global warming theories in favor of his belief that an ice age was imminent; he reversed his position after Britain's record-breaking heatwave in the summer of 1976. Despite this early hiccup, CRU was instrumental in establishing evidence for global warming in the early days of climate change research, and has been partially funded by the U.S. Department of Energy as well as several charitable foundations and corporate sponsors. However, handling the amount of data needed by LINK proved beyond CRU's capacity. It continued to handle ancillary data until 2006, but primary data was sublet to the British Atmospheric Data Center (BADC).

Established in 1994, the BADC reports to the UK's National Environment Research Council and is the chief data center for atmospheric sciences. Today, it continues to oversee the data collection at LINK, but has subcontracted the work out to the Met Office Hadley Center for Climate Prediction and Research. Founded in 1990, the Hadley Center is named for 18th-century English meteorologist George Hadley. It is operated by and based at the Exeter headquarters of the Met Office, the UK's national weather service, and is tasked with focusing the office's scientific efforts related to climate change. While CRU includes a staff of about 30, the Hadley Center has over 200.

The LINK data is used by ClimatePrediction.net (CPDN), a distributed computing project run by the UK's Oxford University with the intent of reducing uncertainty in climate modeling. Hundreds of thousands of climate models are run with LINK's data, using the volunteer computing model that utilizes home-based participants who donate their computers' idle time through software that receives tasks from the server to be run client-side on personal computers. About 32,000 volunteers actively participate in CPDN, making it one of the largest projects of its kind.

The LINK data is also used in Providing Regional Climates for Impacts Studies (PRECIS), a regional climate modeling system that can be run on Linux. PRECIS was designed to allow researchers in developing countries to create high-resolution climate change scenarios.

LINK produces several climate models; the current generation is called the HadGEM suite. The suite includes HadGEM1, which has the highest spatial resolution of the three global-coupled, atmosphere-ocean models (the other two are HadCM2 and HadCM3). HadRM2 and HadRM3 are high-resolution atmospheric models of Europe that provided the underpinning for the British government's most recent scientific report on climate change scenarios for the UK. Data is stored and accessible to registered LINK users in a proprietary PP-format; the BADC provides utilities for decoding, converting, and otherwise handling PP-format files. The BADC also operates an online community for LINK users, regardless of affiliation, to discuss the project's data and other information.

Bill Kte'pi
Independent Scholar

See Also: Climap Project; Climate Action Network; Climate Change Knowledge Network; Climate Models; Hadley, George.

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Climate Justice

Climate justice relates to the distribution of benefits and burdens as the climate changes. The theoretical discussion over climate justice stems primarily from the literature in environmental justice, which began in earnest during the 1980s, as political theorists and environmental activists grew concerned enough to widen the focus of environmental ethics.

As with most justice issues, there are forward-looking distributional questions: How are benefits and burdens to be distributed? What parties ought to shoulder this burden? What parties ought to be the primary beneficiaries of climate policy? There

are also backward-looking questions: Who has benefitted from early emissions and/or resource consumption? Who has been marginalized and/or disadvantaged? Who is responsible for having created current distributional inequities? To what extent can they be held accountable?

Both sets of questions inform wider policy and governance prescriptions: What do responsible parties owe to aggrieved parties? Should early (and presumably unaware) emitters be held accountable to the same degree that contemporary (and presumably informed) emitters ought to be?

It would be too narrow, however, to limit the climate-justice debate to distributional questions alone. There are other important considerations as well, related to the procedural fairness of climate policy, participation of parties in the development of climate policy, recognition of diverse communities by the broader international community, and development of capacities for dealing with climate impacts.

Challenges

Climate change poses at least three unique challenges to traditional theories of justice, which tend to operate within a discrete community of subjects. Insofar as traditional theories of justice have tended to address justice claims within states, where moral standing is established by membership in a well-defined community, the global reach of climate change raises international questions related to legitimate jurisdiction, governance, development, population, and birthright. How, for instance, can justice (or injustice) be established without an international contract, a suitably empowered governing body, or a community of recognized citizens?

Perhaps even more problematically for traditional theories of justice, climate change will affect not only an international community of human subjects—typically the subjects of justice—but also a wider spectrum of parties, including animals and nature. These interspecies justice implications raise questions about the moral status of affected parties, the moral considerability of nonanimal nature, and even the standing of abstract natural phenomena like marine ecosystems and boreal forests.

To complicate matters further, the distributional impacts of climate change are projected to linger for centuries, making climate change perhaps a paradigm case of intergenerational justice. Theories of climate justice must therefore consider the distribution of burdens and benefits on not only existing populations but also populations that do not yet exist—or, more vexingly, that might have, but may never exist. This latter consideration comprises the heart of the "nonidentity" problem.

Strategies and Solutions

Within this general constellation of questions, there are many proposed responses, each of which can be addressed using two central approaches: historical and ahistorical. Historical theories purport to answer the question of justice by appealing to the backward-looking questions—not simply how to attribute blame and/or liability, but also to integrate considerations related to needs, rights, freedoms, disenfranchisement, and previously discharged obligation into a determination of whether the current state of affairs is just; and/or what a more just state of affairs might look like. In contrast, ahistorical theories (or "time slice" theories) tend to avoid appealing to history, and instead seek the just distribution by simply appealing to optimal distributional arrangements. Both historical and ahistorical strategies can be used to support any of the following responses.

Just as there are multiple and varied strategies to address these questions, there are also multiple and varied responses, each saddled with further problems. For instance, the simplest distributional arrangement, strict egalitarianism, evenly distributes the benefits or burdens of climate change among all parties and/or persons. Strict egalitarian approaches have the merit of being straightforward, but they suffer from concerns of overindexing—essentially, that benefits and costs must be identified, measured, bundled, and allocated in accordance with some consistent principle—and concerns about measurement over specific timeframes. In the case of climate change, these concerns relate specifically to considerations about whether the world is to be returned to an initial baseline state, or whether a mere compensation-and-restitution regime will resolve injustice, as well as how to account for future generations and nonhuman nature.

Almost all justice positions are caught up in the debate over equality, sufficiency, or priority.

That is, whether benefits and burdens should be distributed equally (egalitarianism), whether they should be distributed so as to provide enough and as good for affected parties (sufficientarianism), or whether the worse off should be given priority or extra weight (prioritarianism). More problematically, there is no agreement among theorists with regard to the nature of benefits and burdens, as benefits and burdens may relate to issues such as resources, emissions, happiness, or general welfare.

Therefore, there is a range of competing principles relevant to climate justice, including welfare egalitarianism, rights egalitarianism, luck egalitarianism, Rawlsian cosmopolitanism, justice as fairness, and capabilities theory.

Movement Uptake and Realpolitik

As a consequence of (and perhaps further fueling) the conceptual disparities and disagreements between the variety of climate justice positions, there are a wide range of representative climate-justice movement actors, each reflecting these theoretical rifts and divisions. Depending on the preferred approach to climate justice, a suite of practical outcomes related to health, wealth, well-being, freedom, security, food, natural resources, cultural heritage, and national identity assumes the dominant emphasis in political and policy negotiations, leaving movement actors to struggle against one another as well as against their perceived sources of injustice in the first place. To complicate matters, the climate-justice movement is also interspersed with opportunistic actors, including special-interest groups and representatives from state and industry, that seek to capture institutions, resources, and funding under the auspices of these generalized concerns.

Benjamin Hale
University of Colorado, Boulder

See Also: Carbon Markets; Carbon Tax; Climate Debt; Developing Countries; Human Rights and Climate Change.

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Climate Justice Now!

Climate Justice Now! (CJN!) is a transnational activist network of over 400 organizational and social-movement members committed to fighting for ecological, social, and gender justice as they relate to global climate governance. The network was founded in December 2007 at the United Nations Framework Convention on Climate Change (UNFCCC) Conference of Parties 13 (COP 13) climate negotiations in Bali, Indonesia, as an open space for radical critique of current climate change policies and reformist environmental nongovernmental organizations (ENGOs). Since its founding, CJN has been actively engaged