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# Climate Empowerment Theory of Change

for the United States of America,  
its territories, protectorates, &  
the sovereign nations within its borders

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# 1. Introduction

## Why do we need climate empowerment?

Rapid, human caused climate change is an urgent and increasing threat that is impacting the stability of our communities, economies, ecosystems, and security. As today's decision makers, we must accept that the survival of our communities and the natural world depends on the actions we take now.<sup>i</sup> We must also understand that we are not at the beginning of the story; generations before us have laid the foundations for climate solutions that, if adapted, scaled, and carefully implemented, can promote equity and security, build stable economies, support thriving and regenerating ecosystems, and advance well-being.<sup>ii</sup>

Climate change is a multigenerational issue. For centuries, global expansion has relied on extraction and exploitation of ecosystems and communities for increased cultural power and wealth. But despite extensive scientific evidence, an international consensus on the need for action, and widespread observations of climate impacts, global actions have never been and are not yet on a scale commensurate with the threat to ourselves, future generations, and our planet.

In the United States, groups across all sectors of society—communities, businesses, networks, organizations, institutions, and individuals—are working to advance climate action, yet their efforts are not strategically coordinated or aligned at the community through the national levels.<sup>iii</sup> Cities, counties, states, businesses, and cultural institutions around the country have set ambitious clean energy, resilience and climate action goals but the path to achieving them is no easy road. Making the case for climate action is one of the leading challenges that communities face in undertaking ambitious climate action.<sup>iv</sup> Effectively engaging communities in climate action will help leaders to close the wage and skills gap, eliminate carbon pollution, and build healthier, more equitable, more resilient and regenerative communities.

One of the greatest opportunities to accelerate progress toward a healthy planet lies in purposeful connection, shared priorities, and scaled, collective action. However, the social infrastructure for collaborative, just climate action across communities, states, and regions is critically missing. Enhanced climate strategies at all levels of society must encourage collective action and not rely entirely on the actions of individuals.

## What is climate empowerment?

Climate empowerment works to empower all members of society to engage in just climate action through education, training, workforce development, public awareness, public engagement, public access to information, and cooperation on these issues. The ultimate goal of climate empowerment is to weave climate action, justice, meaningful involvement, and fair treatment into the social and decision-making fabric across an extraordinarily diverse society.<sup>v</sup> Implementation of all of these focus areas in coordination is crucial to the response to climate change. Everyone must have access to climate information and be able to participate in the just transition to a decarbonized, climate-resilient world. Success will require broad collaboration between all levels of government and all sectors of society. Analysis has found that climate empowerment capabilities are both under-utilized and critical for communities to marshal support to reach their climate action goals and build better futures.<sup>vi</sup>

Climate empowerment work in the United States has expanded significantly in recent years through youth movements, initiatives in formal and informal education, workforce training, and civic engagement.<sup>vii</sup> This work can be accelerated by aligning and mobilizing the extensive capabilities of the education, entertainment, health, business, media, arts, scientific, and cultural sectors towards collective climate action.

## Our Transformational Moment

An empowered society can mitigate the climate crisis and address our inequitable legacies through aggressive, coordinated, and just sectoral transitions to low-carbon, low-extraction systems. We must direct these transitions toward redress and remediation of historic injustices as a step toward reconciling our past with our possible futures. To meet these demands of history, this document puts forth a comprehensive theory of change that is equal to the scale of the task at hand. This proposed theory of change is based on the concept that centering justice and equity in these transitions can address historic racial and economic disparities in environment, well-being, health, and economy so all people and places can thrive and are regenerative.

Decarbonizing our society requires acknowledging that humankind is inseparable from the ecosystems we live within, and that failure to do so was and continues to be a harmful omission. The theory of change is rooted in the concept of fostering regenerative ecosystems, requiring a redefinition of how energy is generated, captured, deployed, and consumed, and how and to whose benefit we shape our built infrastructure. It will require us to act urgently to release and unfetter the natural systems that can prevail in a rapidly warming climate, and to use human capacity and action to capture and extract excess carbon. It will require us to redefine humanity's place on the planet and the responsibilities we hold towards all human beings and the ecosystems we live within.

To achieve this turn toward just decarbonization, the theory acknowledges that the well-being of ecosystems is indivisible from human well-being. The Indigenous concept of rematriation of our human systems back into the natural systems of the Earth acknowledges that healing planetary systems is critical to any outcome that humanity seeks to achieve. It acknowledges that past harms to ecosystems require a new focus on nurturing the healing and recovery of nature-based regenerative processes. Nature-based removals of carbon dioxide from the atmosphere will become a focus for not only addressing climate change but also increasing human and planetary well-being.

We challenge the historical definition of a thriving economy. This theory of change proposes measuring the success of the economy by planetary well-being rather than historical measures of work product. We do so by focusing on a world where all communities have the capacity to thrive and where contributions to well-being are valued equally to economic indicators. Therefore, the measurements themselves should focus on the achievement of human well-being for all people, weighted to reflect the cost of remedies to those harmed as a responsibility of those who have or continue to benefit from those harms.

## 2. The Goal of Climate Empowerment

### Placing people at the heart of addressing climate change

An informed and active society is the most effective and equitable way to accelerate a just transition to a resilient, low-carbon future. Climate Empowerment — education, training, workforce development, public awareness, public engagement, public access to information, and cooperation on these issues — can accelerate climate action and advance people-centered climate policies through increasing public awareness, building local capability, enhancing information sharing, encouraging innovation and beneficial behavioral norms, and promoting ongoing engagement. This theory of change is based on the premise that climate action is accelerated by working with a coordinated constellation of inclusive networks that are tightly connected at key points, known as 'knotworking'.<sup>viii,ix</sup>

Racial equity, environmental justice and the rights of low-income and Black, Indigenous, and People of Color (BIPOC) are central to climate empowerment.<sup>x</sup> However, residents of low income and rural communities, and Black, Indigenous and People of Color (BIPOC) remain marginalized and largely excluded from decision making about energy, pollution, education, infrastructure, and justice issues, even though they are being harmed disproportionately by climate change.<sup>xi,xii,xiii</sup> Rapid and transformative structural changes are necessary. If climate actions fail to address inequity and injustice, they will, themselves, fail. Incorporating climate empowerment into a community or organization's climate action process expands power relationships and grows new ones. Climate action strategies and planning processes, therefore, must be culturally appropriate and inclusive, recognize that diversity and differences are assets, and that just and equitable partnerships and policies will enable everyone to engage and share power equitably and benefit from the resulting opportunities.<sup>xiv</sup>

People's concern about the climate crisis has been increasing over at least the past five years. There is strong evidence that a confluence of factors is driving engagement including, among other things, an increase in people's lived experience with extreme weather events and the amplification of the voices of trusted messengers other than climate scientists and leaders from numerous sectors of society. Climate change is being repositioned in the minds of the public from an abstract and distant risk to an immediately relevant and concrete threat. Climate action plans need to be strengthened by a reliance on social science research to identify factors that are likely to motivate public engagement and validate the efficacy of communication campaigns.

By placing people at the heart of addressing climate change we can increase the possibilities that society will effectively address the key aspects of climate change, sufficiently reducing high carbon pollution, building resilience, increasing social capacity, advancing social understanding, and strengthening regenerative ecosystems.

### 3. The core principles of climate empowerment

The following principles, adapted from the input of hundreds of climate empowerment practitioners<sup>xv</sup>, are recognized as key pillars of successful climate empowerment that contributes to larger national and societal goals. These principles should guide the creation of new climate empowerment networks and initiatives and the integration of climate empowerment into existing efforts.

***Equity and Justice in Climate Empowerment Decision-making and Climate Solutions*** —

Colonial thinking that accepts the extraction and exploitation of communities and resources for wealth and power is driving the climate crisis. Unjust processes will necessarily lead to unjust outcomes;<sup>xvi</sup> equity and justice must be central to climate solutions to ensure that climate solutions contribute to a future that allows all human and non-human beings to thrive.<sup>xvii</sup>

***Inclusive and Locally Focused Decision-making*** —

Designing climate actions through broad, culturally appropriate, public engagement rather than top-down decision-making leads to increased trust and acceptance of the action and increased support for more transformative action.<sup>17</sup> Decision-making processes need to have equity and access considerations included from the very beginning of the process.

***Evidence-based, Collaborative Planning and Decision-making*** —

Climate empowerment efforts necessarily span many professions and areas of expertise. In order to effectively and equitably catalyze climate solutions, an evidence-based, collaborative, and intentionally interdisciplinary approach that respects and invites all backgrounds, skill sets, and ways of knowing is needed.<sup>17</sup>

***Scale of Impact*** –

For maximum impact, resource efficiency, and speed, climate actions at the town to city scale – involving between ten thousand and one million people – should be prioritized.<sup>xviii</sup> This scale allows for effective public participation, leveraging of existing efforts at all levels of governance, and consideration of local cultures, climate risks, and resources.<sup>xix</sup>

***Access to Sustained Financial Support*** —

Achieving climate empowerment goals will require higher levels of sustained funding<sup>17</sup> from a variety of sources for public education, workforce development, communication, outreach, and other empowerment actions.

## 4. The cross cutting elements of accelerating climate action

The following elements cut across multiple principles and, if engaged effectively, can lead to faster, stronger, less controversial, and potentially self-replicating climate empowerment actions. These cross-cutting elements have been shown to depoliticize and widen climate empowerment efforts by lowering barriers to action and allowing more members of a community to see themselves and be invested in the envisioning, development, and implementation of climate solutions.

- **Multigenerationality** – Several generations are active in society at any one time, with different ways of relating to and utilizing power, knowledge, communication methods, and dominant narratives. Engaging multiple generations in climate work, discussing legacy and future generations, and encouraging intergenerational conversations about action on climate change strengthens solutions, reaches more people, encourages collaboration, cuts through politicized narratives, and encourages commitment by all generations.<sup>xx, xxi, xxii, xxiii</sup> Additionally, learning from past generations can provide inspiration and hindsight to guide climate action.
- **Inclusion and Diversity** – Intentionally creating a landscape of climate actions across the community that appeal to, invite in, and are accessible to people of different experiences - including race, class, background, skill, interest, worldview, and others - can build community support for stronger climate actions, effectively utilize existing resources, engage previously disengaged groups, companies, institutions, and other types of organizations, and increase participation in all aspects of climate solutions.<sup>xxiv</sup> As part of inclusion and diversity issues, research has demonstrated that a **Gender Lens** can specifically support more equitable, successful, collaborative, durable, and innovative climate actions that account for the needs of all people.<sup>xxv, xxvi, xxvii</sup>
- **Planetary Worldview** – Expanding the concept of “community” to include all local beings and contextualizing climate action in terms of the anthropocene (the era where humans are impacting planetary functions and those impacts will be visible in the geological record) and planetary well-being (the balance of all planetary systems) reframes the climate crisis and interlinked crises in a new, less controversial way, reinforces and expands principles of justice, builds feelings of urgency and collective responsibility, and leads to the seeking of co-benefits rather than individualistic approaches to planetary and human well-being.<sup>xxviii, xxix</sup>

- **All-of Society Approach** – Groups and organizations within and between communities are motivated by different messaging, bring different skills and resources, and have different goals. All of these organizations - including workforce development and training, business and industry, cultural and recreation, religious, media, youth, education, and academic and scientific organizations - must be activated to work on climate change in ways that work for them but build towards collective impact. To mobilize on climate change at the speed and scale required, coordinating architectures must be built to support action, share learnings, increase capacity, change behavior, and facilitate collaboration across organizational and sectoral boundaries. Increasing interconnectedness and supporting existing and emerging climate action is a long term effort that needs dedicated work.<sup>xxx</sup>

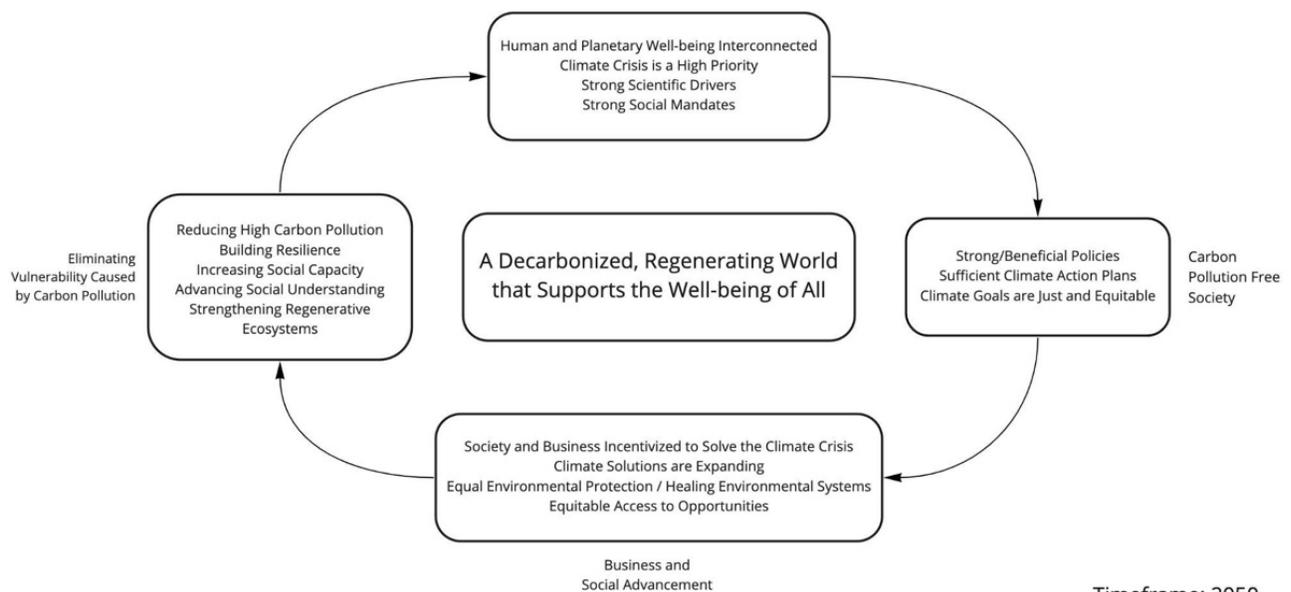
Deeply ingraining these cross-cutting elements into climate empowerment activities creates a multiplier effect and unlocks the potential for synergies across existing and new climate actions within communities and across regions and nations. Attention to cross-cutting issues can invite in groups and entities that have not historically been reached by climate messaging, increasing buy-in, creativity, cultural relevance, resource availability, and longevity of all climate actions within a community. Coordinating action and creating equitable partnerships within and across sectors of society can accelerate existing actions, increase collective impacts, and reduce trade-offs from individual climate actions.<sup>30</sup>

## 5. A Climate Empowerment Theory of Change

### Problem:

The U.S. needs to reduce emissions by at least 50% by 2030 to avert the worst anticipated climate catastrophes. Evidence suggests that the US is not on track for success. The United States of America is the world’s largest historic producer of fossil fuels, emitter of planet-warming gasses, and necessarily needs to strengthen its leadership role in addressing this existential crisis. Across the United States, the burden of climate impacts, responsibility for damage done, and capacity and creativity to implement solutions is not equitably distributed.

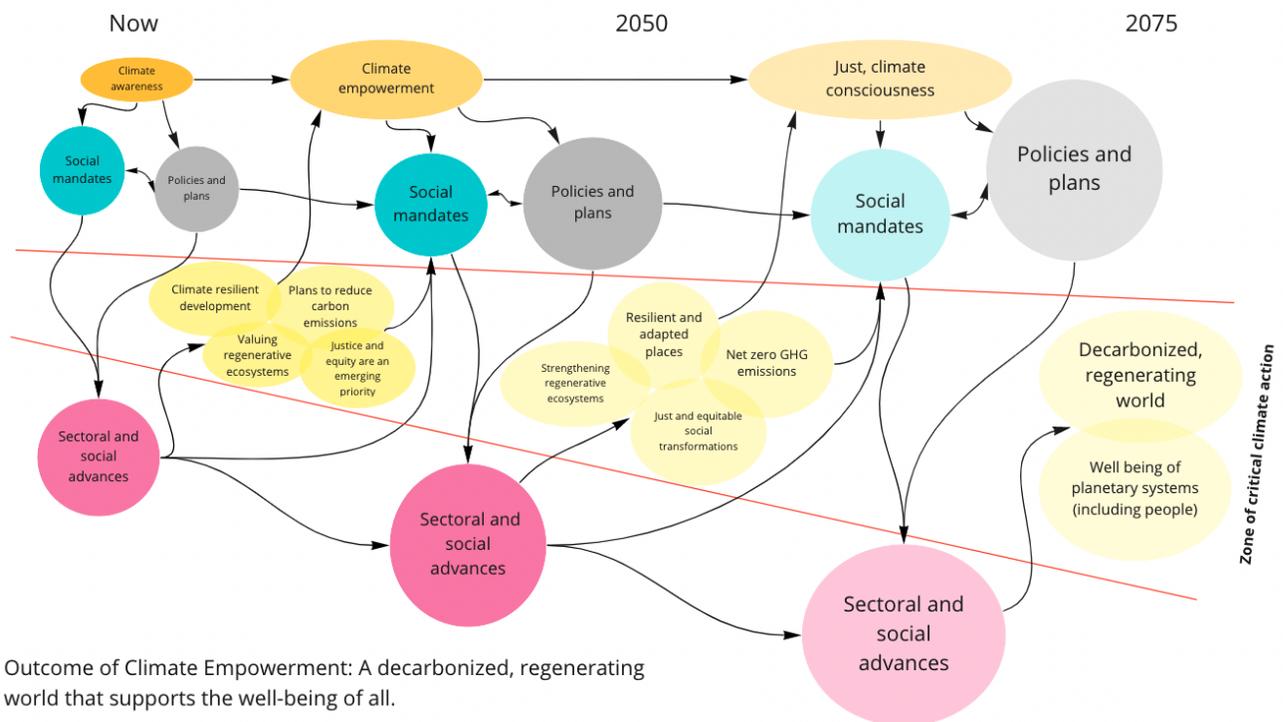
To achieve the unprecedented climate action necessary, all sectors of society - every business, community, institution, and government - have a part to play. Public support for and engagement with climate action varies dramatically, imperiling our chances for success. Efforts to address the crisis and its impacts are widespread across the United States, its territories, and Tribal nations, but the ambition of these climate actions varies widely. Some sectors of society are moving relatively quickly towards decarbonization, while some are constrained or excluded. At present, there are no tools for coordinating, supporting, monitoring, and enhancing collective efforts to achieve national emissions goals and contribute to a better, healthier, more just future.



**Figure 1.** Increasing social mandates reinforces a virtuous cycle of climate solutions. A process for increasing social mandate through coordinated climate empowerment creates and reinforces a virtuous cycle of climate solutions. This model was inspired by the Climate Outreach’s Theory of Change: Creating a social mandate for climate action.xxxi

## Goal:

To help leaders within the US boundaries achieve a decarbonized, regenerating world that supports the well-being of all, this document lays out a framework for tools and networks to accelerate coordinated mobilization of climate actions that are just, culturally appropriate, inclusive, and supportive of community processes.



Outcome of Climate Empowerment: A decarbonized, regenerating world that supports the well-being of all.

**Figure 2.** A visual representation of how climate empowerment drives a shift toward a decarbonized, regenerative world that values planetary well-being. Our theory of change seeks to map policies and climate action plans, and social mandates that are currently implemented. Aligning these efforts will allow for the current state of climate awareness to shift toward climate empowerment, driving a more succinct and coordinated wave of social and sectoral advances that shift toward regenerative and resilient ecosystems, and economies that are just and equitable. As time elapses, the bubbles increase in size as more communities are empowered to act. The cone, representing the zone for critical climate action, widens as climate empowerment is strengthened, to include more just climate action that supports a decarbonized, regenerating world and planetary well-being.

## Intervention:

This theory of change proposes creating collaboration architectures that map the landscape of climate-focused education, workforce development and training, communication, engagement, governance, research, and related efforts and supports existing and catalyzes new all-of-society climate action efforts across the country. Deep, wide, and sustained engagement in mapping climate empowerment efforts will co-create a common understanding of the diversity of interventions and better identify opportunities for synergies and partnerships, as well as bright spots and gaps, thereby accelerating the move toward a decarbonized society. Aligning existing climate empowerment efforts and catalyzing the creation of new initiatives to fill identified gaps will build the support and capacity for just climate action across all industries, sectors of society, and levels of government. Specifically, this intervention will:

- **Help** individual climate action efforts recognize their contributions as aligned with others across society and broader emissions reduction and justice, health, and well-being goals;
- **Create** a system map of climate efforts to allow actors to find synergies and opportunities with other projects;
- **Identify** geographic, economic, racial, sectoral, and other gaps in coverage and accessibility of climate empowerment capabilities;
- **Allow** for monitoring of collective impacts to ensure that the movement toward a decarbonized and regenerative world is just and equitable;
- **Reveal** the necessity of sustained funding and resources by highlighting needs and opportunities, and allowing for more efficient distribution of resources; and
- **Encourage** climate actors to discuss their outcomes in ways that build a collective movement and common language, and create new opportunities for collaboration.

## Outcomes

Making climate empowerment efforts and capabilities clear across sectors will encourage collaboration, setting the stage for collective action that multiplies the impact of all contributions towards creating a thriving and regenerative world.

This work sets a new trajectory for a rapid and enduring cultural shift that aspires to build a thriving planet, first by mitigation and adaptation to climate change that centers people on the front lines, then by creating resilience to our new climate regime, and then ultimately by regenerating damaged planetary systems and removing human-caused damage.

Coordinating architectures for climate empowerment efforts across sectors will mobilize the all-of-society on climate action. In the short term, the resulting framework lays the foundation for new social mandates that link justice for the Earth and its peoples with the actions of all sectors of society. The long term outcomes are a transformation of current values toward a priority on the well-being of all life on the planet, and recognition that planetary health is inseparable from the well-being of people.

## 6. Next Steps

This document was produced as a foundation, with the intention that next generations will be edited, changed, and expanded upon through community driven and community-based engagement processes that can test the theory of change in practice. That process will seek out community voices to find their place in this collective action, to ensure that the document speaks to practitioners in different sectors, and to ensure that all of these diverse activities can find support in the growing climate empowerment community.

NOAA is currently undertaking initiatives that advance this draft Theory of Change, which include the development of a Climate Empowerment Readiness and Action Guide, to assist communities to inventory their existing climate empowerment resources and position them for better collective impact; a second inventory of federal climate empowerment programs, which will help NOAA and other agencies align federal programs for better collective impact and accessibility; and a white paper outlining the formation of a non-governmental organization/university-housed, federally supported climate empowerment hub and spoke network to generate deep, wide, and sustained impact to accelerate climate action in regions across the country.

## EndNotes

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- <sup>i</sup> Sanson, A. V. & Burke, S. E. L. (2019). Climate Change and Children: An Issue of Intergenerational Justice. *Peace Psychology Book Series*, 343–362. [https://doi.org/10.1007/978-3-030-22176-8\\_21](https://doi.org/10.1007/978-3-030-22176-8_21).
- <sup>ii</sup> IPCC (2022). Summary for Policymakers. In *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [P.R. Shukla, et al., Eds., pp.56]. Cambridge University Press, <https://doi.org/10.1017/9781009157926.001>.
- <sup>iii</sup> Bowman, T. & Morrison, D. (Eds.). (2020) *An ACE National Strategic Planning Framework for the United States*. Created in collaborative reflection with the U.S. ACE Community. Bowman.
- <sup>iv</sup> C40. (2016). *Benefits of Climate Action: Piloting A Global Approach To Measurement*. C40 Research. <http://www.sadsma.cdmx.gob.mx:9000/datos/storage/app/media/docpub/otros/c40-climate-action.pdf>.
- <sup>v</sup> Bowman, T. & Morrison, D. (Eds.) (2020) *An ACE National Strategic Planning Framework for the United States*. Created in collaborative reflection with the U.S. ACE Community. <http://aceframework.us>.
- <sup>vi</sup> Niepold, F., Scowcroft, G., & Gingras, A., (2019). *Accelerating Climate Action: A Workshop for Community, Business, and Education Leaders Report*. Climate Change Education Partnership Alliance. <http://ccepalliance.org/collective-impact-summit/>.
- <sup>vii</sup> United States of America (2021). *A review of sustained climate action through 2020. United States 7th national communication, 3rd and 4th biennial report*. United Nations Framework Convention on Climate Change.
- <sup>viii</sup> Engeström, Y. (2005). Knotworking to Create Collaborative Intentionality Capital in Fluid Organizational Fields. *Advances in Interdisciplinary Studies of Work Teams*, 307–336. [https://doi.org/10.1016/s1572-0977\(05\)11011-5](https://doi.org/10.1016/s1572-0977(05)11011-5).
- <sup>ix</sup> Lidskog, R. & Elander, I. (2009). Addressing climate change democratically. Multi-level governance, transnational networks and governmental structures. *Sustainable Development*, 18(1), 32–41. <https://doi.org/10.1002/sd.395>.
- <sup>x</sup> Bowman, T. E., Cintron-Rodriguez, I., Crim, H., Damon, T., Dandridge, C., Kretser, J., Morrison, D., Niepold, F., Poppleton, K., Spitzer, W., & Weiland, L. (2021). Building capacity, momentum and a culture of climate action in the United States. *Environmental Research Letters*, 16(4), 041003. <https://doi.org/10.1088/1748-9326/abe961>.
- <sup>xi</sup> Bowman, T. & Morrison, D. (Eds.) (2020) *An ACE National Strategic Planning Framework for the United States*. Created in collaborative reflection with the U.S. ACE Community. <http://aceframework.us>.
- <sup>xii</sup> Worland, J. (2019) 'Climate change has already increased global inequity. It will only get worse.', *Time*, 22 April [Online]. Available at <https://time.com/5575523/climate-change-in-equality/>.
- <sup>xiii</sup> United Nations Climate Change (2019) High-level Event on Action for Climate Empowerment at COP 25. <https://unfccc.int/topics/education-youth/events-meetings/ace-day-other-events-at-cops/high-level-event-on-action-for-climate-empowerment-at-cop-25>.
- <sup>xiv</sup> IPCC. (2022). Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [P.R. Shukla, et al., (Eds.)]. Cambridge University Press, <https://doi.org/10.1017/9781009157926doi:10.1017/9781009157926>.
- <sup>xv</sup> Bowman, T. & Morrison, D. (Eds.) (2020) *An ACE National Strategic Planning Framework for the United States*. Created in collaborative reflection with the U.S. ACE Community. <http://aceframework.us>.
- <sup>xvi</sup> Robinson, M. (2019). *Climate Justice: Hope, Resilience, and the Fight for a Sustainable Future*. Bloomsbury Publishing.

- 
- xvii IPCC (2022). Summary for Policymakers. In *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [P.R. Shukla, et al., Eds., pp.56]. Cambridge University Press, <https://doi.org/10.1017/9781009157926.001>
- xviii Bhowmik, A. K., McCaffrey, M. S., Ruskey, A. M., Frischmann, C., & Gaffney, O. (2020). Powers of 10: seeking “sweet spots” for rapid climate and sustainability actions between individual and global scales. *Environmental Research Letters*, *15*(9), 094011. <https://doi.org/10.1088/1748-9326/ab9ed0>
- xix Ostrom, E. (2008). Polycentric Systems as One Approach for Solving Collective-Action Problems. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.1936061>
- xx Hurlstone, M. J., Price, A., Wang, S., Leviston, Z., & Walker, I. (2020). Activating the legacy motive mitigates intergenerational discounting in the climate game. *Global Environmental Change*, *60*, 102008. <https://doi.org/10.1016/j.gloenvcha.2019.102008>.
- xxi Lawson, D. F., Stevenson, K. T., Peterson, M. N., Carrier, S. J., Strnad, R., & Seekamp, E. (2018). Intergenerational learning: Are children key in spurring climate action? *Global Environmental Change*, *53*, 204–208. <https://doi.org/10.1016/j.gloenvcha.2018.10.002>.
- xxii Paas, L. (2016). *Action for Climate Empowerment: Guidelines for accelerating solutions through education, training and public awareness*. UNESCO and UNFCCC. [https://unfccc.int/files/cooperation\\_and\\_support/education\\_and\\_outreach/application/pdf/action\\_for\\_climate\\_empowerment\\_guidelines.pdf](https://unfccc.int/files/cooperation_and_support/education_and_outreach/application/pdf/action_for_climate_empowerment_guidelines.pdf).
- xxiii Lawson, D.F., Stevenson, K.T., Peterson, M.N. et al. (2019). Children can foster climate change concern among their parents. *Nat. Clim. Chang.* *9*, 458–462. <https://doi.org/10.1038/s41558-019-0463-3>.
- xxiv Phadke, R., Manning, C., & Burlager, S. (2015). Making it personal: Diversity and deliberation in climate adaptation planning. *Climate Risk Management*, *9*, 62–76. <https://doi.org/10.1016/j.crm.2015.06.005>.
- xxv Schwerhoff, G. & Konte, M. (2019). Gender and Climate Change: Towards Comprehensive Policy Options. *Women and Sustainable Human Development*, 51–67. [https://doi.org/10.1007/978-3-030-14935-2\\_4](https://doi.org/10.1007/978-3-030-14935-2_4).
- xxvi Paas, L. (2016). *Action for Climate Empowerment: Guidelines for accelerating solutions through education, training and public awareness*. UNESCO and UNFCCC.
- xxvii Niepold, M. (2021). *Pink is the New Green How Mediation Tools Can Help Governments Accelerate Progress on the Climate Crisis by Improving Gender Equity* (T. Bowman & K. Kienholz, Eds.) Mara Partners. [https://www.themarapartners.com/\\_files/ugd/f6e491\\_fbe61e0902c7457bbb7f6fa4eb933.pdf](https://www.themarapartners.com/_files/ugd/f6e491_fbe61e0902c7457bbb7f6fa4eb933.pdf).
- xxviii Tu’itahi, S., Watson, H., Egan, R., Parkes, M. W., & Hancock, T. (2021). Waiora: the importance of Indigenous worldviews and spirituality to inspire and inform Planetary Health Promotion in the Anthropocene. *Global Health Promotion*, 175797592110622. <https://doi.org/10.1177/17579759211062261>
- xxix Salonen, A. O., & Åhlberg, M. K. (2012). The Path towards Planetary Responsibility - Expanding the Domain of Human Responsibility Is a Fundamental Goal for Lifelong Learning in a High-Consumption Society. *Journal of Sustainable Development*, *5*(8). <https://doi.org/10.5539/jsd.v5n8p13>
- xxx IPCC (2022). Summary for Policymakers. In: *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [P.R. Shukla, et al., Eds.]. Cambridge University Press <https://doi.org/10.1017/9781009157926.001>
- xxxi Clarke, J., Webster, R. & Corner, A. (2020). Theory of Change: Creating a social mandate for climate action. *Oxford: Climate Outreach*. <https://climateoutreach.org/about-us/theory-of-change/>
-

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Niepold, F., Fraser, J., Crim, H., & Field, S., (Eds.) (2022). *A proposed climate empowerment theory of change for the United States of America, its territories, protectorates and the sovereign nations within its borders*. Knology

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