

# Does Community Empowerment Serve as a Mediator for the Effects of Community Support and Readiness on Socio-Economic Impacts? (Adakah Pemeraksanaan Komuniti Berfungsi Sebagai Pemboleh Ubah Pengantara bagi Kesan Sokongan Komuniti dan Kesiediaan Komuniti terhadap Impak Sosioekonomi)

**Vanessa Gaffar**

Universitas Pendidikan Indonesia

**Denny Andriana**

Universitas Pendidikan Indonesia

**S. Sulastri**

Universitas Pendidikan Indonesia

**Wenda Wahyu Christiyanto**

Universitas Terbuka

**Ujang Koswara**

Yayasan Pilar Peradaban

## ABSTRACT

*This study investigates the relationships among community support, community readiness, and community empowerment in shaping the socio-economic impacts of electrification in a rural region of West Java, Indonesia. Using data from 86 households and applying Partial Least Squares Structural Equation Modelling (PLS-SEM), the research demonstrates that strong community support significantly enhances community empowerment, which in turn serves as a critical driver of socio-economic benefits. Community readiness—reflected in local engagement, acceptance, and willingness to participate—further influences the sustainability and effectiveness of electrification initiatives. Empirical evidence from the study shows that communities exhibiting higher levels of support and readiness experience greater improvements in household welfare, economic mobility, and social integration. These findings reinforce prior literature highlighting the transformative potential of electrification when embedded within supportive community structures. The study's theoretical implications underscore the importance of integrating community-centred strategies into electrification programmes. Policymakers and energy providers should prioritise participatory models that strengthen local capacities, enhance resource mobilisation, and embed training initiatives, thereby maximising the long-term socio-economic benefits of electrification in underserved rural areas.*

*Keywords: Socio-economic impact; community readiness; community support; community empowerment*

## ABSTRAK

*Kajian ini meneliti hubungan antara sokongan komuniti, kesiediaan komuniti dan pemeraksanaan komuniti dalam membentuk kesan sosioekonomi daripada program elektrifikasi di sebuah kawasan luar bandar di Jawa Barat, Indonesia. Berdasarkan data daripada 86 isi rumah dan menggunakan kaedah Partial Least Squares Structural Equation Modelling (PLS-SEM), kajian ini mendapati bahawa sokongan komuniti yang kukuh meningkatkan pemeraksanaan komuniti secara signifikan, yang seterusnya berfungsi sebagai pemacu utama kepada manfaat sosioekonomi. Kesiediaan komuniti—yang tercermin melalui tahap penglibatan, penerimaan dan kesiediaan penduduk untuk terlibat—turut mempengaruhi keberkesanan dan kelestarian inisiatif elektrifikasi. Bukti empirikal menunjukkan bahawa komuniti dengan tahap sokongan dan kesiediaan yang lebih tinggi memperoleh peningkatan yang lebih ketara dari segi kesejahteraan isi rumah, mobiliti ekonomi dan integrasi sosial. Dapatan ini mengukuhkan literatur terdahulu yang menyoroti potensi transformasi elektrifikasi apabila dilaksanakan melalui struktur komuniti yang menyokong. Implikasi teori kajian menegaskan kepentingan mengintegrasikan strategi berpusatkan komuniti dalam reka bentuk program elektrifikasi. Pembuat dasar dan penyedia tenaga disaran untuk mengutamakan model penyertaan yang memperkukuh kapasiti tempatan, meningkatkan mobilisasi sumber dan memperluas inisiatif latihan, sekali gus memaksimumkan manfaat sosioekonomi jangka panjang elektrifikasi di kawasan luar bandar yang kurang mendapat perhatian*

*Kata kunci: Impak sosio-ekonomi; kesiapsiagaan komuniti; sokongan komuniti; pemberdayaan komuniti*

JEL: Q5, Q8, O33, J1, G23, Q56

Received 28 April 2025; Revised 12 October 2025; Accepted 15 January 2026; Available online 30 April 2026

## INTRODUCTION

Access to reliable, affordable, and modern energy has been recognised as both a fundamental human right and a cornerstone of socio-economic development. This perspective is reflected in the United Nations Sustainable Development Goals, particularly Goal 7 of universal access to sustainable and modern energy, and Goal 10, which seeks to reduce inequalities within and among countries (Pappis 2022). Energy access catalyses economic transformation, social empowerment, and environmental resilience, making it indispensable to the comprehensive development strategies of emerging economies (Egli et al. 2023). Many developing nations have demonstrated the significant potential of electrification to elevate living standards, enhance productivity, and unlock new opportunities for economic growth (Sahlberg et al. 2023).

Indonesia is a pertinent example of both progress in electrification and the persistent disparities evident in national efforts. Although the government has implemented numerous initiatives to expand energy access, acute challenges remain in remote and rural regions. National electrification had reached 99.2 per cent in 2020, but rural coverage lagged dramatically at approximately 40 per cent (Halim et al. 2024; Sulaeman et al. 2021). The benefits of electrification have been unevenly distributed, with around 25 million people still lacking electricity, particularly those living on isolated islands and in hard-to-reach rural locations (Setyowati 2021). These disparities are further reflected in localised data: in the Kupang District of East Nusa Tenggara, the electrification ratio stands at 60 per cent, underscoring the persistent barriers to reliable electricity provision despite national progress (Sinaga et al. 2019).

The socio-economic impacts of electrification are wide-ranging. It influences household incomes, educational attainment, health outcomes, and productivity (Nussbaumer et al. 2012). Empirical evidence consistently shows that households with electricity have higher income-generating potential, attain higher levels of education attainment, and greater employment opportunities (Belmin et al. 2021). Electrification thus functions as an infrastructural improvement *and* as an engine for economic growth. It enables increases in household productivity and creates an environment that is conducive to the growth of small enterprises (Sovacool et al. 2013).

Modernisation theory offers a useful conceptual lens through which to understand electrification's various impacts. The theory emphasises the transformative potential of technological advancement and suggests that access to electricity facilitates structural social and economic change. Peters & Sievert (2016) argue that modern technologies – including electrification – can reshape educational systems, health services, economic structures, and social relations. As a foundational technology, electricity enhances access to information, promotes equitable access to essential services, and creates pathways for economic diversification (Akpan 2015).

Evidence from research on rural electrification supports the theoretical assertions above. Households in electrified villages consistently report higher annual cash income and lower poverty rates than those without access to electricity, signalling a strong relationship between energy access and poverty reduction (Tamene et al. 2023). Electricity also improves public health by, for example, enabling the operation of medical equipment and the refrigeration of vaccines, thereby improving the performance of healthcare facilities (Falk et al. 2021). The implications for gender equality are similarly significant. In rural South Africa, electrification has been shown to increase the labour participation of women by reducing the time spent on domestic labour (Dinkelman 2011; Muhwezi et al. 2024). For micro, small, and medium-sized enterprises, a reliable power supply supports operational efficiency, lowers energy costs, and fosters innovation, and, in turn, promotes expansion and competitiveness (Kamalapur & Udaykumar 2010). Over time, these developments contribute to economic diversification, employment, and the long-term resilience of local economies (Imai & Palit 2014).

Beyond economic benefits, electrification yields substantial environmental and health improvements. By reducing reliance on biomass fuels, electricity mitigates indoor air pollution and the associated respiratory diseases prevalent among women and children (Omole et al. 2024). However, existing research tends to privilege economic indicators, such as income or productivity, underrepresenting broader social dimensions, including health, gender equality, and education (Salat et al. 2020). This narrow focus limits the understanding of electrification's holistic development impacts.

There is another notable gap in the literature concerning the role of community-specific factors, such as cultural norms, governance quality, and leadership effectiveness. These factors influence the local acceptance, adoption, and long-term sustainability of electrification initiatives (Pedersen 2016). Community support – understood as the community's active participation in planning, implementation, and maintenance of initiatives – is widely recognised as a determinant of project success. Community readiness, which encompasses local awareness, leadership strength, resource availability, and collective capability, further conditions the sustainability of electrification efforts (Zhang & Fujimori 2020; Sessa et al. 2022). Despite their importance, these social and institutional dimensions have not been sufficiently integrated into electrification research, particularly in developing-country contexts.

In Indonesia, geographical and infrastructural constraints compound these challenges. Although the country's electrification ratio rose to 99.78 per cent in 2023, approximately 600,000 Indonesian's – primarily in remote or mountainous regions – remain without electricity (Feron et al. 2016). For these communities, decentralised, off-grid alternatives such as mini-grids and home solar systems are more feasible than conventional grid extension (Xu et al. 2019). The success of such systems requires more than technological solutions; strong local involvement, adequate training, and community-driven management structures are essential (Rahman et al. 2013).

While there is substantial evidence supporting the economic and social benefits of electrification, there are significant gaps regarding how electrification interacts with community readiness, cultural context, and local support structures. This

study addresses these gaps by examining the socio-economic impacts of electrification in newly electrified regions of Indonesia, with a focus on the mediating roles of community support and readiness. By clarifying these dynamics, the research supports more effective, contextually grounded electrification strategies that advance inclusive socio-economic development and ensure the long-term sustainability of energy access initiatives.

## LITERATURE REVIEW

### COMMUNITY READINESS AND SOCIO-ECONOMIC IMPACT

Community readiness, a concept that is increasingly utilised in public health and community development, refers to the extent to which a community is prepared to take collective action on a particular issue. The psychological and structural dimensions of readiness shape local capacity for change, including with respect to community awareness, leadership commitment, and available resources (Niknam et al. 2023; Zerfu et al. 2021). The community readiness model developed by the Tri-Ethnic Centre for Prevention Research offers a systematic framework for assessing these dimensions and identifying context-specific intervention strategies (Heath et al. 2021; Tandoh et al. 2023).

High levels of community readiness have been shown to enhance socio-economic development outcomes. Communities that demonstrate their readiness to address challenges – whether related to health, education, or infrastructure – are more capable of mobilising resources, engaging stakeholders, and sustaining interventions (Niknam et al. 2023). Readiness-based interventions have strengthened cross-sector collaboration and improved programme implementation, contributing to broader development goals (Akorio et al. 2024; Niknam et al. 2023). These findings underscore the importance of readiness as a precursor to meaningful socio-economic change, particularly in contexts where local agency and collective efficacy are critical.

H<sub>1</sub> Community Readiness has a significant effect on socio-economic impact

### COMMUNITY SUPPORT AND SOCIO-ECONOMIC IMPACT

Community support is a multidimensional construct reflecting the emotional, informational, and material assistance available within a community. Empirical evidence indicates that strong community support systems facilitate access to essential services – including education, healthcare, and social protection – and contribute directly to economic empowerment and improved quality of life. For instance, Wan (2022) highlights how community engagement initiatives can enhance infrastructure, strengthen governance, and stimulate socio-economic transformation.

Community support is also closely aligned with the principles of social exchange theory (SET), which posits that individuals engage in collective activities when they perceive that the benefits of doing so outweigh the associated costs. Community support then functions as a mechanism that boosts social capital, encourages participation, and reinforces the reciprocal relationships required for long-term development.

Despite the concept's importance, several gaps remain in the literature. Jefferson & Harkins (2011) call for a deeper examination of the empowerment narratives in marginalised communities, noting that further research is needed to understand how different forms of support intersect. The literature on community support is fragmented, evaluating social capital or empowerment in isolation without exploring the effects of their interaction (Sarjiyanto 2022). There has been insufficient attention to the influence of cultural contexts on the functioning of community support systems, even though such contexts profoundly shape participation dynamics (Khalid et al. 2019).

Another significant gap is that there are no longitudinal studies. Short-term improvements are well documented, but researchers rarely investigate the sustainability of community support mechanisms or their long-term socio-economic impacts. Doing so is essential for designing interventions that remain robust over time, particularly in rapidly changing socio-economic environments.

H<sub>2</sub> Community Support has a significant effect on socio-economic impact

### COMMUNITY READINESS, COMMUNITY SUPPORT, COMMUNITY EMPOWERMENT, AND SOCIO-ECONOMIC IMPACT

#### COMMUNITY READINESS (CR) AND COMMUNITY EMPOWERMENT (CE)

Community readiness is foundational to community empowerment. Compared to those that are unprepared, a ready community exhibits heightened awareness, stronger leadership, and a greater capacity to engage in decision making. Research shows that high levels of readiness facilitate resource mobilisation and collaborative action, enabling communities to implement targeted interventions that strengthen empowerment (Russell et al. 2024). The community readiness model makes it possible for practitioners to identify readiness gaps and tailor empowerment strategies to align with local capacities and cultural contexts.

## COMMUNITY SUPPORT (CS) AND COMMUNITY EMPOWERMENT (CE)

Community support makes a significant contribution to empowerment by providing the networks, resources, and encouragement required for collective action. Supportive environments improve the problem-solving capacity of communities, foster collaboration, and allow them to address socio-economic challenges more effectively. Evidence from studies of waste management initiatives, for example, demonstrates how community support strengthens participation, improves public health outcomes, and promotes economic empowerment (Tommy et al. 2024). These findings reveal the potential of community support to build collective efficacy and reinforce empowerment within local development processes.

## COMMUNITY EMPOWERMENT (CE) AND SOCIO-ECONOMIC IMPACT (SEI)

Community empowerment is a key mechanism linking readiness and support to socio-economic outcomes. Empowered individuals perceive greater value in their contributions, are more willing to participate in decision making, and actively support local development initiatives. Nazirullah et al. (2023) demonstrate that where community values are perceived in a positive light, local support for tourism and other economic initiatives is enhanced. Similarly, Stylidis et al. (2014) highlight that favourable perceptions of economic and social benefits increase resident support for development activities. Through the lens of SET, empowerment strengthens the reciprocal relationship between perceived benefits and community engagement, thereby improving socio-economic outcomes.

Nonetheless, gaps remain in existing research concerning the mediating role of empowerment. Most studies explore outcomes in specific sectors, such as tourism or renewable energy, without integrating broader empowerment frameworks. For example, Halim et al. (2024) analyse microgrid strategies but do not consider the role of community readiness or empowerment in shaping socio-economic impacts. The long-term effects of empowerment are also understudied due to limited longitudinal research.

H<sub>3</sub> Community readiness has a significant effect on socio-economic impact through community empowerment

H<sub>4</sub> Community support has a significant effect on socio-economic impact through community empowerment

## METHODS

This study adopts a quantitative research design to examine the relationships among key variables influencing the socio-economic outcomes of electrification. The analysis employs socio-economic impact (*SEI*) as the dependent variable, with community readiness (*CR*) and community support (*CS*) functioning as the independent variables, and community empowerment (*CE*) positioned as a mediating construct. Community readiness reflects the community's awareness, willingness, and capacity to engage with electrification initiatives. Community support captures the extent of active involvement and collective backing from community members in the planning and implementation of such projects.

The theoretical framework integrates the community-based approach (CBA) and SET. CBA emphasises local participation and contextual knowledge in shaping development outcomes, while SET explains how reciprocal exchanges between individuals and their communities motivate engagement and cooperation. Data are collected through structured surveys, and appropriate statistical techniques are employed to test the proposed relationships. This approach enables a rigorous assessment of how community dynamics influence empowerment processes and, ultimately, the socio-economic impacts of electrification.

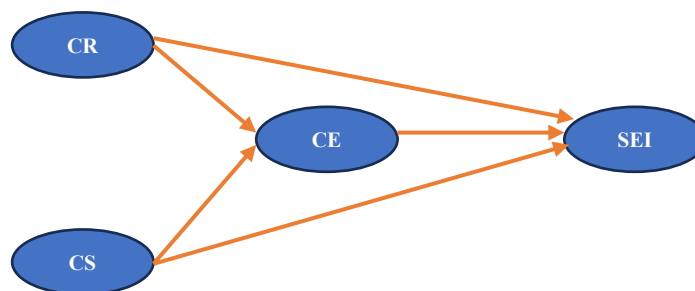


FIGURE 1. Research model

The study involved 86 heads of households from a remote area in West Java, Indonesia. A census approach, drawing on official village records, ensured the full representation of the community. Focusing on household heads was appropriate given their central role in family-level decision making, resource allocation, and engagement with local development initiatives, including electrification projects.

Data were collected through structured interviews using a closed-ended questionnaire. The instrument assessed community readiness and support for electrification, perceptions of empowerment, and the socio-economic impacts derived

from electricity access. To ensure clarity and relevance, the questionnaire measured respondents' attitudes, capacities, and experiences comprehensively using Likert-scale items and categorical responses.

Community readiness (*CR*) is conceptualised as the extent to which households are prepared to participate in the electrification process. Nineteen reflective indicators adapted from Heath et al. (2021) and Tandoh et al. (2023) are used to measure *CR* on a five-point Likert scale. Community support (*CS*), defined as collective assistance and involvement in electrification initiatives, is measured using six reflective indicators derived from West et al. (2022). Community empowerment (*CE*), capturing the community's collective agency and decision-making capacity, consists of 13 reflective indicators based on Russell et al. (2024) and Tommy et al. (2024). *SEI*, the variable measuring socio-economic impact, reflects improvements in well-being attributable to electrification and is assessed using 16 reflective indicators developed from Panakaje et al. (2024).

Partial least squares structural equation modelling (PLS-SEM) is employed for data analysis since it is suitable for complex models and small samples; PLS-SEM can yield robust estimates with samples as small as 35–50 observations (Hair et al. 2019). Following Hair's 10-times rule, the model's four structural paths require a minimum of 40 respondents, confirming the adequacy of the sample size. The analytical approach enabled an examination of how community readiness and support influence empowerment, which, in turn, shapes socio-economic outcomes. This method allows nuanced insights into the determinants of successful electrification in rural communities.

## RESULTS

The respondents' demographic characteristics provide important contextual insights for interpreting the socio-economic impacts of electrification in the studied community (see Table 1). Of the 86 household heads surveyed, 54 per cent are women, highlighting their significant role in household energy management and local socio-economic activities. Approximately 40 per cent of respondents are aged 45 and above, indicating an older population with established livelihood practices and potentially limited exposure to new technologies. The high proportion of married respondents (88%) underscores the centrality of family structures in shaping community priorities and decision making.

TABLE 1. Respondents demographic

	Nominal	Percentage
Gender		
Female	46	54%
Male	40	46%
Age		
More than 45 years old	34	40%
17 - 30 years old	28	33%
31 - 45 years old	24	27%
Marriage status		
Married	76	88%
Widow/widower	6	7%
Single	4	5%
Education level		
Elementary School	71	84%
Junior High School	12	14%
Not completed	2	2%
Senior High School	1	1%
Occupation		
Farmer	52	60%
Housewife	28	33%
Part-time jobs	5	6%
Employee	1	1%
Income		
IDR 26 - 50 thousand per day	56	66%
IDR 10 - 25 thousand per day	22	26%
Less than IDR 10 thousand per day	5	5%
More than IDR 50 thousand per day	3	3%

Source: Table by the Authors

Educational attainment in the community studied is notably low, with 84 per cent of respondents having completed only elementary school. Limited formal education may affect the ability of individuals to navigate technical information related to electrification and fully leverage electricity for income-generating activities. The occupational profile of respondents highlights the community's rural and agrarian characteristics, with 60 per cent engaged in farming. This reliance on agriculture suggests that electrification could substantially enhance productivity through access to improved irrigation systems, processing technologies, and information platforms. However, the low monthly incomes of households – reported to fall between 26,000 and 50,000 Rupiah for 66 per cent – indicate their financial vulnerability and limited capacity to independently invest in new technologies.

Taken together, these demographic factors suggest that the socio-economic impacts of electrification are likely shaped by communities' prevailing gender roles, limited educational attainment, agrarian livelihoods, and income constraints. The substantial representation of women among respondents also indicates their critical involvement in household energy decisions and micro enterprise, reaffirming the importance of gender-sensitive electrification policies.

Instrument validity is assessed using a sample of 30 respondents (see Table 2). With a significance level of 0.05 and 28 degrees of freedom, the *r* value obtained is 0.306. All items exceeded this threshold, demonstrating adequate validity. The reliability analysis shows that all variables meet the minimum Cronbach's alpha criterion of 0.6, confirming internal consistency. Furthermore, each indicator displays a loading factor above 0.7, with corresponding *p*-values below 0.05, indicating strong indicator reliability.

TABLE 2. Instrument's measurement and loadings

Community Readiness (CR)					
Items	r-value	Cronbach's Alpha	Loadings	P-value	
CR5	0.761	0.890	0.730	<0.001	
CR12	0.724		0.703	<0.001	
CR15	0.909		0.883	<0.001	
CR16	0.770		0.732	<0.001	
CR17	0.816		0.891	<0.001	
CR18	0.871		0.853	<0.001	
Community Support (CS)					
Items	r-value	Cronbach's Alpha	Loadings	P-Value	
CS1	0.867	0.832	0.856	<0.001	
CS2	0.867		0.901	<0.001	
CS5	0.746		0.864	<0.001	
CS6	0.909		0.881	<0.001	
Community Empowerment (CE)					
Items	r-value	Cronbach's Alpha	Loadings	P-Value	
CE1	0.615	0.933	0.788	<0.001	
CE2	0.805		0.809	<0.001	
CE3	0.838		0.829	<0.001	
CE5	0.888		0.770	<0.001	
CE6	0.937		0.810	<0.001	
CE7	0.733		0.732	<0.001	
CE12	0.871		0.774	<0.001	
CE13	0.888		0.796	<0.001	
Socio Economic Impact (SEI)					
Items	r-value		Cronbach's Alpha	Loadings	P-Value
SEI1	0.927		0.948	0.850	<0.001
SEI4	0.679			0.786	<0.001
SEI9	0.817			0.756	<0.001
SEI10	0.822	0.835		<0.001	
SEI11	0.843	0.718		<0.001	
SEI12	0.951	0.916		<0.001	
SEI13	0.951	0.927		<0.001	
SEI15	0.735	0.825		<0.001	

Source: Table by the Authors

Composite reliability scores and Cronbach's alpha values above 0.7, as presented in Table 3, confirm the reliability of the constructs. The average variance extracted for each construct exceeds 0.5, evidencing satisfactory convergent validity. Table 4 shows that all model fit and quality indices meet the required cut-off criteria, indicating that the measurement model is sound and suitable for SEM.

TABLE 3. Reliability and AVE

	CR	CS	CE	SEI
Coefficients of composite reliability	0.908	0.929	0.930	0.946
Coefficients of Cronbach's alpha	0.871	0.898	0.913	0.934
AVE	0.665	0.767	0.623	0.688

Source: Table by the Authors

TABLE 4. Model fit and quality indices

	Value	Cut off
Average path coefficient (APC)	P-value < 0,001	P-value<0,05
Average R-squared (ARS)	P-value < 0,001	P-value<0,05
Average adjusted R-squared (AARS)	P-value < 0,001	P-value<0,05
Average block VIF (AVIF)	2,568	Value<=5
Average full collinearity (AFVIF)	3,084	Value<=5
Sympson's paradox Ratio (SPR)	1,000	Value>=0,7
R-squared contribution ratio (RSCR)	1,000	Value>=0,9
Statistical suppression ratio (SSR)	1,000	Value>=0,7
Nonlinear bivariate causality direction ratio (NLBCDR)	1,000	Value>=0,7

Source: Table by the Authors

The structural model reveals significant relationships among community support (*CS*), community empowerment (*CE*), and socio-economic impact (*SEI*) (see Table 5). The relationship between *CS* and *CE* ( $\beta = 0.786$ ;  $p < 0.001$ ) is particularly strong, indicating that supportive community environments substantially enhance empowerment. *CS* has a direct positive effect on *SEI* ( $\beta = 0.321$ ;  $p < 0.001$ ), as does *CE* ( $\beta = 0.451$ ;  $p < 0.001$ ). The overall model demonstrates robust predictive capability, with R-squared values exceeding the thresholds for moderate explanatory power, validating the proposed theoretical relationships (Sarjiyanto 2022).

These findings establish *CE* as a pivotal variable linking community support to socio-economic improvements, supporting the study’s hypotheses. The results confirm that communities with stronger support systems are more empowered, which generates tangible socio-economic gains.

TABLE 5. Path analysis

	Beta	P-Value	Annotation
CR → SEI (H1)	0.140	0.090	Not. Sig.
CR → CE	0.069	0.257	Not. Sig.
CS → CE	0.786	<0.001	Sig.
CS → SEI (H2)	0.321	<0.001	Sig.
CE → SEI	0.451	<0.001	Sig.
CR → CE → SEI (H3)	0.031	0.340	Not Sig.
CS → CE → SEI (H4)	0.355	<0.001	Sig.
R-square		0.707	

Source: Table by the Authors

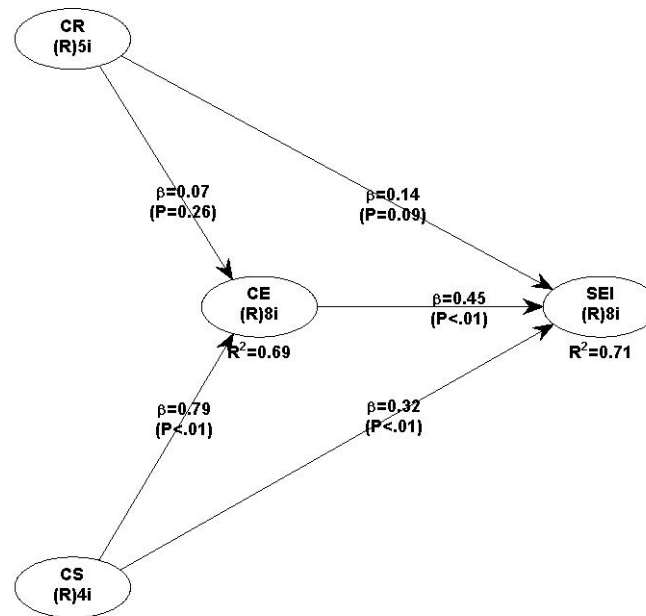


FIGURE 2. The path coefficients

The view that community support shapes community empowerment and socio-economic outcomes is consistent with SET, which posits that social interactions are underpinned by reciprocal relationships in which individuals participate when the benefits outweigh the costs. In the context of this study, community support enhances trust, reciprocal exchanges, and the motivation to engage in collective development activities (Ikhar et al. 2022). This reciprocity reinforces the social fabric and makes it possible for communities to translate support into empowerment and improved livelihood outcomes.

Community support is operationalised through multiple dimensions – emotional, instrumental, informational, and appreciation support – all of which build social cohesion. Emotional support deepens interpersonal bonds through empathy and solidarity, whereas instrumental support involves tangible assistance such as resources, labour, or financial contributions. With informational support, communities possess the knowledge and guidance essential for navigating electrification processes. Appreciation reinforces participation by acknowledging individual contributions. These diverse forms of support collectively enhance the community’s capacity to adopt, manage, and sustain electrification initiatives (Marhaeni et al. 2024).

The study also expands the understanding of social capital as conceptualised by Putnam (2000). Social capital encompasses networks, shared norms, and trust, all of which facilitate coordinated action. In this study, community support is a manifestation of social capital and provides the foundation for empowerment and development. Higher levels of social capital are shown to correlate with better socio-economic outcomes, consistent with this study’s findings that strong community support fosters community empowerment, ultimately leading to improved socio-economic outcomes (Dulkiah 2022).

One of the study’s significant findings is the full mediation effect of *CE* in the relationship between *CS* and *SEI*. The indirect effect of *CS* on *SEI* through *CE* is stronger than the direct effect, indicating that empowerment is the primary mechanism through which community support generates socio-economic benefits. This full mediation analysis confirms that community development efforts must prioritise empowerment strategies rather than relying on support mechanisms. This result aligns with existing research suggesting that empowerment amplifies community agency, enabling individuals to take ownership of development processes and improve socio-economic outcomes (Farajzadegan et al. 2013). Community empowerment is found to enhance decision-making efficacy, promote resource management, and strengthen engagement in

economic and social activities. These findings are consistent with Rozikin et al. (2024), who argue that empowerment increases the effectiveness of community-based decision-support systems, contributing to better socio-economic outcomes.

Recognising *CE* as a full mediator in the relationship between *CS* and *SEI* suggests that electrification interventions must incorporate empowerment components such as leadership training, capacity building, and opportunities for community members to participate in governance structures. Decision-support systems tailored to the community's context can reinforce empowerment efforts and facilitate sustainable development (Faisal et al. 2023).

## POLICY IMPLICATIONS

This research makes several notable contributions to the literature on community-driven development and rural electrification. First, it empirically validates the interconnectedness of community support, community empowerment, and socio-economic impact, clarifying the pathway through which electrification produces sustainable benefits. Second, it reinforces the importance of social capital in development outcomes in remote and low-income communities. Third, it provides evidence that empowerment is not simply an outcome. It is an active mechanism that translates community support into meaningful socio-economic change.

These findings have significant implications for policymakers, development practitioners, and electrification planners. Policymakers should prioritise frameworks that embed community participation in all stages of electrification projects – from planning and implementation to monitoring and system maintenance. Such participatory approaches support community ownership, enhance sustainability, and reduce reliance on external actors (Akpan 2015).

Capacity-building initiatives are essential for strengthening community empowerment. Training programmes should equip community members with technical knowledge of electricity usage, maintenance of electrical systems, and entrepreneurial skills to leverage electricity for income generation. Enhanced capacity empowers communities and increases local resilience and adaptability to socio-economic shocks (Kabalan & Anabaraonye 2014).

Education initiatives should focus on improving technological literacy and raising awareness of the socio-economic benefits of electrification. Knowledge of how electricity can improve productivity, support micro-enterprises, and enhance communication infrastructure is critical for active engagement. This awareness can stimulate entrepreneurship, expand value chains, and increase household incomes over time (Omole et al. 2024).

Access to electricity creates significant opportunities for economic advancement. Electrification allows households to establish small businesses and access information and communication technologies, and facilitates job creation beyond domestic activities (Van de Walle 2016). These opportunities contribute to individual income growth and broader local economic development and community resilience. The findings confirm that strong community support – alongside targeted empowerment interventions – can have a transformative socio-economic impact. Community involvement throughout the electrification process fosters a sense of ownership and accountability, which is essential for long-term sustainability (Mpangwire et al. 2024).

In conclusion, this study advances the understanding of how social capital, community support, and empowerment interact to generate socio-economic improvements in electrified rural communities. The study establishes community empowerment as a mediator in the relationship between community support and socio-economic impact and, in so doing, provides robust evidence that community-driven empowerment strategies are essential for achieving sustainable electrification outcomes. The findings contribute to broader theoretical discussions within SET and social capital theory, highlighting the central role of trust-based relationships, participation, and collective agency. Ultimately, the study underscores that where there are strong community dynamics, electrification can serve as a powerful catalyst for socio-economic transformation.

## CONCLUSIONS

The research underscores the critical role of community assistance and empowerment in enhancing the socio-economic impacts of energy availability, particularly in the context of rural electrification. The findings show that when communities are actively engaged in energy initiatives, the benefits of electricity provision extend beyond basic access and translate into broader local development outcomes. Community involvement strengthens decision-making processes, fosters a sense of ownership and agency, and enhances stakeholder confidence—factors that are especially pivotal in rural agricultural settings. Such engagement aligns closely with the Sustainable Development Goals (SDGs), particularly through its capacity to stimulate employment creation, business innovation, and inclusive economic participation.

Electricity access not only supports existing agricultural and household economic activities but also facilitates technological adoption that can seed new industries. Reliable energy supply provides the infrastructural foundation for innovation, enabling communities to diversify local economies, promote entrepreneurship, and reduce dependence on traditional low-value sectors. As demonstrated in rural Southeast Asian contexts, electrification—when combined with locally embedded support structures—can catalyse business formation, improve productivity, and strengthen community resilience. Emphasising sustainable business models that balance economic growth with community and environmental well-being also aligns with global sustainability frameworks, ensuring that electrification contributes to long-term, equitable development.

These findings have significant implications for policymakers designing rural development and energy-access strategies. Effective interventions must prioritise the strengthening of social capital within communities, acknowledging that governance processes which are participatory and inclusive enhance the success of electrification initiatives. Decision-making frameworks should therefore adopt community-centred approaches that involve local stakeholders in planning, implementation, and monitoring. Policies that encourage trust-building, promote transparency, and facilitate knowledge-sharing among government agencies, communities, and private actors can substantially increase the developmental impact of energy projects.

The sustainability of electrification projects is highly contingent on the extent to which communities are empowered to utilise, manage, and benefit from energy access. Capacity-building programmes—particularly those involving training in energy management, entrepreneurship, and technical maintenance—are essential to ensuring that infrastructure investments translate into sustainable socio-economic improvements. Evidence from community-led governance models indicates that empowerment not only enhances service reliability but also improves local institutional capacities and strengthens accountability.

Educational initiatives further reinforce these outcomes by equipping communities with the skills needed to capitalise on new economic opportunities arising from electricity access. Training in vocational skills, entrepreneurship, and financial literacy has been shown to stimulate business creation and support the growth of micro-enterprises in newly electrified areas. Successful cases from rural electrification programmes in Southeast Asia illustrate that education and training are integral components of project sustainability, as they enable communities to convert infrastructural access into tangible socio-economic gains. In addition, community support mechanisms—such as local cooperatives or business associations—play an important role in building trust, fostering collaboration, and reinforcing collective responsibility for local development.

The socio-economic implications of community engagement in electrification initiatives are therefore multifaceted and far-reaching. Indonesian case studies highlight that collaborative, community-led approaches consistently produce more sustainable outcomes than traditional top-down development models. Acknowledging the centrality of community participation, support, and empowerment is thus essential for maximising the socio-economic benefits of electricity provision in growth-ready rural regions.

The study's findings also resonate strongly with Social Exchange Theory (SET), which posits that individuals and groups engage in interactions based on anticipated benefits relative to perceived costs. Within this framework, community empowerment functions as a mediating mechanism that links community support to enhanced socio-economic outcomes. When communities perceive infrastructure investments such as electrification as valuable and rewarding, they are more likely to reciprocate through active participation, maintenance efforts, and ongoing engagement. This reciprocal dynamic reinforces mutual trust and strengthens the relational foundations necessary for successful long-term development interventions.

By embedding electrification within broader empowerment processes, policymakers can cultivate a reinforcing cycle of reciprocity, benefit-sharing, and collective ownership that aligns with SET's core principles. Empowered communities are more willing to contribute resources, knowledge, and labour to energy projects, while external stakeholders are encouraged to continue supporting initiatives that demonstrate strong local commitment. This mutual exchange contributes to more resilient governance arrangements and enhances overall development outcomes.

Despite its valuable contributions, the study is subject to several limitations. The relatively small sample size of 86 households and the focus on selected rural areas in Indonesia limit the generalisability of the findings to other regions with diverse socio-economic or cultural characteristics. The study's quantitative orientation also restricts the depth of insight into the cultural norms, social dynamics, and local value systems that may influence community empowerment and engagement in electrification initiatives.

Future research should therefore adopt mixed-methods approaches to capture more nuanced perspectives on community dynamics and cultural influences. Qualitative methods, such as in-depth interviews and focus group discussions, would provide richer insights into local experiences, expectations, and motivations related to electrification. Additionally, longitudinal research is necessary to assess the long-term socio-economic effects of energy access, as short-term indicators such as income increases or productivity gains may not be sustained over time. Longitudinal studies would help determine whether early benefits translate into lasting improvements in community well-being, economic resilience, and social inclusion.

## REFERENCES

- Akorio, F.A., Turyamureeba, S., Tugume, A. & Eze, V.H.U. 2024. Rural tourism and socio-economic development in Kalapatta Sub County Kabong District of Uganda. *Journal of Humanities and Social Sciences (JHASS)* 6(1): 31–38.
- Akpan, U. 2015. Technology options for increasing electricity access in areas with low electricity access rate in Nigeria. *Socio-Economic Planning Sciences* 51: 1–12.
- Belmin, C., Hoffmann, R., Pichler, P.-P. & Weisz, H. 2021. Fertility transition powered by women's access to electricity and modern cooking fuels. *Nature Sustainability* 5(3): 245–253.
- Dinkelmann, T. 2011. The effects of rural electrification on employment: New evidence from South Africa. *American Economic Review* 101(7): 3078–3108.

- Dulkiah, Moh. 2022. Pattern of social capital in empowerment of urban and rural communities in Indonesia. *Journal of Scientech Research and Development* 4(2): 478–490.
- Egli, F., Agutu, C., Steffen, B. & Schmidt, T.S. 2023. The cost of electrifying all households in 40 Sub-Saharan African countries by 2030. *Nature Communications* 14(1): 1-10.
- Faisal, A.M., Kasnawi, T., Yunus, R. & Hasbi, H. 2023. Management strategy of the Indonesia juara program for local economy in the regions of Bulukumba, Bone, and Makassar. *International Journal of Multicultural and Multireligious Understanding* 10(11): 224-233.
- Falk, J., Angelmahr, M., Schade, W. & Schenk-Mathes, H. 2021. Socio-economic impacts and challenges associated with the electrification of a remote area in rural Tanzania through a mini-grid system. *Energy, Ecology and Environment* 6(6): 513–530.
- Farajzadegan, Z., Jafari, N., Nazer, S., Keyvanara, M. & Zamani, A. 2013. Social capital - a neglected issue in diabetes control: A cross-sectional survey in Iran. *Health & Social Care in the Community* 21(1): 98–103.
- Feron, S., Heinrichs, H. & Cordero, R. 2016. Are the rural electrification efforts in the ecuadorian amazon sustainable? *Sustainability* 8(5): 1-22.
- Hair, J.F., Black, W.C., Babin, B.J. & Anderson, R.E. 2019. *Multivariate Data Analysis* (Eighth Ed). Cengage Learning EMEA.
- Halim, L., Anugrah, P., Kurniawan, A. & Karim, K. 2024. A critical evaluation of DC microgrid implementation in Indonesia: opportunities and challenges. *Indonesian Journal of Electrical Engineering and Computer Science* 34(2): 687-696.
- Heath, E., Sanon, V., Mast, D.K., Kibbe, D. & Lyn, R. 2021. Increasing community readiness for childhood obesity prevention: A case study of four communities in Georgia. *Health Promotion Practice* 22(5): 676–684.
- Ikhar, M.R., Banerjee, S., Bandhopadhyaya, K., Tiwari, M.K. & Deshmukh, P. 2022. Are women with more of ‘social capital’ more empowered? A cross-sectional analysis from rural Wardha, Central India. *Journal of Family Medicine and Primary Care* 11(2): 472–479.
- Imai, K. & Palit, D. 2014. Impacts of electrification with renewable energies on local economies. *The International Journal of Environmental Sustainability* 9(2): 1–18.
- Jefferson, D.J. & Harkins, D.A. 2011. “Hey, I’ve Got a Voice Too!” Narratives of Adversity, Growth and Empowerment. *Journal for Social Action in Counseling & Psychology* 3(2): 104–128.
- Kabalan, M. & Anabaraonye, B. 2014. Solar photovoltaic versus micro -hydroelectricity: A framework for assessing the sustainability of community-run rural electrification projects. *IEEE Global Humanitarian Technology Conference (GHTC 2014)*: 6–13.
- Kamalapur, G.D. & Udaykumar, R.Y. 2010. Electrification in rural areas of India and consideration of SHS. *2010 5th International Conference on Industrial and Information Systems*: 596–601.
- Khalid, S., Ahmad, M.S., Ramayah, T., Hwang, J. & Kim, I. 2019. Community empowerment and sustainable tourism development: The mediating role of community support for tourism. *Sustainability* 11(22): 1-14.
- Marhaeni, A.A.I.N., Sudibia, I.K., Andika, G. & Fahlevi, M. 2024. Impacts of village funding on community empowerment and poverty in Klungkung, Bali. *International Journal of Sustainable Development and Planning* 19(3): 981–990.
- Mpangwire, V., Ainomugisha, S. & Musiita, B. 2024. Stakeholder involvement and team capacity on the performance of rural electrification projects in Southwestern Uganda. *Journal of Economics and Behavioral Studies* 16(1(J)): 109–117.
- Muhwezi, N., Dahiru Buhari, M., Nuhu Shuaibu, A. & Shola Bakare, M. 2024. Techno economic assessment and ANFIS driven optimization for solar PV-biomass hybrid energy system. *KIU Journal of Science Engineering and Technology* 3(1): 71–85.
- Nazirullah, Mat Som, A.P., Mior Shariffuddin, N.S., Wan Mohd Zain, W.M.A. & Al Qassem, A. 202). The influence of socio-cultural and economic impact on tourism support: A mediating role of community value. *Planning Malaysia* 21: 146-162.
- Niknam, M., Omidvar, N., Eini-Zinab, H., Kalantari, N., Olazadeh, K. & Amiri, P. 2023. Improving community readiness among Iranian local communities to prevent childhood obesity. *BMC Public Health* 23(1): 1-12.
- Nussbaumer, P., Bazilian, M. & Modi, V. 2012. Measuring energy poverty: Focusing on what matters. *Renewable and Sustainable Energy Reviews* 16(1): 231–243.
- Omole, F.O., Olajiga, O.K. & Olatunde, T.M. 2024. Challenges and successes in rural electrification: A review of global policies and case studies. *Engineering Science & Technology Journal* 5(3): 1031–1046.
- Panakaje, N., Rahiman, H.U., Riha Parvin, S.M., Siddiq, A. & Rabbani, M.R. 2024. Revitalising socio-economic empowerment through cooperative banks: Insights from India. *Arab Gulf Journal of Scientific Research* 42(4): 1456–1471.
- Pappis, I. 2022. Strategic low-cost energy investment opportunities and challenges towards achieving universal electricity access (SDG7) in forty-eight African nations. *Environmental Research: Infrastructure and Sustainability* 2(3).
- Pedersen, M.B. 2016. Deconstructing the concept of renewable energy-based mini-grids for rural electrification in East Africa. *WIREs Energy and Environment* 5(5): 570–587.
- Peters, J. & Sievert, M. 2016. Impacts of rural electrification revisited – the African context. *Journal of Development Effectiveness* 8(3): 327–345.
- Putnam, R.D. 2000. *Bowling Alone: The Collapse and Revival of American Community*. Simon and Schuster Paperbacks.

- Rahman, Md. M., Paatero, J.V. & Lahdelma, R. 2013. Evaluation of choices for sustainable rural electrification in developing countries: A multicriteria approach. *Energy Policy* 59: 589–599.
- Rozikin, H.J., Ismiwati, B. & Astuti, E. (2024). The effect of the agriculture, tourism, and trade sectors on economic growth in Lombok Timur Regency. *English and Tourism Studies* 2(1): 1–6.
- Russell, K., Barnett, F., Varela, S., Rosenbaum, S. & Stanton, R. 2024. Physical activity to address mental health in a remote Australian community: community readiness assessment. *The Journal of Mental Health Training, Education and Practice* 19(3): 125–138.
- Sahlberg, A., Khavari, B., Mohamed, I. & Fuso Nerini, F. 2023. Comparison of least-cost pathways towards universal electricity access in Somalia over different timelines. *Energies* 16(18).
- Salat, H., Smoreda, Z. & Schläpfer, M. 2020. A method to estimate population densities and electricity consumption from mobile phone data in developing countries. *PLOS ONE* 15(6).
- Sarjiyanto, S. 2022. Moderating effect of social capital on community empowerment and economic well-being. *Jurnal Perspektif Pembiayaan Dan Pembangunan Daerah* 9(6): 479–492.
- Sessa, M.R., Russo, A. & Sica, F. 2022. Opinion paper on green deal for the urban regeneration of industrial brownfield land in Europe. *Land Use Policy* 119.
- Setyowati, A.B. 2021. Mitigating inequality with emissions? Exploring energy justice and financing transitions to low carbon energy in Indonesia. *Energy Research & Social Science* 71.
- Sinaga, R., Prastowo, Simangunsong, B.C.H., Liebman, A. & Tambunan, A.H. 2019. Analysis of barriers in supplying electricity using interpretative structural modeling. *Energy Strategy Reviews* 25: 11–17.
- Sovacool, B.K., Sidortsov, R.V. & Jones, B.R. 2013. *Energy Security, Equality and Justice*. Routledge.
- Stylidis, D., Biran, A., Sit, J. & Szivas, E.M. 2014. Residents' support for tourism development: The role of residents' place image and perceived tourism impacts. *Tourism Management* 45: 260–274.
- Sulaeman, I., Simatupang, D.P., Noya, B.K., Suryani, A., Moonen, N., Popovic, J. & Leferink, F. 2021. Remote microgrids for energy access in indonesia—part i: Scaling and sustainability challenges and a technology outlook. *Energies* 14(20).
- Tamene, A., Habte, A., Tagesse, M., Sewalem, Z.W. & Afework, A. 2023. Using household survey data to explore the effects of the domiciliary environment on weight at birth: a multilevel mixed-effects analysis of the 2016 Ethiopian Demographic Health Survey. *BMC Pregnancy and Childbirth* 23(1).
- Tandoh, A., Laar, A., Pradeilles, R., Le Port, A., Osei-Kwasi, H., Amevinya, G.S., Aryeetey, R.N.O., Agyemang, C. & Holdsworth, M. 2023. Addressing the marketing and availability of unhealthy food and beverages in and around selected schools in Ghana: a community readiness appraisal. *BMJ Open* 13(9).
- Tommy, S., Sujianto, Rusli, Z. & Heriyanto, M. 2024. Grand design policy for economic empowerment through waste management: A case study of Pekanbaru City's environmental and energy strategies. *E3S Web of Conferences* 506.
- Van de Walle, S. 2016. When public services fail: A research agenda on public service failure. *Journal of Service Management* 27(5): 831–846.
- Wan, J. 2022. Practice of community vocational rehabilitation empowerment for patients with mental disorders—A case study on the “walking with love” project in Y City. *Advances in Applied Sociology* 12(08): 377–393.
- West, R., DiMeo, A., Langer, A., Shah, N. & Molina, R.L. 2022. Addressing racial/ethnic inequities in maternal health through community-based social support services: A mixed methods study. *Maternal and Child Health Journal* 26(4): 708–718.
- Xu, S., Yan, Z., Feng, D. & Zhao, X. 2019. Decentralized charging control strategy of the electric vehicle aggregator based on augmented Lagrangian method. *International Journal of Electrical Power & Energy Systems* 104: 673–679.
- Zerfu, T.A., Griffiths, P., Macharia, T., Kamande, E.W., Anono, E., Kiige, L., Gatheru, P.M., Jobando, S., Moloney, G. & Kimani-Murage, E.W. 2021. Communities and employers show a high level of preparedness in supporting working mothers to combine breastfeeding with work in rural Kenya. *Maternal & Child Nutrition* 17(4).
- Zhang, R. & Fujimori, S. 2020. The role of transport electrification in global climate change mitigation scenarios. *Environmental Research Letters* 15(3).

Vanessa Gaffar\*

Faculty of Economics and Business Education  
Universitas Pendidikan Indonesia  
Jl. Dr. Setiabudhi 229 Bandung, 40154, INDONESIA.  
E-mail: vanessa@upi.edu

Denny Andriana

Faculty of Economics and Business Education  
Universitas Pendidikan Indonesia  
Jl. Dr. Setiabudhi 229 Bandung, 40154, INDONESIA.  
E-mail: denny.andriana@upi.edu

S. Sulastri  
Faculty of Economics and Business Education  
Universitas Pendidikan Indonesia  
Jl. Dr. Setiabudhi 229 Bandung, 40154, INDONESIA.  
E-mail: sulastri@upi.edu

Wenda Wahyu Christiyanto  
Postgraduate School  
Universitas Terbuka  
Jl. Cabe Raya, Pondok Cabe, Pamulang, Tangerang Selatan 15437, INDONESIA.  
E-mail: wenda.wahyu@ecampus.ut.ac.id

Ujang Koswara  
Yayasan Pilar Peradaban  
Kilimanjaro 30 Pinus Regensi Bandung, 40294, INDONESIA.  
E-mail: yppbdg@gmail.com

\* Corresponding author

## APPENDIX

Community Readiness (CR) Heath et al. (2021) and Tandoh et al. (2023)	
CR1	You and the local community are making significant efforts to obtain access to electricity.
CR2	You and the local community are seeking electricity access through both formal and informal channels.
CR3	Not all community members support gaining access to electricity.
CR4	You and the community recognise that securing electricity access requires strong cooperation among members.
CR5	You and the community are knowledgeable about the process required to obtain electricity access.
CR6	You and the community recognise that securing electricity access requires both material and non-material efforts.
CR7	You and the local community choose a leader to oversee the process of obtaining electricity access.
CR8	The elected leader is highly committed to securing electricity for your area.
CR9	The elected leader is directly involved in securing electricity for your area.
CR10	You and the local community have a positive attitude towards the provision of electricity.
CR11	You frequently encounter resistance from the community when seeking access to electricity.
CR12	You and the local community receive information about the benefits of installing electricity.
CR13	You and the local community receive information about the electricity installation process.
CR14	You and the local community receive information about the cost of installing electricity.
CR15	You and the local community understand the policies governing electricity access in Indonesia.
CR16	You and the local community have prepared human resources to support the electricity installation.
CR17	You and the local community have prepared human resources to support electricity maintenance.
CR18	You and the local community have prepared the infrastructure needed to support electricity installation.
CR19	You and the local community have allocated funds for the electricity installation.
Community Support (CS) West et al. (2022)	
CS1	You take part in various activities related to the provision and maintenance of electricity in the village.
CS2	You devote time to supporting the community's efforts in providing and maintaining electricity in the village.
CS3	You provide full support for the village's electricity provision and maintenance, both materially and non-materially.
CS4	You are actively involved in the provision and maintenance of electricity in the village.
CS5	You consistently voice your views to support the effective provision and maintenance of village electricity.
CS6	You consistently attend village meetings related to the provision and maintenance of electricity.
Community Empowerment (CE) Russell et al. (2024) and Tommy et al. (2024)	
CE1	You and the community have the awareness and willingness to improve village conditions.
CE2	With electricity, you are motivated to contribute to developing rural potential.
CE3	You wish to develop your abilities to help improve the village.
CE4	You have the capacity to enhance your ability to obtain electricity access.
CE5	Electricity helps enhance people's knowledge and skills.
CE6	Electricity facilitates easier access to banking services.
CE7	Electricity facilitates collaboration with institutions and companies.
CE8	You are able to overcome all obstacles in the process of obtaining electricity.
CE9	Electricity makes it easier to meet daily needs.
CE10	Electricity can alter family roles.
CE11	Community involvement in addressing electricity-related problems is very high.
CE12	Communities collaborate to enhance members' welfare by developing village potential.
CE13	Electricity can strengthen solidarity among community members.
Socio-Economic Impact (SEI) Panakaje et al. (2024).	
SEI1	Electricity shapes people's mindset towards modernisation.
SEI2	Electricity influences people's mindset regarding urbanisation and rural-urban migration.
SEI3	Electricity fosters more innovative ways of thinking.
SEI4	Electricity and new technologies alter social relations within the local community, as seen with the spread of television.
SEI5	Electricity enables interaction with the wider world and its cultures, for example, through mobile phones.
SEI6	Electricity increases dependence on electronic devices, such as mobile phones and household appliances.
SEI7	Electricity makes daily activities more effective, productive, and efficient.
SEI8	Young people play a greater role in society as they can access more advanced information.
SEI9	Electricity has contributed to higher household incomes.
SEI10	Electricity has brought change by creating new job opportunities.
SEI11	Electricity has contributed to shifts in employment types, such as movement from farming to factory work.
SEI12	Electricity has transformed the local economic structure by enabling new activities such as shops, stalls, restaurants, and transport services.
SEI13	Electricity has increased employment absorption.
SEI14	Electricity has helped reduce unemployment in the village.
SEI15	Electricity improves the quality of children's education by allowing them to study for longer at home in the evening.
SEI16	Electricity enables greater access to digital technology in education, such as the use of computers, laptops, and internet connectivity.