# 10 Insights on Energy Poverty from Street Vendors in Indonesia

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## 10.1 Introduction

The Indonesian informal economy accounts for a significant proportion of total economic activity and employs between 61% and 70% of the total labour force (Alatas & Newhouse, 2010; Firdausy, 2000). It is estimated that about 22 million people are street vendors and market traders, an immediate result of both the 1997 Asian financial crisis and the population shift from rural to urban areas. In this study, street vendors are defined as micro-merchants who operate on the streets and in parks as informal traders. They are distinct from the kind of merchants who have more resources and operate in designated places such as food courts or shophouses. They play an integral part in people's lives, including providing affordable food and beverages in convenient locations. Many operate on the streets, in alleys, and in parks without legal registration. Jabodetabek (the local name for the Jakarta metropolitan area, comprising Bogor, Depok, Tangerang, and Bekasi) is one of the most highly populated areas on the island of Java, and most of its urban inhabitants can be considered energy vulnerable, or as facing a greater risk of energy poverty. This area also has the highest concentration of urban street vendors in Indonesia.

The street vendors face constant energy insecurity and challenges to their overall health and quality of life. There is an almost complete absence of policies or regulations to protect street vendors in Indonesia, leaving them with no social insurance or other state protection. According to research examining the management of street vendors in the Indonesian city of Makassar, the local government views street vendors as regulatory offenders (Mahsyar & Rijal, 2021). Although the research does not specifically refer to street vendors, people with lower incomes have been included among the groups at risk of energy and transport poverty (Martiskainen et al., 2021).

According to the International Energy Agency (IEA) (2017), energy poverty is defined as a lack of access to secure, affordable, and modern energy services, particularly electricity and clean cooking fuel. The European Union defines energy poverty as a situation in which households are unable to access essential energy services and products (Directorate-General for Energy, 2015). However, a broader conceptualisation of energy poverty encompasses meaning beyond a lack of access and insecurity of supply. It is also "the absence of sufficient choice in accessing adequate, affordable, reliable, high-quality, safe and environmentally benign energy services to support economic and human development" (Reddy & Reddy, 1994, p. 44). In addition, it includes non-income dimensions of poverty such as caloric intake, life expectancy, housing quality, and access to energy, among other factors (Barnes et al., 2011; Njiru & Letema, 2018).

Despite being considered a global challenge, the IEA (2017) shows that the energy poverty gap is greater in Asia and Africa. The nexus between energy and poverty in the Global South has received significant political and academic attention (Gunningham, 2013; Rafi et al., 2021;

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Sagar, 2005; Soriano-Hernández et al., 2022), mainly due to the challenges around finding alternative energy sources to reduce the dependence of these households on traditional forms of energy. Traditional forms of energy include open fires burning low-quality fuels, particularly biomass, resulting in fumes and smoke that may impact areas such as health, education, labour productivity, and income (Bouzarovski, 2018). The literature also indicates that a lack of availability and affordability of clean energy services among poor households particularly affects female members and children, as they are responsible for the majority of household chores, such as cooking and collecting firewood (Kanagawa & Nakata, 2006).

The majority of the literature investigating energy poverty in developing countries focuses on electricity supply and reliability constraints (Batinge et al., 2019; Bouzarovski, 2018; Dagnachew et al., 2018). The emphasis is on the need to expand the electrical grid based on the experience of developed countries (Rahul Sharma & Chan, 2016) and to extend the coverage of the power grid into rural areas (Pereira et al., 2010). The literature also identifies limited access to funds as the leading impediment to energy access. Therefore, attracting private investors to invest in the electricity sector could mitigate the lack of adequate institutional infrastructure and financial capital (Batinge et al., 2019; Wilson et al., 2014).

Although most people consider rural areas to be the most affected by energy poverty, studies show that energy poverty remains a critical issue in urban areas (Barnes et al., 2004; Zhang et al., 2019). In large part, it is migrants and the urban poor who have trouble meeting their basic energy needs and have to pay higher prices for energy use, including electricity. These people also tend to reside in built environments with very poor living conditions and limited access to services such as water, sanitation, and hygiene. Energy poverty, therefore, deals with the inability of households to pay for satisfactory energy services and supplies of electricity or heat (Sovacool, 2012), regardless of whether they are located in urban or rural areas. It also reinforces the spatial marginalisation of the urban poor as a minority group (Sovacool & Furszyfer Del Rio, 2022).

To the best of my knowledge, there is limited research investigating energy poverty in urban areas of Indonesia, especially in terms of assessing energy access in relation to the economic activities of the urban poor (Brata, 2010). Discussion about Indonesian street vendors in the available literature mostly centres on the governance and institutional challenges facing the management of the urban informal sector (Mahsyar & Rijal, 2021; Permatasari et al., 2014; Wilson, 2010; Yatmo, 2009) and the economic vulnerability of street vendors (Fathy & Rachmawan, 2020; Timothy & Wall, 1997). In addition, the academic literature that deals with Indonesian policy on energy poverty analyses the impact of energy poverty on welfare in rural areas (Sambodo, 2008; Wirawan & Gultom, 2021). These studies find that the geographical characteristics of remote villages are often the main inhibiting factors for electricity supply and safe cooking methods. However, most of the urban poor in Indonesia face similar issues around access to electricity, reflecting the situation prevailing in rural areas. This is evidenced by shifts in energy use in urban household studies (Andadari et al., 2014; Barnes et al., 2004). Due to the unregistered nature of their businesses, street vendors do not have access to the electrical grid for their everyday operations. This study, therefore, documents the energy poverty of street vendors in Indonesia and its implications on their standard of living.

## 10.2 Research methodology and conceptual approach

This section explains the methodological and conceptual approach of this study. Based on the relevance of the context for this study, I focus explicitly on street vendors in Jabodetabek.

### *10.2.1 Case study approach*

This study uses a case-study approach. Interviews were conducted with a set of actors, including street vendor community representatives and the vendors themselves. Participant observation was conducted in ten locations in Jakarta, Bogor, Depok, Tangerang, and Bekasi (i.e., Jabodetabek). These cities are home to the largest street vendor communities in Indonesia. They are attractive to rural-urban migrants and are home to eleven million people. They also have more developed infrastructure than other cities in Indonesia, creating a façade of good career prospects and attractive employment. In reality, rural people without good academic qualifications often find themselves working in non-standard forms of employment or working as street vendors to support themselves. Street vendors in Indonesia are classified as working in the informal economic sector and thus have no national insurance or pension cover.

These five Indonesian cities have similar geography, energy, and transport challenges. Bogor, Depok, Tangerang, and Bekasi are located immediately adjacent to Jakarta, the capital city of Indonesia. About 30 million people residing in Indonesian cities are deprived of access to energy and hygiene facilities (Asian Development Bank, 2022). While the Indonesian government has aimed to improve energy access, in practice it has only prioritised increasing access through the extension of the centralised energy grid, leaving behind people with no connection to the grid (Chelminski, 2016) in both urban and rural areas. In urban areas, power theft remains a serious problem, often disrupting the electricity supply to homes and affecting the performance of the electrical grid, as proven in other locations (Furszyfer Del Rio & Sovacool, 2023). This also holds for Jabodetabek. In addition, this area faces problems in terms of traffic congestion, high fuel consumption, and greenhouse emissions. Jakarta city itself is regarded as one of the most congested cities in the world, with one of the main causes of the commuting activities of people from Bogor, Depok, Tangerang, and Bekasi for activities such as work and schooling (Farda & al-Rasyid Lubis, 2018). The congested and unhygienic conditions in slum areas also put dwellers at risk from changing climatic conditions.

The empirical analysis draws on a dataset assembled over three years, from March 2019 to December 2022. Secondary sources include government policy reports, industry reports, and academic literature. Primary sources were obtained from semi-structured interviews with 28 street vendors and participant observations in ten locations in Jabodetabek. The semi-structured interviews took one hour on average and included questions on demographic characteristics, income, electricity expenses, daily activities, problems associated with the present energy service, and coping strategies. Participant observations were conducted for approximately four hours per day, between 15.00 hrs and 19.00 hrs, to observe the vendors' day-to-day activities. I selected interviews and participant observation because both methodologies can provide a first-hand perspective on the group and their activities, as well as the ability to experience events in the same way vendors experience them.

However, due to the nature of the methodology, the results and discussions arising from this study cannot be understood as representative of the highly complex Indonesian urban energy-poverty landscape; rather, they are a study of the implications of energy policy on livelihoods within a small community. Data collection occurred in three stages due to the situation caused by the ongoing pandemic. The first data collection period in June 2019 examined the basic economic drivers behind street vendors' operations and their barriers to electricity access. The second stage, occurring in August-September 2022, focused on interviewing street vendors operating in designated public places. The last stage, completed in December 2022, involved interviews to complete the previous stage and participant observations. Different vendors were interviewed during the second and third stages. Participant observations were undertaken in all

three stages. The data coding process was ongoing and informed the subsequent stages. I employed two research assistants to help with the interviews and participant observations.

### *10.2.2 Conceptual approach: key aspects of energy poverty*

This study builds on the concept of energy poverty introduced by Reddy and Reddy (1994). The concept emphasises the absence of choice in accessing energy services that are adequate, affordable, accessible, reliable, high-quality, safe, and environmentally friendly. These key aspects correlate with the physical, economic, and psychological dimensions of energy poverty, in which geographical locations reflect inequality and the inability to maintain decent living standards. Decent living standards are defined here as the ability to maintain comfortable temperatures at home, such as through the use of air conditioning or a fan, having lighting for night-time activities such as evening meals, watching television together, and school-age children doing their homework, and using electricity for electrical appliances such as blenders and electric stoves. The framework also includes coping strategies, which are psychological adaptations by which vendors exercise coping mechanisms as a response to their hardship and in the hope of recovering from energy poverty (Stojilovska et al., 2021) (Figure 10.1).

## 10.3 Findings and discussion

The results from interviews and participant observations show varying degrees of energy poverty, with respondents vending on public streets having the lowest income in comparison with respondents located in parks and markets. The research team noted that the first group of respondents is paying more for electricity services and is thus the most vulnerable. We also observed that all the street vendors experienced varying degrees of energy poverty in terms of their lack of choice of reliable, safe, and affordable electricity connections. When choosing between diesel-powered generators and illegal electricity connections, the latter option is considered more affordable. Illegal electricity connections involve vendors getting light for their stalls by connecting to nearby shophouses, where the latter tamper with a metre. This is an illegal practise that can cause fire hazards.

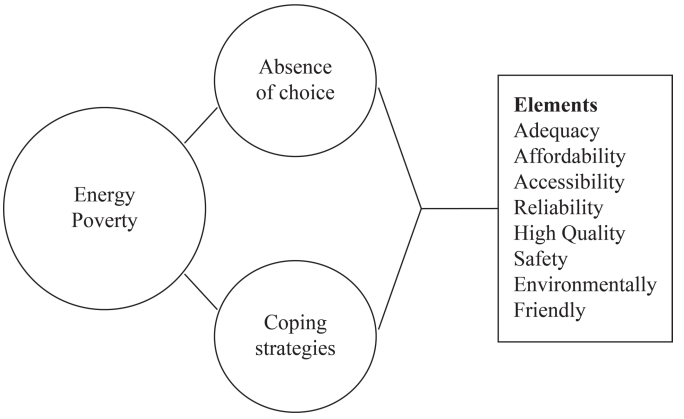


*Figure 10.1* Key aspects of energy poverty.

*Source*: Adapted from Reddy and Reddy (1994).

### *10.3.1 Absence of choice*

This study's findings suggest that the degree of difficulty in paying their accumulated energy costs is influenced by the absence of choice in selecting safe vending locations and adequate, affordable, accessible, reliable, safe, high-quality, and environmentally friendly energy services. The absence of choice can further exacerbate the vendors' physical, economic, and psychological vulnerabilities, exposing them to health threats, fire hazards, and a lack of future opportunities.

Participant observations show that vendors sell goods to the public without having premises or occupying walkways, roads, alleys, or other public spaces. Given that these people often operate in environments that can be dangerous or unpredictable, finding a safe and affordable vending location is perhaps the first and most significant issue this community faces. In this context, the negative consequences for the physical health of vending on the streets need to be emphasised. Vendors who spend most of their time outdoors are impacted by pollution from vehicles and industry, leading to health issues and non-communicable diseases. This also applies to the children of vendors, who often accompany them to their stalls. This could have long-term implications for educational attainment and employment opportunities, with consequences that endure into adulthood. From a wider societal perspective, the economic burden of non-communicable disease places a substantial burden on healthcare systems in terms of greater healthcare utilisation and costs.

Beyond impacts on health, energy-poor households face a choice between enduring uncomfortable temperatures, incurring debt, and cutting expenditure in other areas (Anderson et al., 2012; Gibbons & Singler, 2008; Hills, 2011; Mattioli et al., 2017), such as food consumption (Beatty et al., 2014). The research team found that all of our participants were living in slums and informal settlements with fans as cooling devices. The average temperature in Jakarta is between 26°C and 33°C. None of the respondents had air conditioning at home.

> I think air conditioning is a luxury. I do not have it in my home or my stall. I just use this small fan here and try to bear the heat. As long as my children can sleep at night, I am happy.
>
> (A09, food seller in Jakarta)

> I cannot be afraid of the pandemic. If I don't work, then who will feed my children? I do not know what I would do if I got sick.
>
> (A05, food seller in Bogor)

The slums are mostly located near active railway tracks or rivers, which lack hygiene and sanitation and utilise non-permanent materials for housing. Their houses are also located far from vending locations in the city centres. To reach their vending locations, the participants in our study had to walk between five and ten kilometres, dragging their carts across the city to maintain their livelihoods. There is an opportunity cost associated with the time used for travel, as they cannot be productive or do vending activities.

Presently, there is no legal electricity access provided by the government for street vendors operating on the street, for example, for lamps, blending juices, or cooking with electric stoves. These small businesses commonly use either diesel power generators that generate air pollution containing toxic air contaminants or illegal cable connections from nearby shophouses. Some respondents operate in front of shophouses where there are fixed vending spots with facilities for vending. These spots have canopies that provide shelter against the sun and rain and have

(illegal) electricity points for stationary vendors. The absence of choice means that vendors are unable to purchase electricity legally, for example, by becoming registered customers of the State Electricity Company for their vending activities. It is also important to note that the only electricity connection available through the national grid belongs to the State Electricity Company. This means that customers do not have the option of subscribing to another electricity provider, creating little space for participation in energy decision-making.

> I pay about US $24 per month for my electricity bill. I think the price is affordable because my income is around US$350 per month. I use electricity for blending drinks, using a rice cooker and cooking. However, if there is a power cut, I will have less income because I do not have an alternative electricity supply.
>
> (A03, food and drink seller in Bogor)

The definition of "affordability" in energy poverty equates to spending no more than 10% of income on electricity services (Sovacool et al., 2019). Based on our data, most of our respondents ($n$ = 26) spend less than 10% of their income on electricity services. However, the data does not necessarily confirm the premise that they are not energy poor. Their testimony states that electricity is not affordable, the electricity that they purchase is not adequate to maintain a comfortable temperature, and it is neither environmentally friendly (e.g., using polluting diesel generators), safe, nor reliable (if they depend on illegal electricity connections). More than 80% ($n$ = 22) of the interview participants commented that they struggle to pay their energy and rent bills:

> I spend about US $8 (Indonesian rupiah Rp 100,000) on electricity bills. My income on average is about US $80 per month. For location rental, I spend about twice as much. Covering my monthly expenses is very difficult. I have to open my stall from 5 pm to 2 am.
>
> (A12, coffee seller in Jakarta)

Because energy expenses are high, they have little money to cover other services such as accommodation, healthcare, education, or transportation. This is the reason most respondents choose to travel to their vending location on foot.

> My income is between US $30 - US $50 per month. I pay around US$10-US$20 for electricity per month. It has been difficult due to the pandemic, I started selling here in 2020. I open my stall from 9 am to 12 midnight. I usually use electricity for the lamp, charging my phones, blending ice, and cooking. Electricity is mostly used at night. I need to find another location so I can get more customers.
>
> (A05, food and drink seller in Bogor)

Those who operate in front of private spaces have to pay rent to the stall or shophouse owner to sell in front of the building, in addition to their electricity bill.

> The electricity and rental prices are too high. But I do not have an option because I sell my products at night. The price of goods also keeps rising. Coffee and drink packages are more expensive now after the pandemic. I thought things would be better after the pandemic, but my shop still does not have a lot of customers.
>
> (A02, coffee seller in Bekasi)

In terms of adequacy and reliability, it seems that electricity connections do not satisfy energy requirements or comply with requirements on safety and quality of service. For example, one electricity terminal is used by numerous vendors.

> I choose to sell at night because more customers come here to eat after work. I have been selling here for three years. I get electricity from the building located nearby. Seven sellers use one electricity terminal. Sometimes there are conflicts if one of us uses more electricity than we agreed to. Then, the power is off and our customers are disturbed.
>
> (A03, food and drink seller in Bogor)

> It was quite easy to get a permit to sell here (in front of a small convenience store), I just asked permission from the local neighbourhood unit, who then submitted my request to the village administrative unit. I did not find it difficult to find a spot to open my stall. There are about six food and drink stalls in this area and we all purchase electricity from the coffee stall there.
>
> (A05, food and drink seller in Bogor)

### *10.3.2 Coping strategies*

To survive, we found that the respondents employed coping strategies to access electricity, despite the apparent risks. For example, the local custom of using illegal electricity connections means that some respondents downplay the danger posed by this type of installation and believe that there is no need for standard installations. The chances of fire and electrical overloads are increased, which can cause serious damage to electrical appliances or the grid system.

> I know that using an electricity connection from another stall is dangerous. I often read and see news about fires in the stalls. We do not have proper fire safety guidelines. I think if there were cheap, designated places where we could vend for free, with reliable electricity connections, I would very much like to move there. I know that those places (referring to food courts) charge around USD$100 per month, which is almost half of my income.
>
> (A16, food seller in Jakarta)

> I did not know that purchasing electricity from a kiosk is illegal. I don't care about the fire hazards. I just need to do what I do to survive.
>
> (A28, food seller in Bekasi)

We also explored the choices that low-income vendors make when electricity competes with other essential needs, such as education and health.

> I used to sell during the daytime but I found that not many customers would buy my product (juice). Selling at night is much more expensive because I need to pay extra for the electricity. If I pay for electricity, I hardly have enough money left to pay for my son's education. I think about changing my product, but I have been doing this for the past seven years. I do receive cash transfers from the government sometimes, but it is not a regular income.
>
> (A15, juice seller in Jakarta)

> My son is going to graduate from high school soon. I worry about his future because I do not have the resources to fund his university studies. We have thought of a possible alternative, which is to send him to a training centre so he can work as a seafarer on foreign-owned vessels. Of course, I wish that electricity was cheaper so I could save more for his dream.
>
> (A21, food seller in Jakarta)

> If there is a power cut, I use an emergency lamp because diesel generators are not available in this area and they are expensive.
>
> (A16, food seller in Bogor)

> I think electricity is important because customers can see my stall from afar in the afternoon. I have regular customers but I want to attract new customers and grow my business.
>
> (A27, coffee seller in Bekasi)

There has been a suggestion to use solar panels as a cleaner electricity source for street vendors in India (Szakonyi & Urpelainen, 2015). This technology has the potential to be replicated in the Indonesian case. By using solar energy, there is potential for the vendors to label their products as "green" and increase their prices. The respondents in our study expressed an interest in using renewable energy to support environmental causes.

> Sometimes there are power cuts and I use candles to light my stalls. I did not know about renewable energy or that we could use the sun's power to generate electricity, but if we can use cleaner energy sources then I would be willing to use them. I saw on the news that people are protesting against coal and pollution.
>
> (A12, food seller in Jakarta)

> If I had the resources, I would prefer to use electricity from the sun.
>
> (A07, food seller in Jakarta)

> I think solar energy is very important. I know the trend now is toward sustainable living. Therefore, if I can use electricity sourced from renewable energy, I am contributing to the betterment of the environment. I think the government should build more solar-powered electric charging stations in convenient locations where we can operate our stalls.
>
> (A04, coffee seller in Tangerang)

There is research suggesting that we need to address energy poverty through a multidimensional lens (Furszyfer Del Rio & Sovacool, 2023). By observing the lived experience of energy-poor communities and identifying coping strategies, this study adds to the discussion that energy poverty should not be considered only in terms of the technical issues of affordability and accessibility but should also take into account the economic and psychological factors that create the problem. Frequently used coping strategies are bearing uncomfortable temperatures, restricting other needs, such as education, lowering the priority of transportation by walking to vending locations, and ignoring the impact on the health of being exposed to constant pollution.

We did not find this in our observations, but we found from the interviews, there are some cases of street vendors stealing electricity from public street lighting. This is very dangerous, as it can result in electrocution and disruption to the transportation system. Having streets left unlit due to vandalism increases the risk of road accidents.

It seems that the issue of energy poverty has become a systemic injustice. Vendors are left isolated in their individualised coping strategies rather than receiving help from the system (Bouzarovski & Simcock, 2017; Stojilovska et al., 2021). The absence of electricity choice stemming from Indonesia's monopolistic energy system leaves vulnerable communities with an inability to provide input into policymaking that should be targeting vulnerable citizens.

## 10.4 Conclusion

To examine the lived experience of energy poverty in Indonesia's urban informal economy, I interviewed 28 respondents and conducted site visits to ten locations in urban areas of Jabodetabek. This study shows that these street vendor communities experience energy poverty in terms of their lack of choice for reliable, safe, and affordable electricity connections. Moreover, this study reveals that energy poverty is exacerbated by geographical barriers and that coping strategies are used to access electricity. The street vendors experience varying degrees of energy poverty, depending on their income, vending location, and the availability of electricity. The poorest energy vendor has the lowest income, spends almost half of her income on electricity, and purchases electricity from a nearby kiosk, which connects to the electricity grid via an illegal cable connection. Some respondents expressed an interest in purchasing electricity sourced from renewable energy sources. Coping strategies to overcome energy poverty include choosing energy services over education and purchasing illegal electricity from a nearby kiosk.

From this study's exploration, I found that energy poverty is best understood through a multidimensional lens. It is not only a technical issue, but it also has social, cultural, and political implications. The street vendors, who spent a larger proportion of their income on energy, neglected other basic necessities such as health and education. There is also a loss in terms of the opportunity costs associated with the long travel time between homes and vending locations. Educational and health impacts related to expenditure on energy rather than schooling, as well as an increased incidence of sickness. For instance, time spent on the street may be related to acute respiratory infections. Most of the sellers also do not have sufficient health insurance, revealing the need for better social protection for these informal workers.

There is also an absence of choice; vendors have limited alternatives for accessing cleaner energy sources. They have no choice but to secure a connection to the electricity grid. Using solar energy has inherent advantages, but considering the cost of solar panels and the absence of a place to install the panels, this option is beyond the consideration of most street vendors. Despite this, the interest in using cleaner energy sources offers important opportunities for further action. For example, action by the government to provide access to solar energy could enable vendors who want to reduce their emissions to choose an electricity source that satisfies this desire.

Street vendors are one of the most politically and economically underrepresented communities in urban areas and are one of the most vulnerable to changes in the energy system. Their inclusion in the energy poverty bracket is systematically reinforced by the absence of a choice of adequate, reliable, affordable, and safe energy services in a centralised energy system. Going beyond the technical implications, this study also highlights the economic and psychological impacts in terms of more personal coping strategies that affect vendors' resilience against climate change, social development, and health consequences. Policies to combat energy poverty

should address the ability of the vendors as individuals, and as economic actors, to prepare for, absorb, recover from and adapt to major shocks, for example, by providing free vending locations with safe, reliable, environmentally friendly electricity access as well as social safety nets accessible to all.

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