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Rethinking gender and identity in energy studies

Sarah E. Ryan*

Yale Law School, United States

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ABSTRACT

Gender and identity should be core concerns for energy researchers and policymakers, because they mediate access to resources, exposure to pollutants, and opportunities to participate in energy resource management, policy, and science. Accordingly, this article suggests four research agendas ripe for further development: eliminating indoor air pollution, strengthening community resource management, developing feminist energy jurisprudence, and increasing women's representation in science, technology, engineering, and mathematics (STEM) and energy fields. This article is a call to action to publish gender and identity research of great consequence in this new journal.

Social scientific research on gender and energy covers vast interdisciplinary terrain. For decades, energy scholars have examined how women are disproportionately impacted by inefficient and unsafe indoor energy sources, how gender mediates community resource management (CRM), how natural resource jurisprudence reinscribes masculinist hierarchies, and how women are underrepresented in science, technology, engineering, and mathematics (STEM) fields. Energy researchers have analyzed the gendering of energy usage, pollution, and policymaking across geographies and economies. For instance, Parikh called attention to differences among "rural, urban, home bound... [and] economically active" women [1,2]. Clancy and Roehr illustrated that geography, income, and occupation influence women's energy preferences in high-income countries [3]. Sovacool explored the educational impacts of energy poverty on women and girls in economically developing nations [4].

The knowledge accreted by hundreds of studies enables us to rethink gender and identity in energy studies in exciting ways. Building upon the rich research on indoor air pollution, largely located in low income countries, we can explore the feasibility of localized "safer energy" industries that could contribute to environmental and economic sustainability, and improve the quality of life of millions. Drawing upon narrative and empirical work in CRM, concentrated in rural areas, we can investigate the lifecycle of community energy management and rigorously interrogate whether inclusion of disenfranchised people's perspectives leads to better environmental outcomes. Synthesizing diverse writings on gender, energy, and jurisprudence across locales, we can develop a feminist legal framework for remedying environmental wrongs, and launch the field of feminist energy jurisprudence. Responding to evidence demonstrating women's underrepresentation at myriad junctures in the STEM pipelines of every country, we can identify obstacles preventing diverse energy scientists from reaching their fullest potential. This article will explicate the potential of these four research areas. But first, a brief discussion of how gender studies scholarship can enhance energy research.

1. Reviewing gender studies scholarship with energy research in mind

Within gender studies, a number of literatures converse with the concerns of energy researchers, most notably ecofeminism, relational ethics, and standpoint theory. Western academic ecofeminism incubated in various peace and liberation movements of the late 1960s and early 1970s [5]. Several early conferences[1] [6] and anthologies [7–9] serve as touchstones of the emerging research area [10]. The early field, as characterized by Mellor in 1997, proposed "a connection between the exploitation and degradation of the natural world and the subordination and oppression of women" [11]. The goal of ecofeminism, according

[1] These included the 1974 "Women and Environment Conference" at the University of California, Berkeley and the 1980 "Women and Life on Earth: Ecofeminism in the '1980s" conference in Amherst, MA.

* Tel.: +1 203 436 9253.
E-mail address: sarah.ryan@yale.edu

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to Mies and Shiva, was to formulate "a new cosmology and a new anthropology which recognizes that life in nature (which includes human beings) is maintained by means of co-operation, and mutual care and love" [12]. Early ecofeminist works wove themes as diverse as animal rights, anti-colonization, and reproductive justice into calls for sustainable living and communal care.

From its inception, ecofeminism faced two challenges that serve as cautionary tales for contemporary gender and energy scholars. First, some writers grounded their work in tenuous assumptions about women's spiritual and physical connections to nature, which simultaneously simplified differences among women and dramatized distinctions between men and women [5]. Second, many ecofeminist and environmental essays were so reliant on structuralist (e.g., Marxist) theories that they lost sight of the mundane operations of modern market economies, including the diverse experiences of women as decision-makers at household and community levels [13]. One of the more interesting responses to these dilemmas has been scholarly monographs and collections that address specific instances of environmental degradation [14] or interact with particular environmental conferences or initiatives [15]. Readers of *ERSS* can debate whether the move to the specific is an advance or retreat, but it is an approach worth considering. So too are relational ethics and standpoint frameworks.

Gender and energy researchers might productively draw upon relational ethics and standpoint, or intersectionality, theories. The foundational work on relational ethics, Carol Gilligan's *In a different voice*, illustrated gendered differences in children's moral decision-making. Noting that girls seemed to consider others' feelings when making moral calculations, Gilligan suggested that a relational orientation informed their choices [16]. Roundly criticized for its empirical and philosophical shortcomings [17–19], the text nevertheless spurred important empirical work on girls' and women's relational obligations and household roles, including in environmental resource usage and planning. As Cynthia Grant Bowman summarized:

> . . .a material truth underlies the connection between women and the environment, for women as a group still perform most of the tasks involved in nurturing children and providing for their households. In fact, in many areas of the world, women's social and economic status, and in some cases their very survival and security, depend upon their doing so [20].

The notion that women's environmental decisions are mediated by interpersonal concerns and obligations, when empirically validated, has important implications for research and policy. So too does a recognition of women's unique roles within particular communities and societies.

Standpoint theory foregrounds the situated perspectives of marginalized individuals and groups. Its broad-ranging formulations encompass neo-Marxist critiques of gendered underclasses, phenomenological explorations of women's double consciousness, and postmodern critiques of gendered binaries in language, literature, and science [21–23]. At its most basic, standpoint theory posits that most research fails to incorporate diverse, localized, and personal knowledge, particularly from subordinate members of society. As such, a standpoint approach interrogates the validity of population research findings, though it has rarely been framed in such empirical terms. By the early 1980s, a robust debate over the meaning of the term "standpoint" and its usefulness for applied research was already raging [22]. Critics contended that standpoint theorizing was rarely complex enough to capture the chaotic interaction of gender, race, socio-economic status, etc. in individuals' lives [24,25]. Further, its emphasis on situated understanding suggested fractured solutions to global problems [26] such as climate change. Despite these shortcomings, standpoint and other feminist theories augment larger postpositivist critiques of "pure science" in important ways [27–29], as Harding illuminated:

> First, [feminist research] has revealed how the methods, assumptions, and results of research in 'good science,' not just in 'bad science,' have in themselves sometimes advanced sexist and androcentric projects. . .. Second, it has shown how the purported excellence of those standards is again and again defined in terms of the separation, the distance, of such standards from whatever counts as womanly or feminine. . .. Third, feminist research has demonstrated that it is only those politically engaged scientists and their philosophies that insist on the responsibility, the accountability, of the sciences for their consequences, intended or not, that can gather the resources to detect such discriminatory assumptions and practices [30,31].

Heeding Harding's advice, energy researchers can engage gender studies to interrogate socio-cultural binaries, champion women as change agents, and problematize simplistic accounts of energy usage and policy.

Decades of gender studies scholarship have explored binary pairings such as: men–women [32], male–female [22,27–29,33], individual–community [19,34], and present-future responsibilities [34,35]. These writings have complicated the ways in which we construct categorical variables and time periods. Gender studies have also demonstrated women's contributions to scientific theorizing, applied research, policymaking, and community action [14,27–29,36,37]; they are a reservoir of data. Leveraging this evidence, gender scholars have cross-examined oversimplified accounts of women's organizing. Young's writings on "seriality," or strategic social organizing among loosely affiliated individuals with a shared agenda, are among the most nuanced examples of this line of scholarship [32,34,35]. Her work converses with energy research that explores women's perceptions of environmental degradation [38,39] and willingness to cooperate on environmental conservation initiatives [40]. Overall, gender studies scholarship complicates reductionist views of gender and suggests how women might best be mobilized when their lives and livelihoods are at stake, as in the case of household air pollution.

2. Research agenda #1: eliminating indoor air pollution

Household energy issues have captured the attention of scholars, policymakers, and nongovernmental organizations such as the World Health Organization (WHO). Household energy use is a significant portion of national energy consumption across economies, as Stern explains in this journal issue [41]; indoor air pollution is a pernicious hazard in many places. For instance, solid cooking and heating fuels can quickly generate unhealthy levels of carbon monoxide and other harmful particulates [42–45]. According to data published by WHO in 2012, in high use countries such as Sierra Leone and Liberia, more than 95% of the population rely upon solid fuels; in median use countries such as Belize and Estonia, more than 10% of the population burn dung, charcoal, or wood for cooking or heating [46] (Chart 1).

Annual deaths attributable to indoor air pollution range from fewer than 100 in median countries to approximately half a million in China and India, according to 2004 WHO data (Chart 2).

Pollution from household sources not only occasions millions of preventable deaths each year, but also contributes to manifold incidents of chronic lung diseases [42–45,48], among the leading causes of death worldwide [49]. Further, indoor air pollution disproportionally affects a medically underserved and economically vulnerable population: poor women [42–45].