

By James W. Dearing and Maria Lapinski

## COMMENTARY

# Multisolving Innovations For Climate And Health: Message Framing To Achieve Broad Public Support

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**ABSTRACT** Rapid diffusion of solutions to a changing climate is paramount if the US is to mitigate carbon emissions. A timely response depends on how people perceive and understand innovations such as new practices, programs, policies, and technologies that promise to reduce emissions. This article explores multisolving innovations in the context of interventions that can be targeted to community leaders and decision makers. We focus on examples led by policy staff; directors of municipal offices and departments of transportation, housing, sustainability, urban planning, and public health; and elected county and city officials where there may be mixed support for efforts to reduce carbon emissions, to show that some innovations can be accurately framed solely in terms of community health benefits. When communicating with stakeholders who are dismissive or skeptical of climate change, we suggest using messages that describe the benefits of mitigation innovations in terms of human health, rather than climate, to achieve broader acceptability.

**James W. Dearing** (dearjim@msu.edu) is the Brandt Endowed Professor in the Department of Communication at Michigan State University, in East Lansing, Michigan.

**Maria Lapinski** is the director of the Health and Risk Communication Center and a professor in the Department of Communication at Michigan State University.

The effort began in Mid-City, in New Orleans, Louisiana. Volunteers, some of whom were neighborhood block captains, rallied their own children and neighbors to join them in planting trees. In fifteen- and thirty-gallon buckets, the residents of New Orleans moved large native trees and planted them along barren city streets. Word spread, and so did the organizing, branching out from Mid-City to New Orleans East, Gentilly, Tremé, the 7th Ward, St. Roch, and Marigny through the nonprofit Sustaining Our Urban Landscape (SOUL).<sup>1</sup> Trees reduce carbon by absorbing and storing it.<sup>2</sup> But they also do more: They provide shade, lower temperatures, provide wild animal habitat, reduce flooding, and provide peace of mind. Trees improve community health, and evidence is accumulating that they improve individual health.<sup>3–5</sup> Many US cities have adopted similar

simple, low-cost, adaptable, volunteer-led community greening and forestry programs. In fact, cities and counties are leading the way in the US by implementing many types of innovations—new practices, programs, policies, and technologies—each of which can contribute in additive fashion to reducing carbon emissions while providing community health benefits as well.<sup>6</sup>

The diffusion of innovations intended to mitigate the harmful effects of climate change is key to a low-carbon future and, in turn, could yield health, social, and economic benefits.<sup>3,7</sup> Mitigation efforts of various types—voluntary as well as compulsory, implemented together in complementary ways and enacted both in communities and at the state and national levels—may give rise to a more just and sustainable future.<sup>7,8</sup> Local policy staff and directors of municipal offices and departments of transpor-

tation, housing, sustainability, urban planning, and public health, as well as elected officials at the county and city levels, along with private business and nonprofit leaders, are important gatekeepers for many carbon mitigation innovations in the US. Yet whether at the level of individual residents or social collectives of neighborhoods, communities, cities, counties, states, or the nation, barriers stand in the way of the adoption and successful implementation of carbon mitigation innovations. These obstacles are well documented. They range from the psychological (including ignorance and numbness to the climate change issue and uncertainty)<sup>9</sup> to the social (such as normative expectations and the underestimation of how much a majority of others cares about climate change)<sup>10-12</sup> and the political, institutional, and economic.<sup>13,14</sup>

Not everyone welcomes the arrival of new programs, practices, policies, and technologies that promise to mitigate carbon emissions. Millions of Americans can be expected to respond negatively, skeptically, or indifferently to such innovations because of the social psychology of partisanship.<sup>15,16</sup> Partisan belief systems characterize the local leaders who make decisions about community adoption of innovations as well as the publics they represent. The ideological divide in relation to concern—or the lack thereof—about climate change does not appear to be dissipating; rather, polarization in the US seems to have hardened.<sup>17,18</sup> Although strategies such as emphasizing the scientific consensus on climate change and inoculation against misinformation can be effective with segments of the American public,<sup>19,20</sup> such strategies can also elicit negative reactions<sup>21</sup> among people who are primed to interpret climate change messages as alarmist, antibusiness, and indicative of a liberal political agenda.

Increasing polarization makes it less likely that strategies for surmounting or breaking down attitudinal and behavioral barriers on the rhetorical bases of facts and logic and the highlighting of inaccurate information will be met with open minds by those who are skeptical of climate change and the need to address it. Such information is unlikely to change beliefs and behaviors among those who are inclined to ignore or counterargue messages about the issue. Confirmation bias is a well-established general tendency that serves to protect an individual's current beliefs and affiliations and can be highly emotionally charged.<sup>22</sup> Strong biases affect even highly trained professionals.<sup>23</sup>

Fortunately, many of the community-level innovations, such as SOUL in New Orleans, that may contribute to carbon emission mitigation once they are scaled up in a community have

co-benefits of multiple types, bringing ecosystem benefits, but also health benefits. These innovations can be understood and framed as climate change initiatives or as community health initiatives.

In this article our aim is to connect the concept of multisolving innovations with that of community health message framing in the context of interventions that can be communicated to community leaders and decision makers. First, we introduce and define the idea of multisolving. Then we describe several multisolving innovations to illustrate their variety and benefits. We follow this by a brief review of the difficulty of attitudinal and behavioral change in the context of a polarized polity. The solution we offer is one of message framing so that reference to climate change is avoided and the use of the imagery and language of community health is emphasized. Multisolving innovations make such a message strategy possible as an additional way to approach influencing targeted segments of the population, whose members can be expected to hold mixed or negative attitudes about climate change and efforts to mitigate carbon emissions.

## A New Way Forward

The modern information environment is crowded and, for any topic, contains both sophisticated countermessages<sup>24</sup> and potential misinformation; attention to and processing of science-based messages about climate and health innovations requires a careful approach to communication to attract broad attention and produce open-minded consideration across the political spectrum. Changes to the associations and meanings with which ideas and innovations are communicated (or “framed”) can affect whether people attend to messages and are willing to consider new practices, programs, policies, and technologies.

Careful consideration of the ways in which new ideas, such as those designed to mitigate climate change, are communicated to stakeholders can influence the response to those ideas. Message framing is dependent on understanding the narratives, language, attitudes, and motivations of stakeholders (termed tailoring or targeting of messages). The Yale Program on Climate Change Communication has collected a body of scholarship on the language of climate change that can inform multisolving strategy.<sup>25,26</sup> Shifting the frame of messages about multisolving innovations to describe the community health benefits of climate change innovations can increase attention to messages, reduce the likelihood of negative reactions<sup>21</sup> to messages, and increase positive responses.<sup>27</sup> When the climate change

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mitigation innovation of carbon capture and storage was alternatively framed as a technological solution versus waste reduction versus a holistic solution to climate change, levels of support from residents in five countries varied considerably.<sup>28</sup> Public opinion surveys of US citizens, depending on how the issue is described in the questions, show tremendous variability in attitudes toward climate-related policy and mitigation solutions across the country.<sup>29</sup>

## Types Of Multisolving Innovations

A multisolving innovation is a practice, program, policy, or technology new to a community that offers co-benefits of more than one type. Health co-benefits of a community gardening program, for example, may include reduced risk for obesity, improved muscle tone and bone density, better heart health, improved balance and flexibility, or a heightened sense of self-worth and self-efficacy or collective efficacy. Other types of benefits can be grouped in terms of air quality, land quality, energy, waste, and economy.<sup>30</sup> The concept of multisolving can be attractive to community leaders, who must navigate tight budgets, multiple priorities, and local politics to accomplish goals.

Many multisolving innovations promise climate as well as health benefits that can be thought of as ancillary or spillover positive effects.<sup>31,32</sup> Consider *ciclovía* (“bikeway” in Spanish), or community-based recreational programs in which selected streets are temporarily closed to automobiles. Auto-free streets become open spaces for residents to safely bicycle, jog, stroll, play, shop, and mingle, which encourages physical activity and social integration while decreasing auto emissions.<sup>33,34</sup> *Ciclovía* originated in Bogotá, Colombia, in 1974 and had been adapted by hundreds of cities even before the emergency

of coronavirus disease 2019 (COVID-19), including Los Angeles, California; Portland, Oregon; New York City; Atlanta, Georgia; and Brownsville, Texas. These programs go by many names, including Open Streets. Citizen groups, including bicycling clubs and neighborhood associations, reach out to local businesses and residents while partnering with local policy makers who assist with public endorsement, funding, permits, and coordination with security efforts. Although the implementation of *ciclovía* programs can reduce carbon emissions, they also can be promoted solely as physical activity opportunities or ways to reduce social isolation.<sup>35</sup>

Technology-intensive anaerobic digesters are another type of multisolving. These large-scale dairy farm and municipality storage and processing tanks convert manure and food scraps; plant biomass; used cooking oils; wastewater; and other unwanted byproducts of animals, crops, households, and retail food businesses into natural gas or electricity, which powers local facilities, homes, and businesses or is resold to electricity and gas providers.<sup>36,37</sup> Anaerobic digesters also produce fertilizer that is given away or sold to farmers and gardeners. They are in use in more than 2,100 US locations. China alone has more than forty-three million small household digesters in use in rural areas that power home gas and electrical appliances.<sup>38</sup> The California Environmental Protection Agency estimates that a statewide capital investment of between \$900 million and \$1.4 billion at wastewater treatment plants could yield energy savings up to \$255 million per year.<sup>39</sup> Anaerobic digesters have ecosystem and climate mitigation benefits, yet they can be advocated for strictly as a community health approach to reduce harmful waste.

Another example of a multisolving innovation includes green affordable housing initiatives such as that built in the Buffalo, New York, Green Development Zone.<sup>40</sup> Green affordable housing results not only in energy efficient homes and sustainable neighborhoods but also in a corps of newly trained and certified builders, installers, and service personnel drawn from the same low-income neighborhoods, which contributes to the sustained economic and mental well-being of residents. Organizations such as Green America, Global Green USA, and the Green Building Council have helped spread green affordable housing to hundreds of low-income communities. Along with the obvious ecological benefits, green affordable housing can provide mental health benefits by improving access to affordable housing and well-paying jobs.

Demonstrations of multisolving innovations are under way and spreading in urban landscape

and beautification, energy efficiency and community redevelopment, employment, agriculture, food waste reduction, and other sectors. They begin in locations such as the province of Friesland in the Netherlands, where recycled toilet paper is being reused to pave bike paths. They are begun by social or commercial entrepreneurs like the Native Americans in Navajo Nation near Gallup, New Mexico, who have rediscovered heritage farming techniques that regenerate and enrich soil for improved crop yields while capturing and locking carbon into the soil. And they spring up in surprising places like America's public libraries, where thousands of file cabinet-size "seed libraries" now freely offer community members the opportunity to grow their own food while propagating heirloom varieties of vegetables, herbs, and fruit.

A key to multisolving innovations is that they can be represented in communicative terms by employing alternative rather than multiple frames, depending on the attitudes and characteristics of the potential adopting community leaders, who can be thought of as a geographically dispersed but professionally similar population segment of individuals.<sup>41</sup>

### Going Around, Rather Than Over, Barriers To Change

A timely response to the specter of a changing climate depends on how stakeholders in communities, states, and the federal government perceive and are predisposed to understand solutions to climate change. At this time, many Americans ignore or argue against such solutions when messages frame those solutions as answers to climate change. The mere mention of terms such as climate change, fossil fuels, or global warming can elicit prior opinions and feelings that prime individuals to interpret the new information in light of this prior recalled context.<sup>42,43</sup> Most people who self-identify as liberal will be inclined to positively interpret the new information, whereas most people who self-identify as conservative will likely do the opposite.<sup>43</sup> The result is simple reinforcement and political stalemate. With a multisolving innovation such as anaerobic biofuel digesters or seed libraries, however, there is no need to use language and imagery that will lead a large portion of potential adopting community leaders to be skeptical and negatively inclined. Evoking a different cognitive schema can produce a more favorable reaction.<sup>44</sup>

The common approach to representing the co-benefits of a climate change adaptation or mitigation innovation is to communicate a solution's climate and health benefits together,<sup>45</sup> with the

## Community health framing offers a means of addressing carbon mitigation in political jurisdictions where solutions have been slow to take root.

assumption being that the more benefits, the better for moving people to action. Yet it is also the case that some solutions can be communicated as either a health innovation or a climate innovation, therefore eliciting what may be quite different attitudinal and behavioral reactions from elected officials, policy makers, administrators and managers, and members of the public. Messages that promote the environment can negatively affect the adoption of carbon mitigation innovations by people who self-identify as conservative.<sup>46</sup> Emphasizing the health threats of climate change can lessen differences of opinion across political divides.<sup>47</sup> And avoiding mention of the carbon mitigation benefits of a multisolving innovation to instead draw attention to its potential health outcomes will be more effective when communicating with people who are negatively predisposed to messages about climate change.<sup>48</sup>

Using just a portion of the available meanings for designing and communicating messages "upstream" to community leaders and decision makers about multisolving innovations is a strategy of canalization. In such a strategy, innovation advocates and policy entrepreneurs use formative evaluation research to ascertain the positive meanings and associations that characterize the beliefs of a segment of potential adopters. They then craft messages that are framed in those terms and referents for those community leaders, instead of developing campaign messages that seek to overtly persuade by changing beliefs and values through repetition, facts, or appeals to authority.<sup>49</sup> Canalization as a message strategy is a way of meeting people where they cognitively are, not asking them to change.<sup>50</sup>

## Message Framing For Community Health

Positioning multisolving innovations as ways to improve community health reflects choice architecture; the innovation advocate or policy entrepreneur acting as a message architect makes decisions about the number of choices, the attributes thereof, and their organization in terms of how they are presented. This form of choice architecture “nudges” the negatively predisposed adopter to consider a socially beneficial way forward.<sup>51</sup> The principle used by the choice architect in the multisolving innovation context is canalization; its practical application is community health framing.

A robust experimental literature on message design shows the impact of different ways of describing a new idea on attitudes and behavioral decisions, many of which involve small changes to the language or imagery of the message. Information can be designed in ways to promote particular outcomes including the modification of attitudes, beliefs, or outcomes.<sup>27,52</sup> Examples include the effects of emotional messages based in fear,<sup>53</sup> anger,<sup>54</sup> or nostalgia,<sup>55</sup> framing a decision as a gain versus loss;<sup>56</sup> or describing behaviors as more versus less popular or socially approved.<sup>57</sup> These effects cut across contexts and demonstrate the effect of small changes to information content on attention, reception, and response to messages.

Health is an especially promising way to frame messages about climate change<sup>58,59</sup> because of strong evidence for the effects of environmental change on human health outcomes.<sup>60,61</sup> Particular segments of the population—those who are alarmed or concerned about climate change—respond favorably to written descriptions of the community health consequences associated with climate change.<sup>25</sup> People with dismissive or disengaged attitudes, beliefs, and behaviors toward the issue of climate change can feel hopeful in response to a community health frame about an innovation. Conversely, people who are dismissive, doubtful, or disengaged experience more anger when the environmental or national security aspects rather than the community

health aspects of climate change are described in messages.<sup>26</sup> People who self-identify as conservative more frequently select human health over climate as the most compelling reason for reducing fossil fuel use; people who self-identify as liberal are more likely to select climate change than public health. A community health–focused rather than climate-focused message can have a positive impact on attitudes about the harms associated with air pollution, particularly for people who identify as politically conservative.<sup>43</sup>

Taken together, these studies suggest that for some segments of the population, communicating the community health benefits of a multisolving innovation may provide a mechanism to avoid polarization and produce greater numbers of potential adopters who will be curious, and thus receptive to learning more about innovations as they proceed through a decision process about whether or not to adopt.

### Old Wine, New Bottle?

There is nothing new about suggesting the importance of message framing for political leaders and policy makers. As the political scientist John Kingdon knew, changing how a solution to a problem was framed could revive attention, gain supporters, and newly arm policy entrepreneurs to discuss a formerly moribund innovation as a promising answer during a window of policy opportunity.<sup>62</sup> Although multisolving innovations to reduce carbon emissions can gain attention through issue expansion by attracting additional proponents when their climate as well as health benefits are used to frame messages,<sup>63</sup> doing so may also gain opponents unless those solutions are framed in a way that positively appeal to them.

Similar to innovations more generally, multisolving innovations involve costs as well as benefits and may still face resistance once introduced into communities.<sup>12,64</sup> What community health framing offers is a means of addressing carbon mitigation in political jurisdictions where solutions have been slow to take root. ■

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