



Short communication

## Who is energy poor? Revisiting energy (in)security in the case of Nepal

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## ABSTRACT

Current definitions of energy poverty oversimplify the fluid and dynamic nature of the lived experiences of the energy impoverished. By drawing on empirical observations in the aftermath of Nepal's humanitarian crises in 2015, we showcase the vulnerability of vital energy systems that threatens human security and negatively impacts on the lives and livelihoods of those affected. In search of greater human security, we observed a reverse energy transition whereby people abandoned modern fuels and returned to biomass-based traditional cooking practices. These observations in Nepal suggest that people respond and adapt to energy insecurity with strategies that move them in and out of energy impoverishment in a much more fluid process than many of the contemporary statistics and known indicators imply. After presenting the case in Nepal, we invoke several questions that challenge conventional ways of conceptualising, identifying and defining energy poverty and present a research agenda for strengthening scholarship in this field.

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### 1. Introduction

The United Nations Development Program defines energy poverty as the 'inability to cook with modern cooking fuels and the lack of a bare minimum of electric lighting to read or for other household and productive activities at sunset' [1, p. 4]. Considering this definition, one may identify the energy impoverished as those who do not have access to adequate electricity and/or rely upon biomass as their primary fuel for cooking. According to the International Energy Agency (IEA), around the world 1.2 billion people do not have access to electricity and 2.7 billion people rely on biomass-based cooking practices [2] who, according to the definition, are considered 'energy poor'. It is widely acknowledged that the energy impoverished face economic, social, and health problems. To escape from energy impoverishment, hence, there is a need for a complete energy transition toward modern energy services [3].

However, these definitions and the complementing suite of current indicators and statistics tend to grossly oversimplify the fluid and dynamic nature of energy poverty that is observed empirically. Using the case of the humanitarian crisis that unfolded in 2015 on Nepal's border blockade, this short communications piece challenges conventional ways of conceptualising, identifying and

defining energy poverty. We draw attention to the possibility of a 'reverse energy ladder' in the face of human insecurity, and provoke several questions worthy of further research related to power and politics, household and community fuel choice and sustainable pathways to energy poverty alleviation.

While the insights presented here are grounded in the empirical case of Nepal, the implications for the proposed research agenda extend well beyond this context. We can learn a lot from this case on the dynamics of the global phenomenon of energy poverty, the nature of energy transitions and the well-known energy ladder. Furthermore, advancing the literature on the role of energy systems in post disaster recovery and reconstruction is a global imperative given the increased threat of humanitarian disasters induced by climate change, threatening disproportionately the world's most vulnerable populations [4].

This case also serves to advance the scholarship on topics that would be familiar to readers of this journal. For example, the case inspires a research opportunity to extend the recent work on the nature of pro-poor energy governance [5–7] to examine the actors, institutions and processes involved at the intersection of disaster recovery, community resilience and energy systems. Furthermore, several critical questions are raised in relation to energy justice [8–11] in political post-disaster environments, and energy deprivation [12] through our emphasis on securing adequate energy services and the pivotal role for human security.

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## 2. Nepal's humanitarian crisis of 2015

By the end of 2015 Nepal was facing its second humanitarian crisis in less than a year. Both of these events share a common theme – they showcase the vulnerability of vital energy systems. First, around 30 per cent of Nepal's already stressed electricity infrastructure was damaged [13] following a devastating 7.8 magnitude earthquake in April 2015 that left approximately 9,000 people dead and another 22,000 injured [14]. As a result, the country continues to experience ongoing black outs that have greatly impeded recovery efforts (see Fig. 1 below) [15]. To respond and rebuild after a crisis, critical energy systems, such as electricity networks and fuel infrastructure, can play a fundamental role in enabling communities to communicate, mobilise and transport, operate health clinics and meet basic human needs such as lighting, heating and cooking and access clean food, water and sanitation.

The second crisis relates to political disputes that began in September 2015 at the border of the landlocked country's major supply route from India<sup>1</sup> preventing critical supplies – fuel, food and medicines – from reaching Kathmandu valley and vulnerable communities most in need. The blockade has meant that only a third of Nepal's fuel demand has made its way across the border [16]. Being landlocked and having no in-house refineries, the country faced massive fuel shortages that had a profound impact on people's lives and livelihoods in Nepal. Besides hindering earthquake recovery and reconstruction efforts, limited availability of energy resources threatened other critical facilities including, but not limited to, ambulance services, schools and universities, and local transportation. Taxi drivers in particular, hiked prices or turned to alternative livelihoods as the transport sector struggled to survive without secure fuel supplies.

In Nepal, as people are threatened by system-level shocks such as disruptions in energy imports, manipulations of power relations were explicitly exercised to meet the vested interests of groups and institutions at a time when the government lacks the capability and the means to meet energy demands. Because of the blockade, the ability to cope with the situation relied upon the substitution with other suppliers and supply routes. What eventuated in Nepal with the fuel supply shortage was a substantial rise in the black market for gas, managed by those who happened to control alternative supply routes across the border. These markets were able to price gas at unreasonable rates compared to normal trades. With this black market saw the emergence and development of new power and power relations to form. While the government was aware of these new forms of power relations associated, it could do little to control inasmuch as the priority was also to supply needed fuel.

These threats – irrespective of causal mechanisms; physical or political, sudden or gradual by nature – have highlighted the extreme vulnerability of energy services across Nepal to system-level shocks, and raise fundamental concerns for human security in the region.

## 3. Linking energy and human security

Our starting point is to think about energy security as an enabler of human security more generally [17]. Conceptualising energy security in this way is consistent with a particular worldview that energy is used not for its own sake but for the purpose of accomplishing social practices that are ordered across space and time [18].

<sup>1</sup> For analyses of the origin and nature of the disputes resulting in the blockade on the Nepal-India border, see for example: R. Adkin, G. Sharma, UPDATE 4-Nepali police kill Indian protester at border blockade, Thomson Reuters, 2015; V. Arora, R.I.P., India's Influence in Nepal, The Diplomat, 2015; H. Ojha, The India-Nepal Crisis, The Diplomat, 2015.

In other words, energy is conceptualised as a critical ingredient in our ability to do 'work', where work is considered in a broad sense and constitute such activities as to cook, commute, socialise, communicate, leading to productivity, both socially and economically [19,20].

Conceptualised in this way, vulnerable energy systems can be inexplicitly and indispensably linked, as contributing to or a symptom of, each of the seven threats to human security as defined in the formative stages by the United Nations Development Program [21]; personal (physical) security, economic security, food security, health security, environmental security, community security, and political security. That is, the goal of securing energy systems does not have an end point in and of itself, rather it is a means to an end. The end point from this perspective rests with ensuring human security; the security of human lives, livelihoods, and values that are both personal and shared by nature. To put another way, and to borrow from words that helped redefine human security [21];

*The battle of peace has to be fought on two fronts. The first is the security front where victory spells freedom from fear. The second is the economic and social front where victory means freedom from want. Only victory on both fronts can assure the world of an enduring peace. . .*

Energy insecurity threatens progress on both of these fronts – consider personal safety on a street without lights, major surgery performed in the dark or under intermittent lighting, the impact on productivity under manual labour and employment opportunities without industry, and the direct health impacts from the burning of inefficient fuels.

Drawing this link between energy and human security helps to clarify and emphasise the vital systems of which energy may play an integral part. We therefore define energy security here as the 'low vulnerability of vital energy systems' [17,22]. A slight shift in emphasis toward human security and the vital energy systems which people depend on for their lives and livelihoods allows asking explicit questions related to whose livelihoods are threatened, what values (personal or shared) are under threat and what is the nature of these threats? [17]. The situation that unfolded in Nepal challenges how we think about energy security, energy poverty and the transition from traditional to modern energy fuels. In the next section, we draw on themes emerging from recent Nepalese experiences that question conventional approaches to understanding energy poverty.

## 4. Household fuel choice, adaptation and livelihood strategies: an (inverted) energy ladder model?

According to the World Bank, 80 per cent of Nepalese continue to use solid fuels such as firewood and animal dung as their major source of cooking [23]. These households, with the majority located in rural communities, continue traditional cooking practices using relatively abundant supply of biomass that remains largely unaffected (directly) by the shocks in fuel supply as a result of the crisis at the border. This practice persists despite known adverse health and environmental impacts. In contrast, households in Kathmandu have been forced to abandon their modern petroleum-based gas cook stoves as fuel supplies decline and prices skyrocket. Many have chosen adaptation strategies such as returning to traditional cook stoves and placing stress on nearby forests, or adopting electric cookers adding peak demand challenges to an already crippling electricity grid. In other words, households adapt their energy related practices in what may be considered a livelihood strategy in search of greater human security. In circumstances as we have seen in Nepal, this livelihood strategy involves a transition *back* to traditional cooking practices.

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