Findings suggest empowering women is key to both sustainable energy and gender justice

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Solar Mamas working on solar panels at Barefoot College Zanzibar. Credit: Chalmers University of Technology, Barefoot College Zanzibar, Olga Timokhina

Involving women in implementing solar energy technologies in developing countries not only has great climate impact. A new study published in *Nature Energy* and carried out by researchers from Chalmers University of Technology, Sweden, shows that empowering women through energy care work can change unjust, gendered norms

and long-lived injustices.

Unlike going from fossil to renewable fuels within the transport sector, transitioning to renewable energy for electricity production is often done at the local level due to decentralized energy providers. Around the world, there are community-led programs that provide solar, wind and hydro power, as alternative, greener energy sources.

While these programs have the potential to help improve climate impact, they run the risk of maintaining deep-rooted gender imbalances through a lack of people-centered research and missing out the important, but often undervalued work of women within a community. The new study by Chalmers researchers, analyzes what is needed to successfully implement a renewable energy transition program and at the same time tackle systemic gender injustice.

"The climate crisis has put us in a position to stop and look back on our society, the rampant inequalities and the development planning being driven by over-consumption. As we chart a way out, it is important to emphasize that sustainability and justice go hand in hand. It is important to think of energy transitions as embracing social, economic and environmental aspects and here gender equality is a key," says Kavya Michael, researcher at Chalmers University of Technology and lead author of the paper.

Technical training and female empowerment

In the recently published study "A conceptual analysis of gendered energy care work and epistemic injustice through a case study of Zanzibar's Solar Mamas," Michael spent time observing and interviewing women in a project led by Barefoot College International, in Zanzibar, Tanzania.

The Solar Mamas-project provided women at the heart of the community with technical training to become energy providers in the transition to solar energy, giving them the skills and knowledge to install and maintain solar panels and bringing electric light to previously inaccessible spaces. This meant that businesses within the community could stay open after dark and women started occupying public spaces more in the evenings as there was light.

Through the training, the women became "community caregivers," and this meant that their work, both in providing solar panels and light to the community, and the work they continued to do within the household was valued and respected more.

"Women in Zanzibar were traditionally responsible for domestic energy provisioning, such as collecting firewood or buying kerosene, but these were never jobs that were considered or valued. By placing a value on the roles that were previously taken for granted by the female members of the group, their role in society was advanced," explains Michael.

The training also provided the women with a conducive environment to facilitate empowerment and change.

"What is unique about the program at Barefoot Zanzibar is that, as well as the technical training, there was a module called ENRICHE which is part of the Solar Mamas training curriculum where they are provided with a safe space to reflect on unjust gendered norms and social practices. The women are given education about their rights, reproductive health and financial literacy, among other things. This module plays a huge role in 'unlearning' the systemic injustices that are prevalent in their societies," says Michael.

Support from all levels key for success

The study shows that there is potential for locally led energy transitions to break established gender norms and successfully combine a move to renewable energy with a gender-just society. The findings illustrate the need for energy transitions research, policy and practice to be deeply informed by lived experiences, diverse practices of care within the energy webs and valuing of multiple voices.

"I believe lessons from the Zanzibar case can give valuable insights in driving forward gender-just, locally led sustainable transitions in other settings. However, these initiatives are often not backed up by the state and hence fail to make a significant impact. In this study, we see change actually happening because the whole process of the program, from community meetings, to recruitments, to training and follow-ups are done together with the state.

"Whenever there is a bottleneck, for example when male partners prevented their wives from joining the training after they were selected, the state intervenes. The truly unique part of this study, which could be recreated elsewhere, is the empowerment of women, in combination with the change of men and the whole community, working together towards energy transitions. Zanzibar is a very patriarchal space, if it can work in Zanzibar, then there is the potential for it to work in many other places as well," concludes Michael.

A new concept focusing on energy and care

The theoretical framework used to understand this case study is unique. Using four key themes—care, knowledge, power and energy—Michael and the team from Chalmers, created a list of "codes" from the interviews they conducted with the Solar Mamas, Barefoot College Staff and Government representatives. This coded framework allowed the researchers to analyze the data from the qualitative research and understand the dynamics of the project.

The findings from the study place a great value on the concept of care and the importance in valuing this fully within a community in the transition to renewable energy. An innovative concept of gendered energy care work is described in the paper, which puts a value on the role of women in providing energy within a community to help chart a way out of the climate crisis.

"Energy and care are deeply connected in two key ways, energy can either enable or hinder care work, and care work influences energy demands. For a just energy transition that supports and fairly distributes care, it's crucial to include care in energy transition analyses," says Michael.

This innovative approach using a lens of energy and care, helps to understand and value gendered energy care work, specifically women's previously invisible work, involving skilled labor in everyday life.

More about the study's definition of care

In this paper Michael and Helene Ahlborg draw on the concept of care as defined by Fisher and Tronto as an activity encompassing everything we do to maintain, continue, and repair our world to live in it as well as possible. This world includes our bodies, ourselves, and our environment, all of which we aim to weave into a complex, life-sustaining web.

Building on this definition, the researchers introduce the concept of "energy care work," referring to the daily practices at household and community levels that involve provisioning, sustaining, maintaining, repairing, and ensuring the availability of energy carriers and services for everyday life. This perspective on energy care work not only focuses on caring for people but also on the infrastructures and technologies, and their environmental impacts.

It is based on the lived experiences of dependence and relationships within energy networks, recognizing the intricate connections between individuals, energy systems, and the ecosystems that support their daily activities.

More information: Kavya Michael et al, A conceptual analysis of gendered energy care work and epistemic injustice through a case study of Zanzibar's Solar Mamas, *Nature Energy* (2024). DOI: 10.1038/s41560-024-01539-1

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