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POLICY BRIEF

Climate Advocacy through Collective Action: Recommendations for Environmental Health Policy

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EXECUTIVE SUMMARY

- Climate change poses an increasingly urgent threat to both environmental and human health, with current World Health Organization projections indicating severe global health impacts across vulnerable populations.
- Climate communication experts demonstrate that framing environmental threats through health impacts can effectively mobilize diverse stakeholders and bridge political divides.
- Analysis of successful environmental health movements reveals three critical elements for effective advocacy: specific issue identification, scientific evidence collection, and compelling narrative development.

Acronyms: World Health Organization (WHO), 29th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP29), Yale Program on Climate Change Communication (YPCCC), Environmental Protection Agency (EPA), Good Food Institute (GFI), Conservative Reserve Program (CRP), Low-Carbon Agriculture Program (ABC Program)

Figure 1: *Air pollution in Dakar, Senegal. Source: Issiaga_Photography via Wikimedia Commons. Licensed under CC BY-SA 4.0*

- This framework draws from case studies in the United States where collective action achieved concrete policy reforms, including Silent Spring's exposure of DDT, the Hinkley groundwater contamination case, and the Flint water crisis.
- Our recommendations emphasize combining rigorous scientific evidence with community testimony to build powerful narratives connecting environmental damage to immediate and chronic health impacts, while considering the long-term economic benefits of early preventive action.

PROBLEM CONTEXT

Climate change fundamentally threatens environmental and human health through multiple, interconnected pathways. Rising global temperatures amplify existing environmental health risks while creating new threats to communities worldwide. This complex relationship between climate change and environmental health requires a strategic approach to advocacy that addresses both immediate pollution impacts and longer-term climate threats while considering sustained economic viability.

The significance of this connection is underscored by the World Health Organization's (WHO) urgent call ahead of the Conference of the Parties (COP) 29th Climate Change Conference, demanding that world leaders center human health in climate negotiations.[1] This recommendation aligns with the "One Health" framework, which recognizes the inextricable links between human health, environmental health, and planetary health - connections that have profound implications for long-term economic stability and societal wellbeing.

This urgency is emphasized by economic analyses demonstrating that early action on climate health yields substantial returns through reduced healthcare costs and preserved productivity.[2] Delayed response not only increases health risks but also dramatically escalates economic costs, making immediate action both a health imperative and economic necessity.[3,4]

This interconnection is evident in how climate change intensifies environmental health challenges; the rising of global temperatures is already resulting in an increase in extreme weather events such as hurricanes, floods, heatwaves, and droughts across the globe. These events not only disrupt ecosystems but also mobilize environmental toxins, contaminate water supplies, and degrade air quality in affected communities. According to the World Meteorological Organization, the number of weather disasters have increased over five times in the past 50 years because of climate change.[5] This surge in extreme weather compounds existing environmental health threats, particularly in vulnerable communities already facing disproportionate exposure to pollution and environmental hazards. Climate change also threatens to increase the incidence of zoonotic diseases, jeopardize clean water supplies, increase food insecurity, and create a global climate more prone to disease and death.[6]

In a political climate which challenges not only how to address climate change, but its very existence, it is necessary to turn to human health to inspire change and ensure that the devastating consequences of inaction are aptly highlighted. Indeed, the health impacts of environmental degradation and climate change are already being observed globally, as the WHO estimates that between 2030 and 2050, climate change will cause approximately 250,000 additional deaths per year from malnutrition, malaria, diarrhea, and heat stress.[7] This human health toll provides compelling evidence for urgent climate and environmental action.

Figure 2: *The World Health Organization urged world leaders to center human health in climate action at COP29. Source: Dean Calma / IAEA. Licensed under CC BY 2.0.*

CHALLENGES WITH COLLECTIVE ACTION

Given these pressing challenges and the clear links between climate and health, there is an urgent need for effective advocacy approaches that mobilize collective action. We are proposing a framework for use by community organizers. This framework is relevant as there are potential challenges with getting people involved in collective action – especially action against climate change. Research shows that there are varying beliefs about social accountability as well as the existence and/or severity of climate change itself. Therefore, people may not believe that climate change is responsible for damage to environmental health. Additionally, many people in the United States feel distant from the issue of climate change and that their corrective actions do not have meaningful impact. These factors may contribute to difficulty in rallying a populace.

A nationwide 2023 poll by The Associated Press-NORC Center for Public Affairs Research reported that 71% of adults in the United States believe climate change is happening, a statistic that has remained similar over the past 7 years of AP-NORC polling. However, only 63% of those who think climate change is happening believe it to be the fault of human activity alone, whereas 7% believe it to be solely due to natural causes and 30% an equal contribution of both forces. The same poll found that beliefs about climate change differ starkly between the two primary political parties in the United States: 91% of Democrats versus only 52% of Republicans reported belief in climate change.[8]

Regarding feeling personally connected to the issue of climate change, data collected between 2008 and 2023 presented by the Yale Program on Climate Change Communication (YPCCC) shows that only 46% of adults in the United States believe that climate change will cause them personal harm.[9,10] YPCCC and the George Mason University Center for Climate Change Communication conducted a nationally representative survey in the spring of 2024. In this survey, 62% of adults living in the United States reported feeling a personal sense of responsibility to reduce global warming, but 47% feel that the actions of any one individual won't make any difference.[11]

There is also a lack of social expectation that people act against climate change. Less than half of adults living in the United States perceive social norms for taking action.[12] This lack of social accountability could contribute to difficulty in organizing collective action, as research shows that norms incentivize human cooperation.[13] Additionally, this Spring 2024 survey reports that 66% of adults in the United States "rarely" or "never" discuss climate change with friends and family.[14] However, research shows that sharing stories outlining how people have been personally impacted by climate change can positively affect beliefs about global warming in skeptical audiences.[15]

These nationwide beliefs about climate change are likely reflective of attitudes toward environmental health more broadly. Damage to environmental health is a consequence of climate change. Therefore, with skeptical beliefs about climate change comes skepticism and personal separation from its impacts on environmental health. These challenges in mobilizing climate action highlight

Figure 3: *Protester holds a sign stating "Science doesn't care about your opinion" at a Melbourne March for our Future #StopAdani climate campaign shortly after Adani announced it would be proceeding with the Carmichael coal mine. Source: Science doesn't care about your opinion - Melbourne climate march for our future - #stopAdani - IMG_3789 by John Englart. Licensed under CC BY-SA 2.0.*

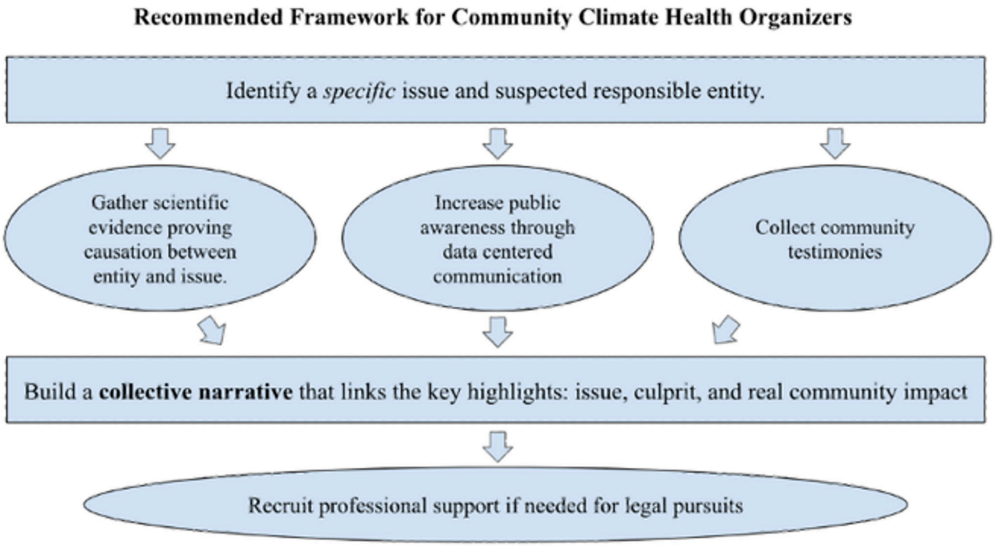

Figure 4: *A concept map of our proposed framework for community climate health organizers.*

the need for a strategic approach that connects abstract environmental threats to immediate community impacts.

Framework Summary

We present a framework consisting of three key components:

- Identifying a *specific* issue and community affected
- Collecting relevant data to support community testimony
- Building data-centered communication

This framework aims to provide a toolkit for bolstering collective action against climate change. Environmental health is a broad topic, so we are focused on advocacy against the release of pollutants in the United States, which has implications for both human health and the environment. The broadness of climate change also necessitates work at a local level to make tangible progress regarding specific concerns. To illustrate how these framework components operate in practice, we examine three successful environmental health movements that achieved concrete policy reforms. These cases demonstrate the power of combining scientific evidence with community testimony to drive meaningful change. Historical cases include the events leading up to the passage of legislation regulating DDT release and hexavalent chromium release. Analysis of the Flint water crisis proves a more recent example of the role of collective action in advocating for legislation. Finally, a discussion of the strategies used by the Good Food Institute demonstrates our framework in action.

CASE STUDY:

Case Study: Silent Spring and DDT

Rachel Carson's 1962 publication of "Silent Spring's" represents a watershed moment in environmental health advocacy, fundamentally transforming how scientific evidence could be leveraged for collective action. Through careful narrative construction, Carson demonstrated how complex environmental health threats could be translated into broad public movements demanding policy reform.[16] Prior to "Silent Spring's" publication, DDT production had reached staggering levels - 90,000 tons of annual U.S. production by 1963 - despite mounting evidence of its ecological and human health impacts.[17]

The pesticide's widespread aerial application was causing catastrophic damage: poisoning beneficial insects alongside targeted pests, thinning eggshells that decimated bird populations, and accumulating in the fatty tissues of animals throughout the food chain, including humans.[18, 19, 20] However, this evidence remained largely hidden from public view. Carson's revolutionary approach combined rigorous scientific evidence with accessible narrative storytelling that resonated with both policymakers and the public. She began with "A Fable for Tomorrow" – a stark portrayal of an American town devastated by pesticides that resonated deeply with suburban readers.[21,22,23] She then methodically built her case through a combination of meticulous research and emotional appeals, particularly targeting suburban families concerned about chemical exposure. By collecting personal testimonies of pesticide impacts and publishing

Figure 5: *Time Magazine advertisement for DDT products in 1947. Source: Science History Institute. Licensed under Public*

this alongside scientific evidence, Carson created a powerful grassroots network of concerned citizens.[24]

The strategic serialization of content in The New Yorker reached educated middle-class readers, while appearances on programs like CBS Reports brought the message to mainstream households.[25] Industry response proved swift and aggressive, yet ultimately counterproductive to chemical manufacturers' aims. When Velsicol, a major DDT manufacturer, attempted to prevent publication through legal threats, the controversy only heightened public interest. Corporate efforts to discredit the research by labeling Carson as hysterical and unscientific backfired spectacularly, as her calm, methodical Congressional testimony in 1963 stood in stark contrast to industry hyperbole.[26] Carson's powerful presentation of scientific evidence to policymakers catalyzed the formation of a presidential committee on pesticides and sparked what she termed "citizen brigades" - local environmental groups that would form the backbone of future advocacy efforts.[27]

"Silent Spring's" impact extended far beyond DDT regulation. While domestic DDT sales were not banned until 1972, the movement led to the creation of the Environmental Protection Agency, passage of the Clean Air and Clean Water Acts, and establishment of the modern environmental movement.[28,29] Perhaps most significantly, Carson's approach established a replicable model for collective environmental action: identify specific threats backed by scientific evidence, build broad coalitions through strategic communication, and maintain sustained pressure for policy reform.[30]

This historical example remains highly relevant to contemporary environmental health advocacy, where similar tactics of industry opposition now operate through sophisticated digital channels and coordinated public relations campaigns.[31] Modern movements face parallel challenges in translating complex scientific evidence into accessible narratives that motivate public action. "Silent Spring's" enduring legacy lies not just in its specific policy outcomes but in demonstrating how strategic communication and organized collective action can overcome powerful industrial interests to achieve lasting environmental health reform.

CASE STUDY:

Groundwater Contamination in Hinkley, California

Anderson v. Pacific Gas and Electric (PG&E) is a landmark legal case for social justice and environmental activism, won through powerful scientifically verified collective action. Also known as the Hinkley groundwater contamination case, this historic win involved the residents of Hinkley, California, and the law firm Masry & Vititoe. Together, a class action lawsuit was filed in 1993 and thorough investigations commenced. After proving that PG&E knowingly contaminated Hinkley residents'

Figure 6: *Banner reading "One World". Rachel Carson is credited with influencing the launch of the modern environmentalist movement. Source: Markus Spiske, Pexels. Licensed under CC BY-SA 2.0..*

groundwater with hexavalent chromium (a widely carcinogenic chemical) through careless chemical handling, the case was settled in 1996 for $333 million, one of the largest settlements for a direct-action lawsuit.[32]

This case highlights our recommended strategic framework including identifying a specific environmental health concern and culprit, gathering scientific evidence to support community testimonies, and reinforcing collective action towards holding the culprit accountable for damage caused.

From the 1950s to 1960s, PG&E used hexavalent chromium to prevent corrosion in its Hinkley plant, the wastewater from the cooling towers was discharged to unlined ponds at the site wherein the wastewater percolated to the groundwater, resulting in hexavalent chromium pollution.[33] PG&E neglected to inform the California water board and Hinkley residents of the chromium-6 leakage. Investigations began when Roberta Walker, a Hinkley resident, sought legal help after gathering that her family and neighbors were experiencing serious health issues from what she suspected were linked to groundwater contamination.[34] This first step corresponds to our framework, identifying concerning health issues with a hypothesis for what may be causing them. Masry & Vititoe attorney, Ed Masry, and his assistant Erin Brockovich, worked with third-party environmental experts to test the water, gaining critical evidence that Hinkley groundwater was contaminated with hexavalent chromium.

After establishing scientific proof for the contamination, the imperative step of collecting community testimony began with increasing awareness and buy-in. Erin Brockovich played a critical role in establishing trust between community members and the legal team by informing the rest of the community about the dangers of their groundwater and collecting their testimonies. Residents reported cancer (specifically stomach cancer), reproductive harm for both men and women, and many short-term effects like asthma attacks, nasal ulcers, anemia, gastroenteritis, gastrointestinal hemorrhage, convulsions, and damage or failure of liver and kidneys.[35] Gathering their testimonies and convincing them to testify presents perhaps the most effective step of the Hinkley case and our recommendation, reinforcing a collective narrative that showed the court how PG&E's disregard for an entire community resulted in dire health issues.

Community organizing played a crucial role, as Hinkley residents united, shared their stories, and pushed for accountability, amplifying their cause through public awareness. Their collective action not only secured compensation but also spurred long-term policy changes in regulating hexavalent chromium and highlighting the importance of corporate responsibility and accountability, underscoring the power of grassroots movements in driving social and environmental justice. While this successful case may seem distant, settling in 1996, it presents a strong historical precedent for our strategic framework that centers collective action around environmental health for climate advocacy, including: corporate accountability, environmental justice, and long-term sustainable practices.

CASE STUDY:

Case Study: Grassroots Mobilization in the Flint Water Crisis

The Flint water crisis remains one of the most salient, recognizable, and effective domestic case studies highlighting successful community organizing for an environmental health concern. Its success relied on grassroots mobilization to rally around a cause. Although this provides a local case study, the implications from Flint, Michigan are applicable to broader trends in relating environmental threats to health advocacy for the masses.

In 2014, the government of Flint, Michigan changed its water source from the Detroit-based Lake Huron to the Flint River.[36] This exposed heavily lead-contaminated water into drinking water sources for over 140,000 residents.[37] Within weeks, residents reported physiological health concerns such as rapid hair loss, rashes, and respiratory illness, in addition to concerns regarding the metallic taste of their water.[38] Despite the outpour of criticism, public officials in Flint and Michigan refuted concerns of contaminated water sources, downplayed the significance of their constituents' symptoms, and refused to investigate the accusations levied against them.[39] It required 18 months, in October of 2015, for Flint's water source to be changed back to the Detroit system, unravelling further debates on what drove the successful environmental health initiative.

The Flint water crisis momentum drew upon grassroots efforts, persistent advocacy, the development of coalitions to reinforce individual arguments, and the implementation of accountability measures to prevent future tragedies from occurring. Everyday citizens with lived experiences to the crisis were the first to voice concerns. LeeAnne Walters had gone as far as hiring a utilities technician to test the water in her home, unearthing lead as the culprit contaminant and stimulating a new drive to hold the government of Flint accountable.[40] When personal anecdotes proved insufficient to garner the attention of authorities, residents sought the support of recognized activists like the aforementioned Erin Brockovich to independently test lead levels and quantify the scale of the crisis. The efficacy of this movement was bolstered when Dr. Mona Hanna-Attisha, director of Flint's Pediatric Medical Center, published a report validating the alarming trend of extremely elevated pediatric blood levels.[41] The publication of various reports, statements of solidarity, and calls for action from partnerships between residents and credentialed societal actors produced the necessary pressure to convince government officials to change its water source.

Tangible changes resulting from the Flint water crisis demonstrate the efficacy of its mobilizing force. The EPA has since decreased the acceptable standards for lead levels in domestic drinking water, implemented new regulations to increase maintenance findings transparency, and most recently declared that all lead pipes must be removed from drinking water systems within the next

Figure 7: *Photograph taken in 2015 of a sign in Hinkley, CA reading "PG&E did it, and always knew, since 1952!!" Source: Wikimedia Commons.*

10 years.[42] Coalitions of residents and grassroots groups like Flint's Democracy Defense League, the American Civil Liberties Union of Michigan, and the National Resources Defense Council banded together to sue the state of Michigan and city of Flint for its mismanagement, successfully winning a $600 million crisis settlement to be distributed amongst the locals.[43] Finally, the Flint Water Crisis received national attention for the scale of organization, mutual commitment, and cohesion garnered amongst its constituents.

Our proposed framework holds resolute when evaluating the success of the Flint water crisis. Residents identified multiple levels of causative factors, from the corrosive water pipes leaking lead contaminants to the specific government officials who denied resident claims. The collection of relevant, quantifiable data and reliance on trusted community members to convey the findings was also crucial to the crisis' resolution. Most importantly, the threats in Flint were made personal. Appealing to the wellbeing of children and Flint's generational health, the disproportionate impact on Black communities, and the systemic disadvantages of poorly maintained infrastructure became part of greater debates on environmental policy and health inequities. Community organizers can reference Flint as a modern exemplar for integrating abstract environmental threats into everyday conversation to rally movements for a cause.

Figure 8: *Flint resident protesting in a climate march against then-Michigan governor Rick Snyder's handling of the Flint Water Crisis. Source: Edward Kimmel, Flickr. Licensed under CC BY-SA 2.0.*

CASE STUDY:

Supporting Alternative Proteins for One Health

The Good Food Institute (GFI) is a nonprofit think tank and international network of organizations working to make the global food system better for the planet, people, and animals. GFI recognizes the importance of supporting the innovation of scalable alternative meat options to meet an exponentially growing demand by 2050. GFI insists on the importance of decarbonizing meat production just as energy production and transportation takes part in the energy transition, as meat production currently accounts for most of the 20% of global emissions caused by agriculture.[44] This case study represents a less conventional example than our previous three, having international audiences and not targeting a specific policy. However, GFI represents a grassroots-driven effort for climate advocacy as a far-reaching non-profit think tank that still emulates our key recommendations of scientific evidence collection, a focused environmental health problem to tackle, and investment in collective community action. Founded in 2016, the think tank identified the industrial meat production as not only a culprit for disproportionate global carbon emissions but also linked to an increase in heart disease, cancer, and type II diabetes.[45] GFI also leverages industrial meat production ties to antibiotic resistance, though the overuse of antibiotics in farmed animals, to further support the cause for alternatively produced meat. Industrial meat production also forms the weakest link in global supply chains struggling to combat the most recent global pandemic, climate change, wars, and conflict, driving the issue of food security as a critical human right and further reason to develop alternative meats.[46] Lastly, biodiversity and the growing scarcity of finite resources such as clean water and arable land reinforce GFI's mission to promote

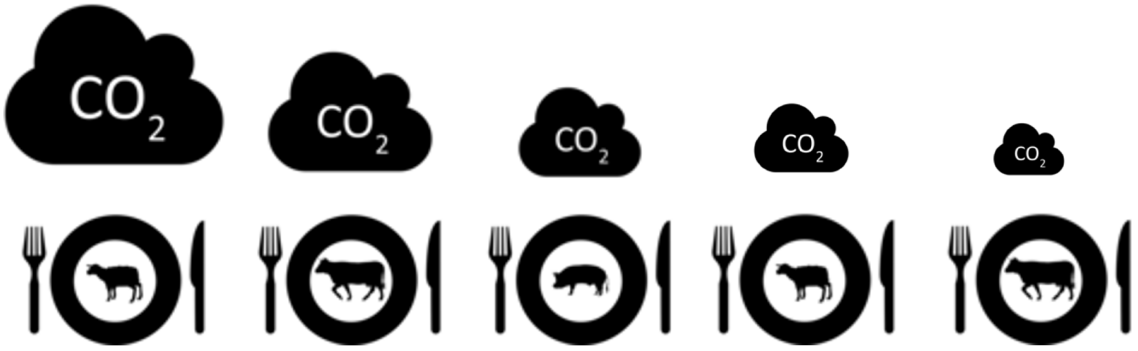

Figure 9: *Carbon dioxide emissions remain a principal concern for various meat types. Alternative meats are further innovating low-emission options. Source: Wikimedia Commons. Licensed under CC0.*

accessible alternative meat innovation. Collectively, GFI has built a climate advocacy narrative that prioritizes the sustainability, accessibility, and security, of meat access for communities that both decreases its impact on environmental and human health.

The Good Food Institute primarily promotes its cause for alternative meats by funding and awarding research grants. With over $21 million in open-access research support and 118 grants awarded since 2019, GFI research has spread over 21 countries in five continents. [47] Globally, sustainable livestock farming policy is beginning to take action such as the European Union's "Farm to Fork" strategy, [48] the United States's "Conservation Reserve Program (CRP)",[49] and Brazil's "Low-Carbon Agriculture Program (ABC Program)".[50] In partnership with governments, corporations, and other non-profits, GFI's ongoing mission continues to leverage our framework by focusing on its specific goal towards alternative meats against the hazards of industrial meat production by supporting research and affected communities worldwide.

RECOMMENDATIONS:

A Framework for Future Collective Action

Drawing from these examples of successful collective action campaigns, several key strategies can be identified to inform approaches to environmental health policy, especially in the context of health-related harms. The following recommendations provide a framework for community organizers to identify a specific environmental issue, gather evidence, and leverage community testimony to propel collective action.

1. Identifying a specific issue and community affected

The first step in successful collective action is identifying specific environmental health issues to target with policy reform. While the impacts of climate change are vast, a narrow focus for policy reform can promote targeted action and avoid political barriers that frame environmental policy as a polarizing issue. Economic analysis shows that targeted interventions addressing specific health impacts often provide the most substantial returns on investment. [51] Our case studies highlight the impact of targeted campaigns related to human health, to improve the lives of individuals in communities most affected by the pollutant.

2. Collecting relevant data to support community testimony

The next step toward successful collective action involves the gathering of robust data to verify and build on community testimony. This can involve both scientific investigation and community-based evidence, as illustrated using data in both the Hinkley case and Flint water crisis, to validate claims of environmental harm and quantify harmful externalities. Whether through testing water or exploring health statistics, the collection of data is the foundation upon which advocacy efforts can build, to encourage legal or regulatory action. The use of narrative to communicate the gravity of health impact from these harms is made stronger by having data to support claims from those affected, allowing for concerns to be substantiated and leveraged for a collective response.

Figure 10: *The People's Climate March in New York City, 2014, Source: South Bend Voice via Flickr. Licensed under CC BY-SA 2.0.*

To support community organizers in implementing this framework, several resources and tools are readily available:

- The WHO's Climate Change and Health Toolkit offers comprehensive guidance for collecting and transforming climate-health evidence into effective advocacy campaigns.
- Air Q+, a specialized health risk assessment and modeling tool, enables organizers to calculate and demonstrate the specific health effects of long-term exposure to both ambient and household air pollution in their communities. Air Q+ can be accessed for free on the WHO website.
- The METEOR research initiative, comprising five Horizon Europe projects, provides current data on health impacts of environmental stressors including air pollution, noise pollution, and chemical exposure, along with their socioeconomic costs. METEOR can be accessed at meteor-research.eu.

These tools can help advocates quantify and communicate environmental health threats while building evidence-based cases for policy reform. By combining these resources with our framework's emphasis on specificity, evidence, and narrative, organizers can effectively bridge the gap between climate awareness and meaningful collective action.

3. Building data-centered communications

After collecting testimony and data verification to support the identification of a specific environmental harm as a human health risk, effective communication is key to driving collective action. To engage the public and policymakers, the community impacts of environmental harm must be framed in a compelling way, connecting scientific evidence to personal lived experiences. In Rachel Carson's "Silent Spring," for example, vivid imagery translated abstract scientific data into a narrative warning of ecological devastation. The Hinkley case and Flint Water Crisis also serve as examples of storytelling to drive grassroots organizing and highlight community testimony. For community organizers to galvanize public support and motivate legislative or regulatory action, it is vital to frame an environmental issue in human health terms, emphasizing the tangible effects on communities with personal appeals. Creating a narrative that resonates with individuals from different backgrounds, especially those who may not yet recognize the severity of climate change as an abstract issue, can bring together communities to support a collective goal: protecting human health. By learning from past successful collective action campaigns, future movements can be more effectively shaped to support communities affected by environmental harms. Our case studies illustrate the importance of identifying a specific environmental health concern, who it impacts, and where it originates from; collecting credible data and community testimony; and building communication emphasizing the consequences of an environmental issue on human health.

CONCLUSION

The intersection of climate change and human health presents both challenges and opportunities for advocacy. While climate change can seem abstract and distant, its health impacts are immediate and personal. Here, we present a framework that identifies specific threats, gathers evidence, and builds compelling narratives to provide a roadmap for effective advocacy that resonates across political, psychological, and social divides.

Historical examples demonstrate that when environmental threats are clearly linked to human health impacts and supported by both scientific evidence and community testimony, meaningful policy change becomes possible. From Rachel Carson's exposure of DDT's dangers to the community mobilization in Flint, successful movements have consistently:

- Focused on specific, documentable health threats
- Combined rigorous scientific data with powerful personal stories
- Built broad coalitions around protecting public health
- Maintained pressure for concrete policy reforms

Moreover, economic analyses demonstrate that early investment in environmental health initiatives yields substantial returns through reduced healthcare costs and preserved ecosystem services. The cost of inaction grows exponentially with delay, making immediate, strategic intervention both a health and economic imperative.

Taken together, this framework provides a roadmap for community organizers to catalyze widespread collective action and advocate for communities most affected by climate change. By implementing these recommendations with consideration for both immediate health impacts and long-term economic sustainability, advocates can build more resilient and effective movements for environmental health reform.

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