



# Re-gendering Climate Change: Men and Masculinity in Climate Research, Policy, and Practice

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In this Perspective, we argue that much climate change research conflates “gender” with “women.” We ask, what are the consequences of this conflation, and what do we learn when we follow sociologist George Homan’s classical command to “bring men back in” to our analysis of the gendered dimensions of climate change? We find, first, that scholarship on gender and climate change tends to depict women mainly as victims of the uneven impacts of climate change. While this assessment is accurate on its face, it leads to solutions that address the problem (women’s troubles), not its causes (men’s greater responsibilities and failures relating to climate change). We note that researchers’ focus on women’s suffering diverts attention from a thorough examination of the mechanisms and consequences of men’s domination of climate change research and policy. We find, further, that analysts’ gender/women conflation hinders redress of women’s injuries by camouflaging men’s blameworthiness and offering solutions that often increase women’s duties. Gender researchers’ emphasis on women’s plight and inequality obscures the exception that proves the rule: men wield the (sometimes) invisible hands that create and perpetuate the climate crisis at the expense of everyone, including women. In this Perspective, we acknowledge women’s relative vulnerability to climate change, outline in some detail the role of men and masculinity in the climate crisis, and identify the unique strengths that women and men each bring to the table to address the environmental challenges facing humanity.

**Keywords:** gender, environmental justice, climate policy, masculinity, climate science

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## GENDER MEANS WOMEN...AND MEN

An Internet search for “gender and climate change” generates almost exclusively links to research on “women and climate change.” The men are missing. In this Perspective, we ask: what accounts for the conflation of “gender” and “women” in climate change research, and what are the implications of the primary focus on women? One answer to the gender=woman assumption flows from feminist scholarship. Twentieth-century gender research made important inroads into understanding the unequal place and treatment of women in societies around the world (de Beauvoir, 1949/1972; Friedan, 1963; Ortner, 1974). During the post-World War Two period of “second wave” feminism, scholars, many associated with “women’s studies” academic programs, embarked on the analysis and discovery of women’s history, literature, art, politics, sexuality, and oppression (Ginsberg, 2008). Women were the explicit focus and, while men were implicit in gender analyses, they were only of secondary interest. It was not until the 1990s that “men’s studies” scholars began to examine the social, cultural, political, sexual, and

historical dimensions of “men” and “masculinities” (Connell, 1995; Kimmel, 1995; Mosse, 1996). Since then the gap between women’s studies and men’s studies has narrowed somewhat, and many academic programs have been renamed “women, gender, and sexuality studies.” For political and historical reasons, however, women remain a primary concern of much gender studies. The emphasis on women continues to shape the thinking and agendas of many researchers outside traditional gender studies including climate science.

## BRINGING WOMEN IN

The discovery of both gender and women by climate change researchers is relatively recent. Equally recent is the prioritization of climate change on the agendas of feminist intellectuals and activists. The United Nations has played a prominent role in both climate change and women’s rights, but there have been few points of convergence between the two issues. The UN established its Commission on the Status of Women in 1946, less than a year after its founding. Half a century later, at the Fourth World Conference on Women in Beijing in 1995 and then at the Beijing +5 UN Millennium Summit in 2000, activists protested women’s continued inequality, but climate change was not a prominent concern. While feminists largely were ignoring climate change, the UN’s two main climate change organizations, United Nations Framework Convention on Climate Change (UNFCCC) and Intergovernmental Panel on Climate Change (IPCC), largely were ignoring women. Women comprised only around one-quarter of delegates during the first quarter-century of annual UNFCCC Conference of Parties (COP) meetings, and women chaired, co-chaired, or vice-chaired an even lower percentage of IPCC committees (IPCC, 2019). As climate change became a greater focus of international feminists, gender “mainstreaming” (i.e., the inclusion of women’s issues) increased as a topic of debate and demand, and women represented nearly half of delegates at the 2021 COP26 in Glasgow, though men were 60 percent of active speakers and spoke 74 percent of the time in plenary meetings (Chiu, 2021; UN, 2021). Since the first IPCC Assessment Report (AR1) in 1990, core authorship by women has increased from 8 percent to 33 percent in AR6 in 2021 (Liverman et al., 2022), but gender parity in climate science remains elusive.

Gender mainstreaming efforts by climate researchers followed the longstanding script of cataloging women’s injuries from the impacts of a changing climate: women’s greater rates of injury and mortality from climate and environmental disasters, higher rates of domestic abuse and increased stress from the demands of care work during and after climate-related catastrophes, larger loss of income and slower economic recovery from climatic hardships, and higher likelihood of interrupted schooling and earlier forced marriage resulting from climate-related disruptions of social life (see Dankelman, 2010; Fothergill and Peek, 2015; Karpf, 2021). Once again the men are missing.

## BRINGING MEN IN

How is research on gender and climate changed when “men” are included? Women’s grievances related to climate change impacts

and policies are myriad and warrant researchers’ documentation. It is a mistake, however, to think that our gender and climate change work is done by even the most exhaustive exposition of women’s hardships. “Gender and climate change” also must include “men and climate change.” For instance, men’s work can make them particularly vulnerable to the impacts and consequences of climate change. The vast majority of firefighters are male, and the dramatic increase in wildfires related to rising temperatures has a disproportionate impact on men (Ericksen, 2014; Potter, 2020; U.S. Fire Administration, 2021), as does the predominantly male rescue and reconstruction work associated with disasters such as flooding from rising sea levels (Learn, 2016; IPCC, 2021; Soravia et al., 2021).

Our goal here is not to compare the injuries from climate change suffered by women with those experienced by men. By broadening the analysis of gender and climate change to include men, we wish to raise questions about gender and power: Who is responsible for defining climate change? Who is responsible for setting the research agenda about climate change? Who is responsible for deciding how serious is climate change? Who is responsible for causing climate change? Who is responsible for deciding priorities and strategies for responding to climate change? Who is responsible for solving the problem of climate change? There are gendered answers to these questions, and the answers uniformly are the same: men.

## DISCUSSION

Our goal in this Perspective is to illuminate how men’s power and actions are camouflaged by the emphasis on women in discussions of gender and climate change. What can we learn by examining the role of men and masculinity in causing, comprehending, and controlling climate change? Historically and at present, men have dominated commerce, science, and politics which represent three realms of climate change: *cause*, *comprehension*, and *control*. Each is discussed below.

### Men, Masculinity, and the Causes of Climate Change

Patterns of consumption and production in the industrialized world are widely recognized as the greatest drivers of anthropogenic climate change (Atkin, 2019; Thogerson, 2021; IPCC, 2022). On their face, consumption and production are gender-neutral terms. Researchers have deconstructed these patterns, however, to argue that men have an outsized role in both. Men dominate the fossil fuel industry at all levels, they control the military, they consume more meat, they drive larger vehicles, and their recreational activities are more carbon-intensive (Cohen, 2014; Kanyama et al., 2021). Daggett (2018) labels these patterns “petro-masculinity,” and argues that there is an intimate connection between manhood and the consumption and control of fossil. Men not only are the captains of industry and the champions of carbon consumption, they also are the wagers of war.

The military is a preeminently male institution invoking a plethora of “hegemonic” masculine traits (bravery, endurance, patriotism) that appeal to many men (and some women),

including predominantly male politicians and climate scientists (Kelly, 1985; Hinojosa, 2010; Manne, 2018, 2020; Taflaga and Beauregard, 2019). Politicians embrace military concerns and solutions because they generally provide solid political footing, and there is a well-trod path from the military into politics. The allure of the military to scientists is less well-recognized. Since most scientists, especially climate scientists are men, there is a resonance between civilian male microcultural elements such as courage and adventure with military macrocultural themes of loyalty and strength. Scientists also are attracted by defense-related science funding which is many times that available from the National Science Foundation<sup>1</sup>.

The political and scientific affinity for things military contributes to climate change partly because the military is an energy-dependent institution. Its sheer size and budget make the U.S. military “one of the largest institutional climate actors in the world” (Belcher et al., 2019, p. 76). Grappling with climate change is increasing military spending since officials are trying to manage its effects on military installations and operations [e.g., rising sea levels inundating bases and heat exhaustion by troops on missions (Garcia, 2020)]. The DOD’s climate adaptation plans contain a laundry list of energy-saving and environmental adaptation initiatives that tend not to reduce, but only to slow growth of military energy demands. When security crises occur, both civilian and military programs to reduce carbon emissions and energy consumption quickly can be derailed<sup>2</sup>.

## Men, Masculinity, and the Comprehension of Climate Change

Masculine interests and perspectives shape the agenda for climate science and policy which emphasize modeling of physical and biological systems and cataloging security concerns. As MacGregor (2010, p. 128) points out, “by ‘scientizing’ and ‘securitizing’ it, climate change is constructed as a problem that requires the kinds of solutions that are the traditional domain of men and hegemonic masculinity.” Politicians are motivated by powerful and wealthy interests who tend not to lobby for climate justice. Climate science mirrors climate politics in its disregard for climate justice, but for different reasons. The kinds of questions mostly male climate scientists ask tend to focus on the physical science, not the human dimensions of climate change (Masood, 2021). As a result, climate models grow ever more sophisticated and complex, leading Fleming (2017, p. 27) to refer to them as “fetishes.” Despite advances in climate modeling,

<sup>1</sup>For instance, in FY20, the National Science Foundation research budget was \$6.7 billion. The Department of Defense’s (DOD) non-weapons basic and applied research budgets combined totaled \$8.7 billion which included \$3.5 billion for the DOD’s Defense Advanced Research Projects Agency (DARPA); the basic research budget of the National Aeronautics and Space Administration was \$6.9 billion, and the Department of Energy’s basic R&D budget was \$5.5 billion. The latter two agencies are not specifically DOD agencies, but have a significant national security mission and fund a good deal of civilian research (see American Association for the Advancement of Science, 2021). The militarization of science – recruitment of scientists into the military and military projects and the military funding of research has been a cause for some concern by scientists (Nature, 2018).

<sup>2</sup>For instance, the 2022 Russian Federation’s invasion of Ukraine led to a U.S. ban on Russian oil imports and a reevaluation of political decisions about domestic oil exploration and development and international purchases including from former adversaries like Venezuela and Iran (Garip and Forero, 2022; Goodkind, 2022).

scientific understandings of climate change’s effects on social inequalities or human physiology, psychology, and wellbeing remain relatively uncharted.

Male climate science’s preoccupation with climate modeling is more than matched by male-dominated military and political interests in climate security which centers on preparedness and threat. In 2021, U.S. Secretary of Defense, concluded that “no nation can find lasting security without addressing the climate crisis” (U.S. Department of Defense, 2021). Military analyses identify climate change as a “threat multiplier” with the capacity to challenge military effectiveness and preeminence [e.g., by increasing conflicts over resources, mass migrations, or geopolitical competition (LaShier and Stanish, 2018)]. The invocation of “national security” has the capacity to preempt all other research and policy questions and represents another mechanism of masculine agenda-setting (Marzec, 2016).

Masculinism further contributes to the omission of social justice concerns in climate politics and science by sidelining women whose upbringing and social responsibilities as caregivers offer the potential for greater emphasis on the human dimensions of climate change (O’Neill et al., 2010). Researchers have extensively documented the exclusion and exploitation of women scientists, particularly in field sciences like engineering and geosciences, suggesting that to whatever extent there is a distinct feminine scientific ethos, it tends to be devalued (Gay-Antaki and Liverman, 2018; El-Hout et al., 2021). Similarly, male-dominated politics around the world has long been recognized as a misogynistic boys’ club (Manne, 2018, 2020; Taflaga and Beauregard, 2019)<sup>3</sup>. Even when women experts are enlisted in pro-environmental political battles, they report being sidelined and denigrated (Heinzerling, 2021).

## Men, Masculinity, and the Control of Climate Change

Feminist critiques of science emphasize a long-standing masculine preoccupation with controlling nature, summarized as “science is masculine, nature is feminine” (Keller, 1987; Kirk, 2009). In climate science, the masculine desire to control nature is perhaps most dramatically represented by the case of geoengineering. Large-scale efforts at carbon dioxide removal and solar radiation management comprise two major categories of geoengineering solutions to climate change<sup>4</sup>.

Most geoengineers are men and many are associated with U.S. national laboratories engaged in military research (Russell, 2001; Fialka, 2020). This association is especially clear in the

<sup>3</sup>“Masculinism” is defined as the advocacy of male superiority and should be distinguished from “masculinity” which refers to the characteristics, cultures, interests, and organizations associated exclusively with men (Bain and Arun-Pina, 2020).

<sup>4</sup>Carbon dioxide removal projects range from common, longstanding practices such as planting forests and landcover to more technically challenging CO<sub>2</sub> sequestration in natural formations such as caves or oil and gas reservoirs or designing human-made carbon sinks such as landfills, forced algal blooms, or artificial “trees” that mimic natural trees by absorbing carbon (Environmental Protection Agency, 2017; Royal Academy of Engineering, 2018). Solar radiation management includes a variety of artificial strategies for reducing sunlight such as increasing the reflectivity of clouds, crops, buildings, or the sea surface, releasing reflective aerosols into the stratosphere, or launching orbiting giant mirrors to reflect sunlight (Nicholson, 2020; Wagner, 2021).

case of solar radiation management projects which follow a long history of military scientific interest in controlling weather and the environment [e.g., DDT to fight malaria during WWII, cloud seeding and defoliation chemicals during the Vietnam War (Tollefson, 2008; Fleming, 2012)]. Most critics of geoengineering express misgivings about its effectiveness, unintended consequences, and diversion from the need to reduce CO<sub>2</sub> and other greenhouse gas emissions (Chaturvedi and Doyle, 2015; Thomas and Warner, 2019). Despite some geoengineers' acknowledgment that "geoengineering... could not be a replacement for reducing emissions" (Harvard University, 2022), geoengineering is emblematic of approaches to climate change that not only preserve the carbon emissions status quo, and are themselves large-scale resource-intensive technologies. Buck (2021) concludes that even if geoengineering could offset carbon emissions, "net zero is not enough," and instead political and scientific efforts should be directed toward ending the use of fossil fuels. Other critics argue that the risks of geoengineering constitute a potential "fate worse than warming" (see also Corry, 2017; Tang and Kemp, 2021), suggesting that geoengineers are exemplars of the research literature linking risk-taking to masculine cultures and lifestyles (Mellström and Ericson, 2014; Robinson, 2019; Thomson, 2020).

In this Perspective, we have argued that conflating "women" and "gender" defines climate change as a "women's problem" and masks the role of men in causing, comprehending, and

controlling climate change. The result is to offer solutions to help women (e.g., better shelters, healthcare, small loans), and deemphasize men's responsibilities for causing and failing to effectively address climate change. The focus on women diverts attention from what male-dominated institutions, such as the UN and governmental bodies are doing, or not, to address the most immediate and long-term challenge facing humanity. In her 2010 *Nature* paper, "Call in the Women," Buckingham (2010) recognized the failures of mainly male climate policymakers and emphasized the importance of including women in climate change policymaking. Women's skills at negotiation and insights into the human dimensions of climate change can strengthen the work of fellow policymakers and scientists to capitalize on the promise of rethinking gender and climate change.

## DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

## AUTHOR CONTRIBUTIONS

Both authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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