



Tropentag, September 20-22, 2023, hybrid conference  
“Competing pathways for equitable food systems transformation:  
Trade-offs and synergies”

## Developing women’s empowerment in energy index: Conceptual framework and empirical evidence

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### Abstract

Equal access to clean energy is key to meeting SDGs 5 (Achieve gender equality and empower all women and girls) and 7 (Ensuring access to affordable, reliable, sustainable, and modern energy services for all). However, energy access is not distributed equally around the world, with more than 80 % of energy poverty, that is the lack of access to sustainable, modern energy services and products, concentrated in rural areas, where it affects agriculture, food security and nutrition, and reduces livelihood opportunities and well-being. At the same time, a transformation in energy technology and resources is underway as the world moves to more efficient ways of conducting day-to-day activities while enhancing productivity. But are the gains from energy transformation distributed equitable within and across countries, communities and households? Research has established that compared to men, women spend a disproportionately large portion of their time in non-income generating activities in the household, and increasingly also in productive work such as agriculture and off-farm work. However, when it comes to equity in access to efficient energy resources, gender gaps remain vast. Research examining gender differentiated patterns of energy use or access, and the role that women’s empowerment plays in this, is scant. Our paper develops a framework to inform the relationship between empowerment and access to energy in rural areas. We supplement this with detailed survey data from India, Pakistan, and Nepal, empirically examining the linkage between energy access, women’s empowerment and household well-being. We hypothesise that multiple dimensions of empowerment such as mobility, agency, and control over income, are the main drivers as well as outcomes of equitable energy use and access. We contribute to the knowledge gap by first, reviewing the extant literature to understand the gender-differentiated patterns of access or use of energy and the role of women’s empowerment. Second, we develop a theoretically grounded conceptual framework to study energy and women’s empowerment and identify a set of indicators that can be used to measure women’s role in a rural and developing country context. Finally, we present empirical evidence linking women’s energy use portfolio to measures of empowerment in South Asia.

**Keywords:** Empowerment, energy, gender, irrigation, South Asia