

Executive Summary

2050 Today: Research and Strategies for Mid-Century Decarbonization

**PRIORITIES FOR
CLIMATE ACTION**

November 2018



**ClimateWorks
FOUNDATION**

2050: Sharing New Insights

In 2017, the ClimateWorks Foundation began an internal analysis of 2050 carbon reduction goals needed to achieve a well-below 2°C pathway. We selected five approaches critical to meeting those goals to explore more deeply (see slide 4).

More than 100 experts from research, philanthropy, academia, industry, and public office whom we convened in San Francisco in June 2018 helped test our initial conclusions and approaches. With these experts from the US, China, India, Europe, and Latin America we were able to explore cross-sector topics to generate a shared understanding of how, together, we can accelerate progress toward achieving net-zero emissions by mid century.

THIS DECK REFLECTS WHAT WE'VE LEARNED, BIG QUESTIONS WITH WHICH WE ARE STILL GRAPPLING, AND OUR PHILANTHROPIC FOCUS AND RECOMMENDATIONS TO ENSURE WE MEET OUR 2050 GOALS.

To help us continue to improve, we welcome your feedback on this deck and your reactions to our recommendations for philanthropy.

Reach out to us if you would like more information:
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ClimateWorks is Pursuing Five Key Approaches



ClimateWorks originally selected five approaches to start working on today to achieve net-zero emissions by mid-century. Over the past year, we have refined and deepened our thinking about how to pursue these approaches and, in some case, have revised how we characterize them. Three (orange circles above) represent low-carbon/decarbonization transition approaches. Two (blue circles above) represent critical techniques for advancing these approaches.



Overarching Themes from 2050 Today Event



Feedback from our 2050 Today group discussions surfaced the following themes as important ones for philanthropists to consider as they develop 2050 strategies:

POLITICAL ECONOMY MUST BE PART OF THE 2050 DISCUSSION

It is imperative to work closely with businesses, local communities, and labor representatives to produce long-term visions of successful, just, and equitable transitions.

MITIGATION WILL SCALE IF GROUNDED IN THE SUSTAINABLE DEVELOPMENT AGENDA

Aligning emissions reductions with Sustainable Development Goals (SDGs), such as clean energy access, sustainable cities, responsible consumption and production, and increased biodiversity in oceans and land can help smooth the large societal changes needed for successful energy transitions.

A POSITIVE VISION CAN DRIVE PROGRESS TO A CARBON-NEUTRAL SOCIETY

Working with impacted communities, climate philanthropy must create locally resonant visions of a world in which efforts to mitigate climate change lead to a better quality of life.

ALLIES, ALLIES, ALLIES

There are stronger alliances to forge with groups working on other drivers of climate action, including health, innovation, and competitiveness. It's critical to scale up existing platforms for collaboration, including with the business sector.

SOLUTIONS NEED TO WORK ECONOMICALLY AND ACKNOWLEDGE DIFFERENTIAL NEEDS

By engaging communities greatly affected by decarbonization transitions, climate philanthropy can identify which incentives and forms of support are most useful.

Recommendations for Philanthropy



SHIFT EMPHASIS FROM RENEWABLES

DEPLOYMENT TO BENEFICIAL ELECTRIFICATION AND GRID INTEGRATION

The rapid pace of renewables deployment suggests philanthropic resources could be redirected to scaling up beneficial electrification and to integrating clean electrons onto the grid, especially in China, India, the European Union, and the United States.



ENABLE DEMAND-SIDE REDUCTION WITHIN INDUSTRIES

Using circular economy approaches to reduce industrial emissions offers economically attractive opportunities to meet global material needs while staying on a low-carbon pathway.



CONTINUE BUILDING PHILANTHROPIC

SUPPORT FOR TRANSPORTATION ELECTRIFICATION

Expand regional policies and programs where government ambition outpaces local capacity and build politically powerful local and global coalitions among diverse stakeholder groups.



AVOID NATURAL GAS LOCK-IN

Cheap natural gas threatens to displace zero-carbon power generation. It is also a feedstock to the chemicals industry and a source of energy in the buildings and industry sectors, creating cost barriers for a transition to electrified technologies or use of advanced low-carbon biofuels or hydrogen.



ADVOCATE FOR INNOVATION

Continued technological innovation is needed, yet public (and philanthropic) funding for innovation activities (particularly those focused on the “hard to electrify” sectors) is relatively low. Increased innovation spending and policies that encourage private sector innovation are critical to moving new technologies to commercial scale.



SUPPORT CARBON PRICING

Carbon pricing, either in the form of carbon taxes or cap-and-trade programs, can be a powerful policy to drive decarbonization and beneficial end-use electrification, especially where the challenges and solutions are highly heterogeneous, such as industrial processes.

Recommendations for Philanthropy



CARBON DIOXIDE (CO₂) REMOVAL (CDR) IS A CRITICAL COMPONENT OF DECARBONIZATION

We need removal because it won't be enough to reduce emissions and preserve today's carbon sinks (although these remain important goals). Because we'll need large-scale carbon removal by mid-century, we need to better understand CDR's opportunities, challenges, and scaling potential now.

All of the above: A portfolio of natural and technological options maximizes removal potential and co-benefits. At the same time, it minimizes risks and negative side effects that would be associated with excessive reliance on any single approach. We need to scale natural solutions now.

Not “or” but “and”
Communication strategies are essential to achieve buy-in among groups that view removal as competition to mitigation. Some actors in the climate space associate carbon removal with failed experiments and misunderstand the nature of the interventions.

Today's CDR pilot tests were created in the absence of significant policy support (e.g., a robust carbon price), so they need finance more than policy to scale up. However, we will need both finance and policy to generate the level of CDR capacity necessary to drive emissions to net zero and then below zero.

TO MEET 2050 EMISSIONS MITIGATION TARGETS, CARBON REMOVAL MUST ACCOMPANY END-USE ELECTRIFICATION and DEEP DECARBONIZATION OF ELECTRICITY

We need resources to study the state of carbon removal; to explore communications, advocacy, and policy options; and to examine ways in which to achieve gigatonne-scale carbon removal in little more than 30 years from today.

Approach 3: Focus on food and agriculture

What: Opportunities (and tradeoffs) exist at the intersection of land, food, energy, and carbon.

Climate philanthropy must develop capacity and build out strategies in these sectors to effectively meet the magnitude of this challenge. The food and agriculture approach is the least well developed of our five approaches, but we are investigating (including working with others already engaged in this space and performing additional research) on the set of options below.



NATURAL CARBON REMOVAL

Food and agriculture strategies overlap with many natural carbon removal approaches. Techniques such as the use of biochar, improved land management, or agroforestry can all support the potential of agricultural lands as carbon sinks.



AGRICULTURAL EMISSIONS REDUCTION

Opportunities to reduce agricultural sector emissions range from changing fertilizer and land management practices and increasing yields to increasing efficiency in supply chains, including cold storage. These opportunities provide benefits beyond reducing carbon emissions and help achieve several Sustainable Development Goals.



DEMAND-SIDE SOLUTIONS

Demand-side strategies such as shifting to plant-based diets and reducing post-consumer food waste can help to reduce both the carbon intensity and land use intensity of our food system.

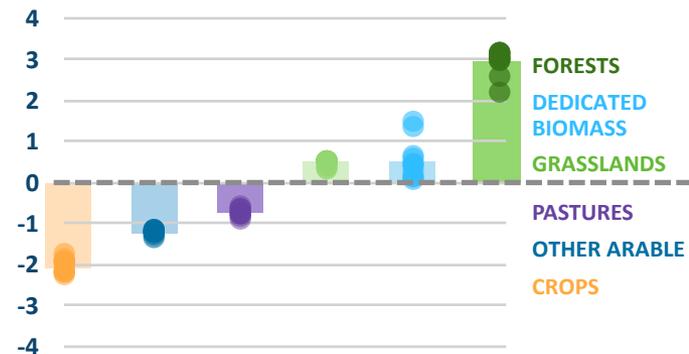
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LAND USE TRADEOFFS

Looking to 2050, models indicate that we will see increasing land scarcity as well as land use tradeoffs among forest carbon sinks, bioenergy crops, and food crops for an estimated 9 billion people, many of whom may be eating more land-intensive meat, if current trends continue. Climate philanthropy must embed an understanding of these constraints into our strategies.

2050 change in global land allocation for well below $<2^{\circ}\text{C}$ pathways compared to a reference case (million km^2)



Source: ClimateWorks analysis using GCAM-CWF v.4.4

Recommendations For Philanthropy



SUSTAINABLE CONSUMER BEHAVIOR

Recognize how much we don't know, and help move the research agenda forward: Sustainable behavior is a nascent field and needs support to keep moving the research agenda forward. Philanthropy must support early-stage research along multiple axes and provide seed funding to develop and test evidence-based strategies.

Incorporate known insights to improve existing strategies:

In some cases, proven behavior-based strategies—for example, setting of greener default options, promotion of issues with a public health lens, or deployment of social pressure—can increase the effectiveness of existing strategies.



HIGH-IMPACT INTERVENTIONS

Harness Influence of Institutional Actors: Philanthropy should target not just individual behaviors of consumers but also those of institutional actors, investors, and decision makers. Working further upstream creates opportunities for philanthropic interventions to achieve a broader reach.

Target the Global Middle Class: Sustainable consumption hinges on middle-class consumers in both the Global North—due to their bulk purchasing power and their role in setting global aspirational consumption norms—and the Global South—due to their growing purchasing power and rapidly evolving consumption norms. Philanthropy can work to ensure that low-carbon, affordable, and convenient options are available for both of these groups.

Involve Consumer-Facing Companies: Philanthropy must find a way to influence companies to implement greener options and redesign their choice architecture to support consumers in moving toward more sustainable consumption.

Approach 5: Pursue global tipping points

Recommendations for Philanthropy

Philanthropy must prioritize those strategies that generate positive spillover effects and take advantage of global tipping point opportunities. We need to support the most promising, transferable, and scalable technologies, policies, and financial interventions to enable global markets that can spread climate-friendly technologies and business models.



UNDERSTAND KEY TIPPING POINT FACTORS

and target interventions in areas where strategic investments can overcome barriers.



BE PREPARED TO RAMP UP INVESTMENTS

in accelerators to ensure that change occurs at speed and scale.



BUILD IN PROGRESS REVIEW AND FLEXIBILITY

to respond to dynamism and uncertainty in technology evolution, political landscape, and markets.



USE MULTIPLE CHANNELS TO GAIN INFLUENCE

beyond typical government and NGO channels. Apply innovative approaches, such as business peer exchanges, to tap into the power of purchase commitments to drive markets.



INVEST IN ADVANCING WORK BY PIONEERS

in key countries and processes to inspire replication of successful examples set by these early movers.



CULTIVATE LOCAL CHAMPIONS AND PARTNER WITH MULTIPLE INSTITUTIONS INSIDE AND OUTSIDE OF GOVERNMENT.

Avoid reliance on just a few individual actors.



COORDINATE SUPPORT AND VISION ACROSS DONORS

so that resources from bi- and multi-lateral institutions and foundations can be applied in a coherent and impactful way.

The ClimateWorks Foundation thanks many partners and experts for contributions to the 2050 exercise:

Adam Gromis, Uber

Adrian Fernandez, Iniciativa Climática de México

Aimee Witteman, McKnight Foundation

Ajay Gambhir, Imperial College

Ajay Mathur, The Energy and Resources Institute (TERI)

Ali Zaidi, Morrison & Foerster

Alicia Seiger, Stanford University

Amanda Staudt, National Academy of Sciences

Amy Luers, Future Earth

Ana Toni, Instituto Clima e Sociedade (ICS)

Andrew Hughes, Generate Capital

Arunabha Ghosh, Council on Energy, Environment and Water (CEEW)

Barbara Buchner, Climate Policy Initiative (CPI)

Bert Metz, European Climate Foundation (ECF)

Betony Jones, Labor Center (UC Berkeley)

Betsy Taylor, Breakthrough Strategies

Bill Hare, Climate Analytics

Brendon Slotterback, McKnight Foundation

Brigid McCormack, Tempest Advisors

Catha Groot, Radicle Impact Partners

Chris Decardy, Packard Foundation

Dan Adler, Energy Foundation

Daniel Vennard, World Resources Institute (WRI)

Daniel Zarin, Climate Land Use Alliance (CLUA)

Deepak Gupta, Shakti Foundatoin

Detlef Van Vuuren, PBL Netherlands Environmental Assessment Agency

Devra Wang, Heising-Simons Foundation

Doug Arent, National Renewable Energy Lab

Eliot Diringier, Center for Climate and Energy Solutions (C2ES)

Elmar Kriegler, Potsdam Institute for Climate Impact Research

Eric Masanet, Northwestern University

Erica Hope, European Climate Foundation (ECF)

Giana Amador, Carbon180

Giovanni Circella, UC Davis

Gustavo Pinheiro, Instituto Clima e Sociedade (iCS)

Heather McGeory, We Mean Business

Horacio Trujillo, Metanoia Fund

Huiming Gong, Energy Foundation China

Jae Edmonds, Pacific Northwest National Lab

James Mulligan, World Resources Institute (WRI)

Janea Scott, CA Energy Commission

Jennifer Wilcox, Colorado School of Mines

Jessica Brown, Climate Policy Initiative (CPI)

Jiang Kejun, Energy Resource Institute

Jiang Lin, Lawrence Berkeley National Lab

Joeri Rogelj, International Institute for Applied Systems Analysis (IIASA)

Jonathan Pershing, Hewlett Foundation

Jorge Villarreal, Iniciativa Climática de México

Jose Carmona, Energy Foundation

Jules Kortenhorst, Rocky Mountain Institute

Julio Friedmann, Carbon Wrangler

Karen Laughlin, Heising-Simons Foundation

Kate Power, KR Foundation

Katharine Mach, Stanford University

Kevin Mo, Paulson Institute

Kirsten Jurich, Overlook Foundation

Lars Grotewold, Mercator Foundation

Lewis Akenji, World Resources Forum

Lindley Mease, Thousand Current

Liu Shuang, Energy Foundation China

Margarita Parra, Hewlett Foundation

Marilyn Waite, Hewlett Foundation

Marisa de Belloy, Overlook Foundation

Mark Wishnie, The Nature Conservancy

Mary Nichols, California Air Resources Board

Mathew Lawrence, IPPR

Matt Baker, Hewlett Foundation

Michael White, Nature

Mona Yew, NRDC China

Monica Araya, Nivelá

Nancy Ryan, E3

Nathan Argent, Oak Foundation

Nebojsa Nakicenovic, International Institute for Applied System Analysis (IIASA)

Niklas Höhne, New Climate Institute

Noah Deich, Carbon180

Pankaj Bhatia, World Resources Institute

Philipp Offergeld, Stiftung Mercator

Rachel Slaybaugh, UC Berkeley

Rebecca Dell, Hewlett Foundation

Richard Baron, European Climate Foundation (ECF)

Rob Glen, BNEF

Roger Aines, Lawrence Livermore National Lab

Rohit Chandra, Harvard University

Ron Benioff, National Renewable Energy Lab

Sahba Chauhan, Oak Foundation

Samantha Smith, International Trade Union Confederation

Sean Thomas McCoy, Lawrence Livermore National Lab

Seema Paul, The Nature Conservancy

Shauna Sadowski, Annie's

Thomas Hale, Oxford University

Tom Steinbach, Tempest Advisors

Tom Wilson, Electric Power Research Institute

Trevor Houser, Rhodium Group

Vance Wagner, Energy Foundation

Walter Reid, Packard Foundation