information may also help reduce local elite capture of public investments, as better-informed communities will know what is expected to take place in their territories. Lastly, involving the community can strengthen grassroots environmental attitudes and social networks, disseminate ecological and scientific knowledge, and increase buy-in for conservation efforts (Jimenez et al., 2021).

Knowledge also needs to flow in the other direction. Governments must incorporate local knowledge into their adaptation plans. The only way that such knowledge can be integrated is if there is a meaningful pathway for individuals to communicate with governments and the international community. Widening the knowledge base from which plans draw can help incorporate contextual knowledge, but also an understanding of which local actors need to be mobilized to gain broader community support. Design and implementation with relevant stakeholders encourage individual and community buy-in, reduce constraints, and increase success (Ebi, 2009). Community input also helps design interventions where maximum effort is made to protect livelihoods, risk to property is minimized, and cultural assets valued by the community are considered.

But it is not just the flow of knowledge that requires effective community engagement. Climate action requires changes that affect nearly every aspect of daily life. This will require active engagement of communities in making consequential decisions, or what we hereafter term *deepened participation*.

We propose five pathways to deepen participation and improve community-based participatory climate action. These interventions include visualization, simulations to practice decision-making, participatory budgeting and planning, environmental civic service, and education and curriculum development. Some, if not all, of these interventions are familiar to many governments globally. They offer opportunities to improve or expand existing repertoires of action in places where they are already in place. In contrast, for places looking to build new avenues for citizen engagement, these pathways can be incorporated into existing frameworks such as educational standards or city and regional planning mandates. The pathways contribute to improving governance by consolidating in governments the practice of soliciting and incorporating community participation while simultaneously giving communities the tools and knowledge needed to become active contributors to climate change adaptation and mitigation measures.

Deepened, not merely perfunctory, participation will only be possible when communities are fully acquainted with the dangers they face from climate change and are treated as equal partners in planning for mitigation and adaptation. True participation must also extend beyond consultation to include decision-making, implementing, and managing solutions – sometimes by communities themselves, other times in partnership with government agencies, universities, non-governmental organizations, and similar stakeholders. However, many frontline communities, especially those most vulnerable to climate change, are often excluded from decision-making and implementation processes or do not participate due to mistrust of governments fueled by historical legacies of harm or active exclusion from political power and processes.

In some cases, this has been an intentional political choice. Although inclusive language is used, governments do not desire deepened participation. Participation then becomes an avenue to consult, placate, or simply inform people about decisions without giving them any decision-making power (Arnstein, 1969).

Other cases involve sincere efforts to use participatory frameworks, but nevertheless fail to be inclusive. For example, the Galápagos archipelago in Ecuador recently launched a 10-year plan that purported to have expanded the level of citizen participation in its elaboration. Interviews with government officials and residents of the islands showed that opportunities for everyday people to join fora were limited, invitations to contribute were limited to a few spots reserved for organized interests (such as fishermen and artisans), and new actors (such as 'students' and 'homemakers') were not chosen randomly. In such cases, governments may simply lack the resources, time, or know-how to construct a deepened participatory process.

Whatever the cause, a merely formal participatory process is an example of what Few, Brown, and Tompkins term the *illusion of inclusion* (Few et al., 2007). In such cases, the presence of a previously marginalized group suggests progress toward inclusion, but this progress is illusory. This can result in a net negative because a problem appears to be solved when, in fact, it is not. Moreover, illusory processes can perpetuate injustice.

2. Inclusion, legitimacy, and justice

While deepened participation is essential for gathering climate data and for coordinating climate action, it also plays a normative role: it is demanded by climate justice. A process that is imposed on a community will not be seen as legitimate or just, and compliance will be perfunctory at best, non-existent at worst.

Consider an analogy with democratic legitimacy. To be truly democratic, a country needs more than elections; it needs the structures that underpin free elections including a free press, freedom of association, resources for political parties to mount a real challenge, and so forth. This infrastructure is what allows for deepened participation in the democratic process.

Similarly, participatory approaches to climate change require considering whom is included or excluded when the problem is defined and when solutions, actions, and strategies to address climate change are proposed. Incorporating principles of justice means including marginalized communities in decision-making, planning processes, and projects that provide them with benefits (Bulkeley et al., 2013; Shi et al., 2016).

Climate change will force many communities to make substantial sacrifices in the way they live, and in some cases, will even require moving to a new location. Lives, lifestyles, and world views may be upended in truly radical ways. COVID-19 forced the world to witness just how quickly and how radically change can occur – and how changes can be done well and poorly. For radical changes to be seen as legitimate, people must see the proposed interventions as a necessary part of saving lives and protecting biodiversity, and their livelihoods must be secured. People also must be part of the entire decision-making and implementation process, not just participants in its impacts. Consequently, if policies are perceived to be imposed from the outside, they will be seen as illegitimate and perhaps even rejected. Climate change adaptation and mitigation call for bringing people into participatory processes as stakeholders with knowledge, interests, and responsibilities.

3. Pathways to deepened participation

Deepened participation requires real opportunities to set priorities, make decisions, and be part of the implementation and

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monitoring stages of planning and policymaking cycles. It also requires access to educational and financial resources that position civil society to participate fully and authentically. These are *enabling conditions*: they are required for individuals and communities to meaningfully contribute to a discussion and be confident of their power over its outcome.

Still, there are limitations to what a participatory strategy can accomplish. First, deepened participation is not a replacement for scientific expertise. Instead, we argue that technical and local knowledge must enter into a dialogue with the objective of feeding into policy development and implementation. Another limitation is some people's lack of experience in policy and planning processes. A more varied approach to formal and popular education, combined with opportunities to participate over time, can help overcome inexperience.

How can governments promote resilience by increasing community engagement and deepened participation in climate change planning? We propose five pathways for action based on a review of both academic and policy ('gray') literature and our combined field experience in Australia, Colombia, Ecuador, Israel, Malawi, Maldives, Peru, Singapore, and the United States. We offer several examples of strategies that help people imagine the future we are heading toward and ways we can improve that future. Each of these strategies also allows individuals to play a role in changing that future.

3.1 Visualizing a climate-changed world

Collaborative visualizations and the promotion of local artistic expression are two ways in which governments can engage communities to co-construct climate resilience. A starting point for governments to improve community participation is to partner with landscape architects, city planners, and other designers to help create visualizations of the future. In North America and Western Europe, recently published maps of the flooding of cities due to rising sea levels sparked substantive discussions about one kind of climate hazard. Collaborative visioning projects can help communities localize and visualize the impacts of emissions under various mitigation and adaptation strategies, and see how local responses can impact the future. For example, a climate change visualization project in British Columbia, Canada, visualized possible climate change impacts under different mitigation and adaptation scenarios and feasible community responses (Sheppard et al., 2011). The three-dimensional visualizations ranged from changes in snowpack in mountains to flooding in urbanized areas, and solutions visualized included berms, raised housing, and solar panels on roofs. Participants indicated increased awareness of local climate change impacts, the urgency to act, and the range of constructive actions that could be taken in response.

There are many other uses for visualization besides highlighting flood-prone areas, changes in snowpack, or rising sea levels decades from now. For example, in the Galápagos archipelago, a more imminent danger than sea-level rise is the risk that existing development patterns along with increased mega-precipitation events will create dangerous, fast-moving storm waters. These will threaten settlements and schools and increase the amount of sewage washing into the ocean. Designers can help communities visualize the dangers they face and incorporate communal knowledge into potential solutions.

Visualization techniques can also help people imagine a better future. A good example of doing this on a national scale is the *Atlas of the Green New Deal* in the United States. This project 'brings together a vast and disparate array of information in the form of maps and datascapes… so that we may be mobilized around a response to [climate change]' (Fleming et al., 2017). This form of visualization can apply to everything from individual properties to regional or global changes. The key is to help people localize and visualize a better future, discuss it, and ultimately pressure their leaders to take action.

Art can also be a powerful tool to engage people around climate change. It can provide emotional engagement that reaches people in a different way than data or analytical approaches and can inspire people to change their lifestyles to adapt to and mitigate climate change (Burke et al., 2018). Art also provides a form of communication that can be seen as more accessible, trustworthy, and localized than expert forms of communication (such as media). The most effective visual art interventions used to communicate climate risk are often participatory, focused on a local context, and produced and consumed by local people. These interventions allow people to make sense of the causes and impacts of climate change in a hyper-local and emotional context (Burke et al., 2018).

While visualization and artistic approaches hold enormous potential to improve community participation, they must overcome well-documented challenges. For example, visioning has been criticized in the past for not leading to tangible, action-oriented results, limiting its impact to broad, abstract exercises (Shipley et al., 2004). The absence of well-trained facilitators able to communicate information and elicit feedback can also be an impediment for the realization of productive visioning exercises. Similarly, leveraging art requires nurturing an appreciation for symbolism and creativity within governments, where decision-makers are often more comfortable with science and numbers.

3.2 Practicing decision-making through games

Our second pathway suggests increasing community engagement by providing people with practical experience in preparation for the unfamiliar circumstances that climate change will bring. Games, simulations, and role-play can help people process information and events, generating emotions and experiential knowledge that they can later refer to when the time for critical decisions comes. Rather than waiting for individuals to learn through trial and error, games can be used to simulate changes, potential solutions, and the outcomes attached to them. For example, a participatory game was used in Nicaragua to help communities understand climate-related vulnerabilities such as floods, droughts, and deforestation, and how local action would affect them, as well as upstream and downstream communities (Bachofen et al., 2012). Similar efforts in several African countries have focused on training government officials so they can use games to help communities role-play climate risk (Suarez & Bachofen, 2013).

Games are increasingly being explored as an avenue for policymakers and communities to learn more about climate change, develop collaborations, and build momentum for the creation and implementation of local climate adaptation plans. In the United States, a 2-year participatory action research project used role-play simulations in four New England coastal municipalities (Rumore et al., 2016). Each game included climate change projections and findings from interviews with community-members and brought together residents and local public officials. The games helped introduce climate change adaptation to new

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audiences and made real the challenges associated with adaptation, such as governance issues. Participants thus became more aware of the need for collaboration and strong institutional responses, and better understood the importance of engaging a diverse set of stakeholders. Governments and communities interested in learning more about games can access free resources from the Red Cross Red Crescent Climate Centre (International Red Cross and Red Crescent Movement, 2021).

Still, simulations and games present limitations that must be considered prior to their use. For instance, they offer oversimplified versions of reality (Rumore et al., 2016). As such, they must be seen as an aid to build initial understandings but not as the only or final step in a participatory process. Another limitation is the need to create simulations and games that are relevant to the community, an undertaking that requires skill, time, and resources.

3.3 Participatory budgeting and planning

Building on efforts of the past three decades, participatory budgeting and planning bring communities and governments together to collaboratively decide how funding should be allocated and how plans can better reflect the aspirations and needs of broader constituencies. These participatory strategies can increase communities' agency in government approaches to climate resilience. Participatory budgeting solicits input from communities for the distribution of financial resources, which can elevate the role of the public in governance and increase democratic participation in government decision-making (Gordon et al., 2016). Participatory budgeting first emerged in 1989 in Porto Alegre, Brazil and rapidly spread throughout municipalities in Brazil and then to cities around the world, evolving as it grew to accommodate local priorities, cultures, and systems of government (Gordon et al., 2016). Today, participatory budgeting is found in the Global North and Global South, and in cities and countries both big and small. What unites participatory budgeting, especially around climate action, is that it is most common at the municipal level.

Climate-sensitive participatory budgeting has emerged largely to address specific impacts and threats of climate change in a given community. This has been especially pronounced on municipal scales as local authorities' roles have been increasingly recognized in climate adaptation and mitigation strategies through both regulatory and leadership actions (Cohen, 2012).

Participatory budgeting can help governments and individuals act on climate change by mobilizing financial decision-making. In Metz, France, this link is particularly clear – multiple types of community groups utilized the participatory budgeting process to produce substantive climate actions (Cabannes, 2021). Additionally, participatory budgeting for climate change projects can provide for hyper-local interventions that best reflect a community's perceptions of risk and vulnerability. This highly nuanced perspective allows deep local knowledge to contribute to creating effective and lasting interventions. The value of climate-sensitive participatory budgeting was evident in a survey of 11 different cities and regions that showed a high rate of project implementation, defying the commonly accepted notion that significant citizen involvement delays or derails projects (Cabannes, 2021).

Participatory planning and direct stakeholder involvement are also increasingly important in planning for climate change adaptation. Participatory practices present several advantages in better improving community resilience. First, participatory planning allows broader community issues to be integrated into climate change adaptation efforts. Community planning processes often seek to address a wide variety of community needs and goals; integrating climate change impacts as part of this process allows for cross-cutting and comprehensive solutions that improve communities in multiple ways while increasing their resilience (Kim & Kang, 2016). Second, community-level participatory climate adaptation planning integrates local knowledge and needs with scientific information, allowing for responsive adaptation interventions that best reflect the community's risk level and values (Kim & Kang, 2016). In Saebat Maeul, South Korea, a climate adaptation plan implemented using participatory planning practices has come to be seen as a success in comprehensively engaging the community and producing results, including reducing flood risks by decreasing surface runoff rates (Kim & Kang, 2016).

Participatory planning and budgeting can magnify a small number of voices while marginalizing or ignoring historically disenfranchised groups. Individuals who are not representative of their broader communities can become salient voices in participatory processes (Einstein et al., 2019). Special interests can also coopt these processes, which then fail to deliver on participants' expectations (Goldfrank & Schneider, 2006). These shortcomings risk furthering community distrust of their governments. Participatory processes must be carefully designed to ensure a variety of voices can be heard and that a plan to follow-up on the fruits of the discussion materializes.

3.4 Engaging in environmental civic service

Another form of deepened participation involves communities getting their hands dirty by engaging in environmental civic service, a strategy that employs individuals to bolster the natural environment. The strategy is not new, having been used, for example, in the United States as part of the New Deal under the name Civilian Conservation Corps. These programs not only create jobs and provide necessary services to communities, but also support transitions to green energy and more sustainable practices and cultivate a commitment to the environment among their participants. Expanding opportunities for environmental civic service could bolster environmental consciousness among younger generations, who already prioritize sustainability and climate action more than previous generations (Tyson et al., 2021).

Environmental civic service can encompass a broad range of activities, including conservation as narrowly envisioned by previous programs, such as trail restoration, but also preparing for natural disasters, reducing pollution, improving eco-friendly transit options, adapting housing and schools to be more energy efficient and safer, and so forth. In the United States, President Biden's American Jobs Plan called 'for establishing a Civilian Climate Corps, a USD 10 billion effort to put a new generation of Americans to work conserving and restoring public lands and waters, increasing reforestation, increasing carbon sequestration in the agricultural sector, protecting biodiversity, improving access to recreation, and addressing the changing climate' (US DIP, 2021). National service as a concept enjoys widespread community support among Americans, as long as it is voluntary rather than mandated (Bridgeland & DiIulio, 2019). Furthermore, national service contributes far more civic, economic, and social benefits to communities than it costs (Bridgeland & DiIulio, 2019).

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The government must partner with local organizations to build trust and expand capacity within communities, rather than providing temporary fixes or otherwise harming local environments instead of supporting them. As communities have different needs and resources, responses will vary at the local, state, and federal levels.

Whether national or international, environmental civic service must learn from the shortcomings of past programs – ranging from Botswana to the United States (Friedersdorf, 2013; Molefe & Weeks, 2001). For example, U.S. AmeriCorps service members are often paid below the federal minimum wage for their work. If participants are not paid a living wage, such programs become an option only for those from wealthier backgrounds or those without any other employment prospects. By using service programs to provide training and build institutional knowledge within communities, the government can better prepare the next generation of workers for sustainable careers.

3.5 Education and curriculum development

According to the UN Framework Convention on Climate Change, 'education, training, public awareness, public participation and public access to information' are important components in the path to climate change adaptation and mitigation (UNFCCC, 2021). Raising awareness about the drivers and impacts of climate change are important first steps to motivate individuals toward climate action. Governments must make climate education and information accessible to all. This requires integrating the topic into primary, secondary, and tertiary education curricula as well as training teachers and providing curricular materials. Museums, zoos, libraries, and other informal educational settings also play a critical role and should be supported by governments.

Expanding access to information also requires that academic institutions and government agencies prepare workers, professionals, and government officials on how to disseminate climate change information so that it is accessible to different publics and how to engage the public in participatory efforts. In the United States, federal agencies such as the Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration have developed programs that support environmental education and training for teachers and educators. The EPA's program provides support for educators to teach about environmental issues, develops certification and accreditation standards, and facilitates access to instructional materials (US EPA, 2012).

Consulting different stakeholders on what aspects of climate change knowledge and awareness are most pressing to them is also important to ensure educational and vocational training create climate literacy and foster workforce development. Participation must therefore include local communities, the scientific community, and the private sector. A careful balancing act is needed when considering education and curricular development. On the one hand, governments must put in place frameworks that allow curricula to incorporate the rapidly changing climate change information landscape. On the other, curricular and educational changes cannot be so reactionary to information that they sacrifice short-, medium-, or long-term needs by constantly responding to new information.

4. Conclusion

Community-based participatory action helps deepen public engagement in climate change mitigation and adaptation in ways that can be both substantive and meaningful. Formal and procedural approaches to participation should give way to strategies to build local know-how and incorporate public knowledge into state-led efforts. Engaging the public is not a call to overlook technical expertise; on the contrary, it is the recognition that communities can benefit from greater access to technical knowledge, while governments can benefit from contextual knowledge. Community expertise may be required for technical experts to better understand the effects of climate change in a given context, to develop policies and plans that meet local wants and needs, and to implement them.

The five pathways outlined here show how governments can incorporate visualization, simulations, participatory budgeting and planning, environmental civic service, and education and curriculum development into existing organizational and institutional frameworks or create new ones. As the examples illustrate, each action has shown promise when implemented. The shortcomings related to each strategy should be considered as actors look to adopt them, ensuring mistakes from the past are not repeated. This requires community and government actors to be reflective as they choose which participatory technique to adopt. Strategies such as visualization and decision-making through games require greater levels of facilitation that might not be available in all localities; however, if available, the results from these techniques can serve as inputs for participatory planning. Similarly, actors looking to implement environmental actions should consider adopting action-ready strategies such as starting an environmental civic service or developing an educational curriculum.

Reflecting on what is needed and mobilizing solutions based on experience, knowledge, or innovative ideas are critical as we look to address climate change adaptation and mitigation (Restrepo-Mieth, 2023). Community-based participatory action provides an opportunity to plan, implement, and monitor adaptation and mitigation interventions in ways that are more effective, just, and legitimate.

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