



Gender bias: the silent barrier to energy transition

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Introduction

In recent years, the world has woken up to the urgent need to tackle climate change. Governments and individuals are increasingly focused on reducing their environmental impact. But when it comes to adopting green behaviours, men and women don't act in the same way. There's a noticeable gap in how the two sexes engage with environmental issues (El Khoury et al, 2023).

Historical Context: Gender, technology and environmental roles

The way men and women approach technology and the environment today has its roots in history. Traditionally, men have been seen as builders, inventors, and those in control of technological advances, while women have been associated with caregiving, nature, and nurturing roles (Alesina et al., 2011; Shelton and John, 1996). This division has shaped the gender gap we see today in environmental engagement and decision making around the adoption of renewable energy technologies.

Ecofeminism offers a key perspective on this issue, arguing that the domination of women and the domination of nature share common roots in patriarchal systems of power. Just as women have been marginalised and oppressed in societies, so too has nature been exploited and controlled (Beauvoir, 1998; Goldenberg and Roberts, 2004; Ortner, 1972; Stephens et al., 2010). This connection is reflected in the way nature is anthropomorphised as feminine, referred to as 'Mother Nature' rather than 'Mr Nature' (Liu et al., 2019). The nurturing qualities attributed to nature are the same ones that society often ascribes to women, reinforcing the idea that they are more connected to the earth and responsible for its care (Bloodhart and Swim, 2010).

At the same time, men have historically dominated energy industries such as coal and oil, industries that are about power and control (Eagly and Steffen, 2000). This historical divide has created long-standing stereotypes. Men are still seen as more suited to technical and leadership roles, particularly in sectors such as renewable energy, while women are expected to be more concerned about the environment but not necessarily leaders in solving the technical challenges (Sovacool et al., 2022; Standal et al., 2020).

Technology, gender and stereotypes

This division persists to this day: in toy stores, for example, aisles are often divided by gender, with 'pink' sections for girls, full of dolls and kitchen sets, and 'blue' sections for boys, with cars and

construction toys (Abrams, 2010; Echavarren, 2023). While this organisation may seem convenient, it sends a clear message about what boys and girls should like. These seemingly innocuous divisions reinforce gender stereotypes at an early age by associating girls with domestic tasks and boys with adventurous or technical activities, subtly limiting their interests and aspirations based on gender (Abrams, 2010).

Studies show that women consistently report more positive attitudes towards the environment than men (Ahmad et al., 2021; Eagly, 1987; Rainisio et al., 2022). However, there's a paradox: men are more likely to adopt renewable energy technologies (Bollinger and Gillingham, 2012). This is largely due to stereotypes that associate technology with masculinity (Sovacool et al., 2022; Standal et al., 2020). As a result, women often feel excluded from energy-related decision-making processes, even though they are more invested in environmental issues.

Regional and cultural differences in gender and environmental concern

The gender gap in environmental concern doesn't look the same everywhere. Research shows that the gap is much wider in Europe and the Americas, while it is smaller or non-existent in other regions, such as Asia and Africa (Fors Connolly et al., 2020; Schmitt et al., 2009).

Surprisingly, the gender gap in environmental concern is actually wider in more gender-equal societies. One might expect that as men and women share more equal roles, their attitudes towards the environment would become more similar. However, research shows that when people have more freedom to express their preferences, men's and women's views on environmental issues can actually become more distinct (Chan et al., 2019). This is consistent with post-materialist theory, which suggests that in more affluent, gender-equal societies, people are freer to express their intrinsic dispositions, leading to greater divergence in gendered behaviours (Falk and Hermle, 2018).

Pro-environmental standards: A practical approach

Given how deeply embedded gender roles are in society, it is unlikely that governments or organisations will be able to completely change these systems overnight. Instead, a more practical solution is to focus on building pro-environmental norms (Chan et al., 2019). In societies where people conform to social norms, they are more likely to engage in widely accepted behaviours (Goldsmith and Goldsmith, 2011; Lazaric et al., 2020; Salazar et al., 2013). If governments and environmental groups highlight the fact that many people care about the environment and, for example, start to adopt renewable energy technologies, they could inspire more public support for sustainability (Sen, 1997). However, caution is needed, as if people already distrust the government, they may still reject these initiatives (Dietz et al., 2007; Rhodes et al., 2017).

Challenging stereotypes and promoting change

While promoting pro-environmental norms is important, we also need to challenge the entrenched stereotypes that keep women out of decision-making roles in the adoption of renewable technologies. Research shows that these stereotypes begin to form in early childhood (Nesdale, 2012; Quintana and McKown, 2008). Educational programmes that encourage girls to

pursue careers in STEM (Science, Technology, Engineering, and Math) and public campaigns that challenge traditional gender roles can help close the gender gap (Sovacool et al., 2022). Increasing women's participation in decision-making roles in the deployment of renewable energy will not only help close the gap, but also contribute to achieving broader sustainability goals.

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