



CORPORATE SOCIAL RESPONSIBILITY FOR ELECTRICITY SUPPLY RELIABILITY: A CASE STUDY OF GO VAP POWER COMPANY

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ABSTRACT :

This study analyzes corporate social responsibility (CSR) implementation in ensuring electricity supply reliability at Go Vap Power Company, Vietnam. Data comprise operational reports for the 2021–2025 period and a convenience survey of 200 customers using 15 criteria on a five-point Likert scale. Descriptive statistics show that SAIFI decreased from 0.54 to 0.12 interruptions per customer per year, and SAIDI decreased from 26.72 to 5.09 minutes per customer per year; the electricity loss rate fell to 2.76% by 2025. Customers rated communication channels, outage notifications, and data security more positively. However, voltage stability ($M = 3.90$), the low incidence of grid faults ($M = 3.62$), and the transparency of tiered electricity pricing ($M = 3.68$) remain three bottlenecks. The findings show that the social responsibility of an electricity utility is expressed not only through community activities but is also realized in infrastructure quality, service continuity, information transparency, and customer responsiveness. The study proposes prioritizing grid automation, local overload management, loss control, and clearer communication of electricity pricing.

Keywords: corporate social responsibility; electricity supply reliability; SAIFI; SAIDI; public utility service; Go Vap Power Company.

1. INTRODUCTION

Electricity is an essential infrastructure service that directly affects daily life, production, healthcare, education, and local competitiveness. Accordingly, the social responsibility of an electricity utility cannot be understood merely as philanthropic programs. This responsibility lies first and foremost in providing electricity that is safe, continuous, high-quality, transparent, and fair, while also reducing resource losses, protecting data, and maintaining an effective feedback mechanism for customers.

Go Vap Power Company (PCGV), Vietnam, is one of the units under the Ho Chi Minh City Power Corporation, responsible for electricity distribution, business operations, and grid management in Go Vap District. This is an urban area with high population density and load demand, which makes requirements for voltage quality, fault-handling capability, and outage information particularly important. During the 2021–2025 period, PCGV's reliability indicators improved considerably; however, line faults, local overloads at several distribution stations, and uneven voltage quality continued to affect the customer experience.

CSR research typically emphasizes economic, legal, ethical, and philanthropic responsibilities (Carroll, 1991), while the stakeholder approach requires firms to create value and reduce adverse impacts on affected groups (Freeman, 1984). More recent syntheses of these two traditions similarly stress that structured stakeholder dialogue is central to aligning CSR programs with stakeholder expectations (Awa et al., 2024). For public utilities, linking these two approaches with technical indicators and service experience carries clear practical significance. However, evidence at the level of urban electricity distribution units in Vietnam remains limited.

This study aims to: (1) systematize CSR in the context of electricity supply; (2) describe operational results and customer evaluations at PCGV; and (3) identify governance priorities to strengthen electricity supply reliability. The contribution of this paper is to translate CSR from a broad concept into a practical framework comprising technical quality, compliance, service ethics, and community contribution, while cross-referencing operational indicators with customer perceptions.

2. THEORETICAL BACKGROUND AND ANALYTICAL FRAMEWORK

2.1. Corporate Social Responsibility

CSR reflects a firm's responsibility for the impacts of its decisions and activities on society and the environment. According to Carroll's (1991) model, CSR comprises economic, legal, ethical, and philanthropic layers of responsibility. ISO 26000 broadens this view through principles of accountability, transparency, ethical behavior, respect for stakeholder interests, rule of law, international norms, and human rights (ISO, 2010). At the organizational level, CSR is also a set of context-appropriate policies and actions integrated into core operations rather than existing as a peripheral program (Aguinis & Glavas, 2012). A recent systematic review of CSR in the energy sector similarly identifies environmental, financial, stakeholder-communication, and organizational pillars as the core dimensions along which energy companies' CSR performance should be measured (Kasradze et al., 2023).

From a stakeholder perspective, electricity customers are both service purchasers and a group dependent on the continuity of an essential infrastructure (Awa et al., 2024). Therefore, customer interests must be considered in decisions regarding investment, operations, communication, and complaint handling. CSR in the electricity sector is thus highly operational in nature: economic responsibility is linked to efficiency and loss reduction; legal responsibility is linked to technical standards and customer rights; ethical responsibility is linked to safety, transparency, security, and service attitude; and community responsibility is linked to energy saving, social welfare, and local development.

2.2. Electricity Supply Reliability as a CSR Outcome

Electricity supply reliability reflects the system's ability to maintain service and restore power following an interruption. Two commonly used indicators are SAIFI (System Average Interruption Frequency Index) and SAIDI (System Average Interruption Duration Index). Lower values of these indicators indicate a smaller average frequency or duration of interruptions. Recent case studies of urban distribution utilities continue to rely on these two indices as the primary benchmark of reliability performance (e.g., Prasetya et al., 2024). However, system-level indicators do not fully substitute for user evaluations, since customers also perceive quality through voltage levels, fault notifications, ease of contact, response time, and transparency.

On this basis, the study uses four analytical groups: (i) financial–technical, comprising investment, electricity losses, voltage quality, and reliability; (ii) legal, comprising compliance with regulations on electricity business and construction investment; (iii) ethical–human, comprising safety, transparency, data security, and service quality; and (iv) social welfare, comprising community support and the promotion of energy-saving practices. This framework is used to jointly interpret operational data and the customer survey.

3. RESEARCH METHODOLOGY

3.1. Research Design and Data

The study uses a case-study design combining secondary data and a cross-sectional survey. Secondary data were compiled from PCGV's operational, business, technical, and customer-service reports for the 2021–2025 period. Key indicators include commercial electricity output, electricity losses, number of customers, investment–repair capital, and the SAIFI and SAIDI indices.

Primary data were collected through direct surveys at transaction points, residential areas, and neighborhood groups within Go Vap District. The sample was selected using a convenience method. A total of 250 questionnaires were distributed, and 200 valid responses were collected, corresponding to an 80% response rate. Respondents rated 15 criteria on a five-point Likert scale, from 1 (strongly disagree) to 5 (strongly agree).

3.2. Measurement Scales and Data Analysis

Six criteria (A1–A6) reflect the experience prior to using or registering for the service, focusing on service information, procedures, connection time, payment methods, electricity pricing, and staff attitude. Nine criteria (B1–B9) reflect the experience during electricity use, comprising risk warnings, safety advice, voltage stability, grid faults, outage notifications, communication channels, complaint-handling procedures, and data security.

Data were processed using descriptive statistics, including mean values and the proportion of customers selecting a rating of 4 or 5. The paper does not conduct hypothesis testing, factor analysis, or statistical generalization. The survey results are therefore interpreted as descriptive evidence from the study sample, not as estimates representative of the entire PCGV customer base.

4. RESEARCH RESULTS

4.1. Operational Results and Electricity Supply Reliability

During the 2021–2025 period, commercial electricity output increased from 1,057 million kWh to 1,407 million kWh, an increase of 350 million kWh (33.1%). The number of customers increased from 144,127 to 146,481. The electricity loss rate decreased from 3.35% to 2.76%. Approximately VND 74 billion was invested in grid construction, repair, and development projects.

Table 1. Selected operational indicators of PCGV, 2021–2025

Indicator	2021	2025	Change
Commercial electricity output (million kWh)	1,057	1,407	+350 (+33.1%)
Number of customers	144,127	146,481	+2,354 (+1.63%)
Electricity loss rate (%)	3.35	2.76	−0.59 (−17.6%)
SAIFI (interruptions/customer/year)	0.54	0.12	−0.42 (−77.8%)
SAIDI (minutes/customer/year)	26.72	5.09	−21.63 (−80.9%)
Investment/repair capital, 2021–2025	—	—	Approximately VND 74 billion

Source: Compiled and calculated from PCGV reports (2021–2025).

SAIFI decreased by 77.8% and SAIDI decreased by 80.9% between the beginning and end of the period. This result reflects a substantial improvement in the average frequency and duration of power interruptions. Nevertheless, the improvement in system-level indicators should be considered alongside customer perceptions of voltage and faults in specific areas, since average figures may mask local hotspots.

4.2. Customer Evaluations Prior to Service Use

Table 2. Evaluation prior to using the electricity service (n = 200)

Code	Criterion	Satisfaction (%)	Mean
A1	Clear information on service types	73.6	4.15
A2	Clear information on connection procedures	76.5	4.56
A3	Clear notification of connection time	82.5	4.72
A4	Specific notification of payment methods	71.0	4.12
A5	Clear information on tiered electricity pricing	69.3	3.68
A6	Staff friendliness and respect toward customers	75.1	4.25
	Overall mean	—	4.25

Source: Author's survey results.

The overall mean for the pre-service-use criteria group reached 4.25. The criterion for connection-time notification (A3) achieved the highest score ($M = 4.72$; 82.5% satisfaction). Conversely, information on tiered electricity pricing (A5) had the lowest mean score ($M = 3.68$; 69.3% satisfaction). This gap indicates that PCGV performs well in communicating procedures and timing, but the explanation of the pricing structure remains unclear to a portion of customers. Transaction attitude (A6) was rated positively, although the 75.1% satisfaction rate still leaves room for improvement.

4.3. Customer Evaluations During Electricity Use

Table 3. Evaluation during use of the electricity service (n = 200)

Code	Criterion	Satisfaction (%)	Mean
B1	Reminders and risk warnings during electricity use	91.6	4.60
B2	Periodic safety advice on electricity use	89.0	4.70
B3	Stable voltage, without overvoltage or undervoltage	70.0	3.90
B4	Low incidence of grid faults	68.5	3.62
B5	App notification of power restoration time	94.0	4.71
B6	App notification of planned outages	89.1	4.73

B7	Availability of contact channels for inquiries	90.0	4.80
B8	Existence of a customer complaint-handling procedure	87.4	4.60
B9	Protection of personal data and privacy	92.1	4.72
	Overall mean	—	4.48

Source: Author's survey results.

The criteria group for the in-use period achieved an overall mean of 4.48. The ability to make contact when questions arise (B7) had the highest score ($M = 4.80$), followed by notification of planned outages (B6; $M = 4.73$) and data security (B9; $M = 4.72$). These results reflect the strength of digital channels and customer-care procedures.

Two technical criteria, B3 and B4, were markedly lower than the other criteria. In particular, B4 reached only $M = 3.62$ with 68.5% satisfaction. This creates a notable governance paradox: although the average SAIFI and SAIDI indicators have improved, the experience of a segment of customers regarding faults and voltage remains inconsistent with this improvement. The gap may be related to the uneven distribution of faults, local overloads, differences between interruption indicators and voltage quality, or rising customer expectations. Since the available data do not allow these mechanisms to be tested, these explanations require verification in future research.

5. DISCUSSION

The findings reinforce the view that CSR in an electricity utility must be integrated into core operations. Reducing SAIFI, SAIDI, and electricity losses simultaneously creates economic value, reduces resource waste, and protects user interests. Following Carroll's (1991) approach, this represents the intersection of economic, legal, and ethical responsibility; under stakeholder theory, it functions as a mechanism for reducing risk to the customer group dependent on an essential service.

First, technical investment is a direct expression of CSR, not merely an operational decision. Automation through SCADA, additional switching equipment, station overload management, line interconnection, and reactive power compensation help shorten both the scope and duration of interruptions. When investments are prioritized according to customer risk, technical efficiency is converted into social value.

Second, the high scores for criteria B5–B9 suggest that digital transformation can increase information accessibility and accountability. However, good notification cannot substitute for actual power quality. Effective CSR governance requires balancing two capabilities: preventing interruptions and communicating transparently when interruptions occur.

Third, the tiered electricity pricing criterion had the lowest score among the pre-service-use criteria. PCGV does not determine pricing policy, but it still bears responsibility for explaining the calculation method, simulating bills, providing consumption warnings, and guiding customers in verifying their data. This illustrates the distinction between the authority to decide policy and the responsibility to communicate it.

Fourth, the inconsistency between average technical indicators and customer perceptions suggests the need to manage reliability at the level of grid segments and customer groups. Area-wide average reporting should be supplemented with hotspot maps, the number of customers experiencing repeated interruptions, voltage quality, and response times by area. This approach helps avoid a situation in which good average results mask certain communities still experiencing lower service quality.

6. GOVERNANCE IMPLICATIONS

Table 4. Priority matrix for enhancing CSR in relation to electricity supply reliability

Priority	Issue	Basis	Key actions	Monitoring indicators
1	Reduce faults and local overloads	B4: $M = 3.62$; B3: $M = 3.90$	Hotspot analysis; capacity upgrades/additional stations; line interconnection; condition-based maintenance	SAIFI/SAIDI by area; number of customers with repeated interruptions
2	Automation and rapid restoration	System indicators have improved but perceptions remain uneven	Expand SCADA; remotely controlled RMU/LBS; standardize load-transfer scenarios	Isolation and restoration time; outage scope
3	Loss and voltage management	2025 loss rate: 2.76%; B3 not yet high	Install compensation capacitors; phase/load balancing; voltage monitoring; inspection of high-loss	Losses by station; voltage-deviation violations

			stations	
4	Pricing and consumption transparency	A5: M = 3.68	Bill-simulation tools; tiered-pricing explanation with examples; consumption warnings	Correct-understanding rate; billing complaints; tool usage level
5	Closing the customer feedback loop	A6: 75.1% satisfaction	Communication training; complaint classification; post-resolution follow-up	Processing time; first-time resolution rate; post-service satisfaction

Source: Author's proposal based on study findings.

In the short term, PCGV should prioritize areas with recurring faults, stations showing signs of overload, and abnormal voltage measurement points, while maintaining multi-channel notification. In the medium term, investment plans should integrate SCADA data, fault history, load-growth rates, and customer feedback to rank projects according to social impact. In the long term, the unit's CSR reports should simultaneously disclose technical indicators, the distribution of service quality, and the results of complaint resolution, thereby increasing transparency and accountability.

7. CONCLUSION AND LIMITATIONS

The study shows that PCGV has achieved clear progress in electricity supply reliability during the 2021–2025 period. SAIFI and SAIDI decreased, electricity losses were controlled, and communication channels and digital notifications were positively rated by customers. However, perceptions of grid faults, voltage stability, and information on tiered electricity pricing remain weaknesses. CSR in the electricity sector should therefore be measured through both operational indicators and customer experience, with a focus on core services rather than welfare activities alone.

The study has three limitations. First, the convenience sample of 200 customers does not ensure probabilistic representativeness, and no demographic profile was collected to assess sample bias. Second, the paper relies on descriptive statistics; the reliability and validity of the scales were not tested. Third, the data pertain to a single unit and a single period, which does not allow causal inference among CSR activities, grid investment, and satisfaction. Future research should employ stratified sampling by ward and customer group, combine interruption data at the line/station level, validate the measurement scales, and use a longitudinal design to assess the impact of individual investment programs.

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