

Strategic communication as a driver of renewable energy adoption in urban transport: Evidence from MRT Jakarta

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Abstract: *Purpose.* This study examines how strategic communication influences stakeholder support for renewable energy initiatives in urban mass rapid transit systems. Using PT MRT Jakarta as a case study, the research addresses a critical gap: despite technical feasibility and policy commitments to achieve decarbonization by 2040, renewable energy implementation remains constrained by insufficient stakeholder alignment and engagement. *Methodology.* A quantitative research design employing Structural Equation Modeling with Partial Least Squares (SEM-PLS) was utilized to test six hypotheses. Data were collected from 176 internal and external stakeholders of MRT Jakarta using a structured questionnaire that measured strategic communication, sense of importance, stakeholder ownership, stakeholder support, and perceived financial outcomes. Path analysis examined both direct and mediated relationships among these constructs. *Results.* Strategic communication demonstrated exceptionally strong effects on sense of importance ($\beta = 0.989, p < 0.001$) and stakeholder ownership ($\beta = 0.978, p < 0.001$). Both psychological constructs significantly mediated the relationship between communication and stakeholder support, with ownership exhibiting stronger influence ($\beta = 0.677, p < 0.001$) than importance ($\beta = 0.316, p < 0.05$). Stakeholder support strongly predicted perceived financial efficiency ($\beta = 0.991, p < 0.001$) and financial independence ($\beta = 0.969, p < 0.001$). All six hypotheses were empirically supported. *Theoretical contribution.* The study advances sustainability transitions scholarship by empirically validating communication as a strategic lever for institutional change. It demonstrates that renewable energy barriers in public infrastructure are fundamentally communicative rather than technical, extending strategic communication theory into sustainable transport contexts. *Practical implications.* Public transit agencies pursuing decarbonization must reposition communication from an auxiliary function to a strategic priority, employing participatory engagement platforms, values-aligned messaging,

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and transparent reporting mechanisms to accelerate renewable energy adoption and strengthen financial sustainability.

Keywords: strategic communication, renewable energy, stakeholder engagement, urban transportation, financial sustainability, MRT Jakarta

Sustainable Development Goals (SDGs): **SDG 7:** Clean Energy; **SDG 11:** Sustainable Cities; **SDG 13:** Climate Action

1. Introduction

Urban transport is experiencing a significant transformation globally. Modern Mass Rapid Transit (MRT) systems are no longer merely perceived as transportation solutions but are increasingly recognized as integral components of sustainable urban development. This shift is reflected in the integration of transit systems with urban planning strategies, such as Transit-Oriented Development (TOD). A prominent example is Hong Kong's "Rail plus Property" (R+P) approach, in which the MRT operator actively leverages its transport infrastructure to generate substantial revenue beyond ticket sales through property ventures, while simultaneously driving urban economic growth (Musil, 2020). In a similar vein, cities such as Dhaka and Jakarta are integrating solar energy into their MRT systems as part of their broader efforts to reduce carbon emissions (Islam et al., 2024). These developments align with global momentum toward the increased adoption of renewable energy technologies.

The transport sector accounts for approximately 25% of global energy-related greenhouse gas emissions, making decarbonization of public transit a critical priority for achieving climate goals (KPMG, 2022). As major electricity consumers, public transit agencies have a significant opportunity to lead this transition. However, success in renewable energy integration is not merely a matter of technology or investment; it also hinges on institutional alignment, stakeholder support, and organizational communication.

In Indonesia, MRT Jakarta represents a pioneering urban transit operator with ambitions aligned to national sustainability targets. Since commencing operations in 2019, the agency has not only provided transportation services but also aimed to support environmental and urban transformation. MRT Jakarta has undertaken feasibility studies for solar power, partnered with international institutions such as the U.S. Trade and Development Agency (USTDA), and publicly committed to achieving net-zero emissions by 2040, well ahead of the Indonesian government's 2060 target (USTDA, 2022). However, the scale and pace of implementation have not matched these ambitions, pointing to deeper organizational and systemic challenges.

Although technical studies and policy alignment support MRT Jakarta's renewable energy initiatives, their execution remains limited in scope. This reflects a broader issue in public infrastructure organizations: the undervaluation of strategic communication as a driver of institutional change. Much of the discourse on renewable energy adoption focuses on technology, policy, and financing, but overlooks the importance of how sustainability goals are communicated, framed, and championed internally and externally (Weder, 2023).

Strategic communication, defined as intentional and mission-driven messaging to align stakeholders and drive behavioral change, has been shown to play a key role in advancing organizational transformation (Hallahan et al., 2007). In sustainability transitions, where initiatives often involve cross-functional coordination, uncertainty, and long time horizons, the need for persuasive and consistent communication is even more critical. Recent research emphasizes that effective sustainability communication requires emotionally resonant messaging, alignment with target audiences' values, and strategic framing that transforms awareness into collective action (Martin et al., 2025; Weder, 2023). However, MRT Jakarta lacks a structured communication strategy that connects renewable energy objectives to stakeholder motivations, responsibilities, and values.

The absence of this communication framework results in two key psychological barriers: a weak sense of importance and limited stakeholder ownership. These constructs refer to the degree to which stakeholders (e.g., internal staff, regulators, partners, and the public) perceive the initiative as urgent and personally relevant. Even if an effort is technically well-designed or financially feasible, internal and

external actors may not provide the necessary support and legitimacy if they do not perceive favorable outcomes (Bergstrom et al., 2024; Ishola et al., 2024).

Poor communication not only hinders stakeholder engagement but also actively reduces support for renewable energy projects, ultimately compromising their long-term sustainability and financial viability. Research demonstrates that infrastructure projects with strong stakeholder engagement experience faster implementation, significantly reduced costs, and greater access to financing options, including carbon credits, green bonds, and ESG investments (Boreal, 2024; OECD, 2024). In contrast, MRT Jakarta has not consistently communicated its sustainability message, resulting in lower public awareness of its initiatives. As a result, the potential for cooperation, funding, and public support remains limited.

This gap not only exists in the theoretical realm but also poses a strategic challenge, as there has been little empirical research to date explaining how communication influences stakeholders' attitudes and actions towards renewable energy implementation in MRT Jakarta. This study actively investigates the mediating role of perceived importance and sense of ownership and establishes the relationship between stakeholder support and financial outcomes. To institutionalize sustainability in public-sector institutions operating in a dynamic, complex context such as Jakarta, we need to build a deep understanding of these relationships.

This study applies a quantitative methodology, utilizing a structured survey and statistical analysis, to bridge the existing research gap. The research examines the impact of strategic communication on stakeholder support for renewable energy initiatives in MRT Jakarta, focusing on the mediating roles of the perceived importance of the issue and stakeholder ownership. Additionally, it examines how stakeholder support may affect organizational outcomes, particularly financial efficiency and financial independence.

The following six research questions guide the study:

- Does strategic communication influence stakeholders' sense of importance regarding renewable energy initiatives at MRT Jakarta?
- Does strategic communication affect stakeholder ownership in the context of MRT Jakarta's renewable energy projects?
- Does a sense of importance mediate the relationship between strategic communication and stakeholder support for renewable energy?
- Does stakeholder ownership mediate the relationship between strategic communication and stakeholder support for renewable energy?
- Does stakeholder support for renewable energy initiatives influence perceptions of MRT Jakarta's long-term financial efficiency?
- Does stakeholder support for renewable energy initiatives influence perceptions of MRT Jakarta's long-term financial independence?

By answering these questions, the study aims to generate actionable recommendations for developing a communication strategy that mobilizes stakeholder engagement and accelerates the integration of renewable energy within MRT Jakarta. In doing so, it contributes to a broader understanding of how public institutions can operationalize sustainability not just through policy and infrastructure, but through effective, targeted, and psychologically informed communication.

2. Literature review

2.1. Strategic communication

Strategic communication is defined as the purposeful use of communication by an organization to fulfill its mission. It involves the deliberate planning and execution of communication activities to achieve specific organizational objectives (Hallahan et al., 2007). This encompasses the integration of various communication disciplines, including public relations, marketing, advertising, and organizational communication, to convey consistent messages across multiple channels.

Recent scholarship has emphasized that strategic sustainability communication functions as "communicative niche construction," where organizations actively shape the conditions for sustainability transitions through targeted messaging (Weder, 2023). This approach recognizes that

communication is not merely information transmission but a strategic tool for fostering shared understanding, building coalitions, and mobilizing collective action toward sustainability goals.

2.2. Sense of importance

The stakeholder's sense of importance is a dynamic construct influenced by framing techniques and psychological factors. Framing theory posits that how information is presented - rather than just what information is presented - shapes stakeholder perceptions and responses (Entman, 1993). Communicators can design strategic communications that effectively engage stakeholders by aligning messages with their audiences' values and emotional drivers.

Recent research on value communication demonstrates that framing sustainability initiatives in terms of functional, emotional, social, and cost-related value significantly influences stakeholder perceptions of importance (Norris, 2023). Messages that resonate emotionally and align with stakeholders' lived experiences prove more effective in creating a genuine sense of urgency and relevance (Martin et al., 2025). This tailored approach has been shown to increase stakeholder alignment and engagement in sustainability initiatives.

2.3. Stakeholder ownership

Psychological ownership refers to the feeling of possessiveness and connection individuals experience toward an organization or initiative, even without formal ownership (Avey et al., 2009). In organizational contexts, fostering a sense of ownership among stakeholders significantly increases intrinsic motivation and long-term engagement.

Recent studies demonstrate that psychological ownership fully mediates the relationship between transparent communication and commitment to change in organizations (Understanding Commitment to Change, 2025). When individuals perceive a personal stake in an organization's initiatives, they feel more empowered and valued, which ultimately strengthens their commitment and engagement (Hsieh & Chiu, 2024). This is particularly relevant in renewable energy initiatives, where stakeholder ownership can translate into active advocacy, resource contributions, and sustained participation.

2.4. Stakeholder support

Stakeholder support is built through organizational actions that actively manage communication, engagement, and trust-building methods. Dialogic communication theory emphasizes the importance of two-way, mutually beneficial conversations between organizations and their publics (Kent & Taylor, 1998). Organizations can foster support by promoting open, transparent, and responsive communication channels.

For renewable energy projects specifically, effective stakeholder communication frameworks have been identified as critical success factors. Research shows that stakeholders desire meaningful engagement, clear information about project benefits and impacts, and opportunities for genuine input into decision-making processes (Ishola et al., 2024; Bergstrom et al., 2024). When organizations prioritize meaningful engagement and transparent communication, they gain and maintain stakeholder support for their initiatives, which is essential for overcoming barriers to renewable energy adoption.

2.5. Financial efficiency

Organizations can improve their financial efficiency by actively managing services and resources to optimize the use of fiscal resources. Based on the Resource-Based View and the Balanced Scorecard, organizations need to consider strategic investment decisions, manage performance dimensions, and optimize resources to achieve efficient outcomes (Barney, 1991; Kaplan & Norton, 1996).

In the context of public transportation, financial efficiency increasingly encompasses the ability to secure diverse funding sources, including green bonds, performance contracts, and public-private partnerships (OECD, 2024). Strong stakeholder support has been demonstrated to improve project financial performance by streamlining implementation processes, reducing conflicts, and lowering

operational costs (Boreal, 2024). Research on infrastructure projects confirms that effective stakeholder engagement directly contributes to cost containment and improved return on investment.

2.6. Financial independence

Organizations can achieve financial independence by actively generating sufficient revenue and managing costs effectively, thereby reducing dependence on external subsidies or debt. Financial sustainability requires diversifying revenue sources, conducting financial operations prudently, and investing in stable and responsive structures (Kaplan & Norton, 1996).

For public transport operators, achieving financial independence is particularly challenging yet critical for long-term sustainability. The future of public transport funding requires revisiting investment allocations, ensuring operational efficiency, and optimizing contributions from users, indirect beneficiaries (including landowners and businesses), and the public sector (OECD, 2024). Stakeholder support can facilitate access to innovative financing mechanisms, enhance revenue generation through increased ridership and public goodwill, and strengthen the case for public investment in sustainable infrastructure.

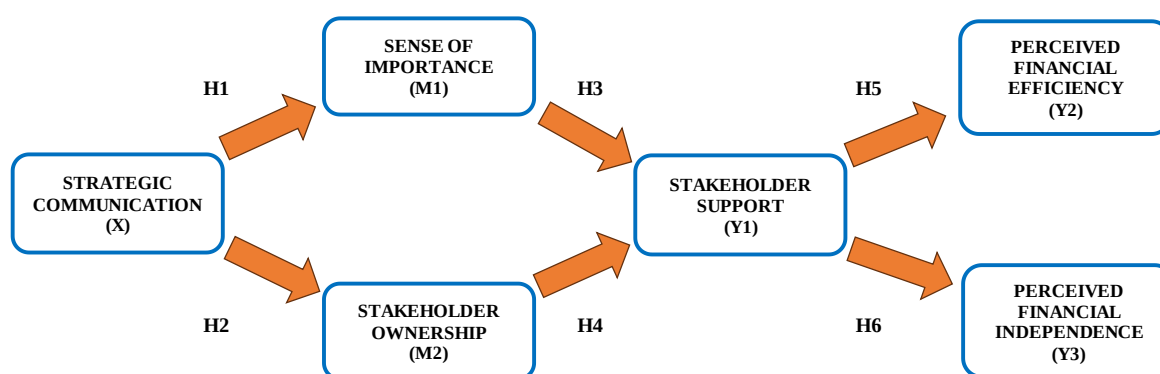
2.7. Theoretical relationships and hypotheses

Strategic communicators actively design messages not only to convey information but also to engage stakeholders by aligning them with stakeholders' values, interests, and concerns. When communications are intentionally tailored, they help stakeholders gain a deeper understanding of why an initiative matters and how it aligns with broader organizational and societal goals. This, in turn, enhances stakeholders' perception of importance and influences their sense of ownership in the initiative's success (Hallahan et al., 2007; Entman, 1993; Weder, 2023; Martin et al., 2025).

By making stakeholders feel seen, heard, and valued through strategic communication, organizations build a strong sense of importance and ownership, encouraging active participation, commitment, and support for organizational objectives. This support, when mobilized effectively, translates into tangible benefits including improved financial efficiency and greater financial independence (Boreal, 2024; OECD, 2024).

Based on the discussion above, the relationship between the concepts can be illustrated as follows:

Figure 1: Conceptual framework



Based on this theoretical foundation, the following hypotheses have been formulated:

H1: Strategic communication positively influences stakeholders' sense of importance.

H2: Strategic communication positively affects stakeholder ownership.

H3: Sense of importance mediates the relationship between strategic communication and stakeholder support.

H4: Stakeholder ownership mediates the relationship between strategic communication and stakeholder support.

H5: Stakeholder support for renewable energy initiatives positively influences the perceived financial efficiency.

H6: Stakeholder support for renewable energy initiatives positively influences the perceived financial independence.

These six hypotheses collectively emphasize the pivotal role of strategic communication in shaping stakeholder perceptions and behaviors, thereby contributing to financial sustainability.

3. Research methods

This study employs a quantitative research approach to investigate how strategic communication can foster stakeholder alignment and support for renewable energy initiatives at PT MRT Jakarta. The research design employs path analysis via Structural Equation Modeling (SEM) with the Partial Least Squares (PLS) method to test the hypothesized relationships among variables.

3.1. Sample and data collection

Data were collected through a structured questionnaire distributed to both internal and external stakeholders of PT MRT Jakarta. The final sample consisted of **176 respondents** comprising employees, partner organizations, government agencies, and community members engaged with MRT Jakarta's operations and sustainability initiatives. This multi-stakeholder approach ensures diverse perspectives on the organization's renewable energy communication efforts.

Respondents were selected based on their familiarity with MRT Jakarta's operations and renewable energy initiatives. The demographic profile reveals that 39.77% are MRT Jakarta employees, 30.11% represent collaborating organizations, 19.89% have participated in public consultations, and 10.23% engage through media channels. All respondents indicated at least "somewhat familiar" with renewable energy concepts, with 39.77% describing themselves as "very familiar".

3.2. Measurement instrument

The questionnaire consisted of 26 items measured on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The constructs measured include:

1. Strategic Communication (SC) - operationalized through items assessing message clarity, consistency, relevance, and alignment with stakeholder values
2. Sense of Importance (SI) - measuring stakeholders' perception of urgency and relevance of renewable energy initiatives
3. Stakeholder Ownership (SO) - assessing psychological ownership and personal connection to initiatives
4. Stakeholder Support (SS) - evaluating willingness to advocate, contribute resources, and actively participate
5. Perceived Financial Efficiency (PFE) - measuring perceptions of cost-effectiveness and resource optimization
6. Perceived Financial Independence (PFI) - assessing perceptions of organizational financial autonomy and sustainability

All measurement scales were adapted from validated instruments in strategic communication and organizational behavior literature.

3.3. Data analysis

Data analysis was conducted using SmartPLS, which is particularly suited to exploratory research and complex models with multiple mediating relationships. The analysis proceeded in two stages:

1. Measurement model assessment (Outer Model)
The measurement model was evaluated for:
 - Convergent validity: assessed through outer loadings (threshold > 0.6) and Average Variance Extracted ($AVE > 0.5$)
 - Discriminant validity: examined through AVE comparison
 - Internal consistency reliability: evaluated using Composite Reliability ($CR > 0.7$)
2. Structural model assessment (Inner Model)

The structural model was tested through:

- Path coefficients (β) indicate the strength and direction of relationships
- Statistical significance (p-values) at $\alpha = 0.05$ significance level
- Predictive relevance (Q^2) to assess model quality
- R^2 values to determine explained variance

This methodological approach allows for simultaneous testing of direct and mediated relationships while accounting for measurement error.

4. Results

4.1. Demographic characteristics

The demographic profile of the 176 respondents reveals:

- Gender distribution: 64.77% male, 35.23% female
- Age distribution: Largest group 35-44 years (38.64%), followed by 25-34 years (20.45%) and 45-54 years (20.45%)
- Education level: Bachelor's degree (60.23%), Master's degree (14.77%), High school (19.89%), Doctoral degree (5.11%)
- Stakeholder type: MRT employees (39.77%), Partner organizations (30.11%), Public participants (19.89%), Media/public followers (10.23%)

The concentration of mid-career professionals with higher education backgrounds suggests a knowledgeable sample well-positioned to evaluate strategic communication efforts.

4.2. Measurement model results

The measurement model demonstrated excellent psychometric properties:

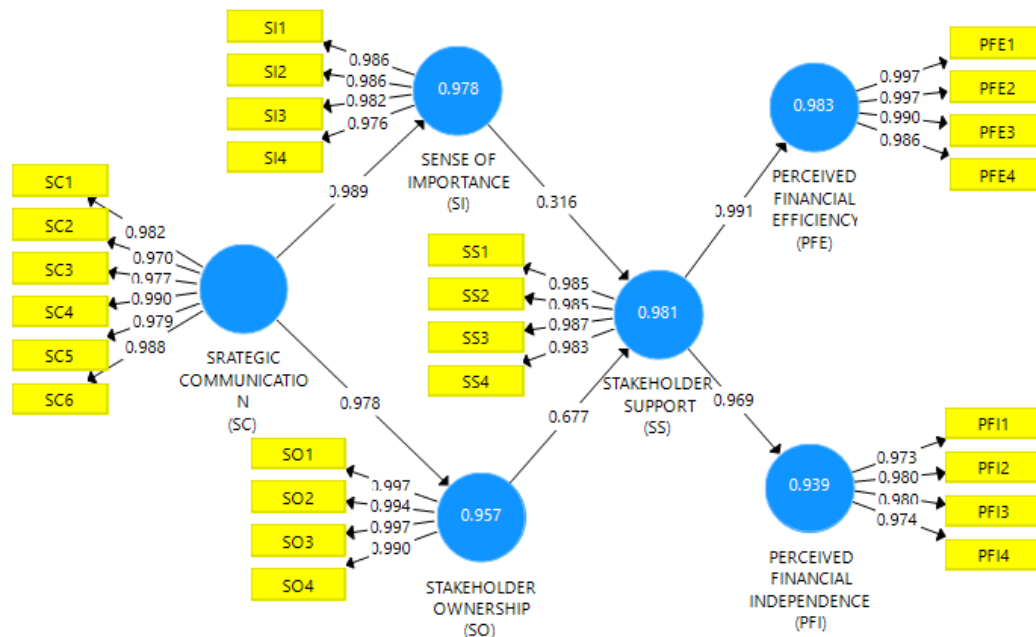
1. Convergent Validity: All outer loadings exceeded 0.6, and all AVE values surpassed 0.5, confirming that each construct adequately explains the variance of its indicators.
2. Discriminant Validity: All constructs exhibited AVE values greater than 0.50, indicating that each construct is distinct and measures a unique concept.
3. Composite Reliability: All constructs achieved CR values above 0.70, demonstrating high internal consistency.
4. Predictive Relevance: The model achieved $Q^2=0.999$, indicating excellent predictive accuracy.

These results confirm that the research model is appropriate (fit) with the collected data.

4.3. Structural model results

Figure 2 and Table 1 present the path analysis results testing the six hypotheses.

Figure 2: Summary of research model analysis results



Source: PLS

Table 1: Significance of influence

Path	Coefficient (β)	p-value	Result
SC → SI	0.989	0.000***	Supported
SC → SO	0.978	0.000***	Supported
SI → SS	0.316	0.021*	Supported
SO → SS	0.677	0.000***	Supported
SS → PFE	0.991	0.000***	Supported
SS → PFI	0.969	0.000***	Supported

Note: * $p < 0.05$; *** $p < 0.001$

4.4. Hypothesis testing results

H1: Strategic Communication → Sense of Importance

Strategic Communication demonstrated a strong positive influence on Sense of Importance ($\beta = 0.989$, $p = 0.000$). This highly significant relationship confirms that well-designed communication strategies substantially enhance stakeholders' perception of renewable energy initiatives as important and urgent. H1 is supported.

H2: Strategic Communication → Stakeholder Ownership

Strategic Communication also exhibited a robust positive effect on Stakeholder Ownership ($\beta = 0.978$, $p = 0.000$). This finding indicates that effective communication fosters psychological ownership, making stakeholders feel personally invested in renewable energy outcomes. H2 is supported.

H3: Sense of Importance → Stakeholder Support (Mediation)

Sense of Importance significantly influenced Stakeholder Support ($\beta = 0.316$, $p = 0.021$), confirming its mediating role between strategic communication and stakeholder support. When stakeholders perceive initiatives as important, they are more likely to provide active support. H3 is supported.

H4: Stakeholder Ownership → Stakeholder Support (Mediation)

Stakeholder Ownership demonstrated a more substantial mediating effect ($\beta = 0.677$, $p = 0.000$), indicating that psychological ownership is a critical pathway through which communication translates into support. H4 is supported.

H5: Stakeholder Support → Perceived Financial Efficiency

Stakeholder Support exhibited a powerful positive relationship with Perceived Financial Efficiency ($\beta = 0.991$, $p = 0.000$). This suggests that stakeholder backing substantially enhances perceptions of cost-effectiveness and resource optimization. H5 is supported.

H6: Stakeholder Support $\rightarrow$ Perceived Financial Independence

Similarly, Stakeholder Support strongly influenced Perceived Financial Independence ($\beta = 0.969$, $p = 0.000$), demonstrating that stakeholder engagement enhances confidence in organizational financial sustainability. H6 is supported.

All six hypotheses were empirically validated, confirming the proposed conceptual framework. The results reveal that strategic communication serves as the foundational driver that shapes stakeholder perceptions (importance and ownership), which in turn mobilizes support that ultimately strengthens financial sustainability outcomes.

5. Discussion

PT MRT Jakarta has publicly committed to sustainable urban development through its ambitious goal of achieving decarbonization by 2040. Despite possessing technical expertise and international partnerships, the organization continues to face significant barriers in scaling renewable energy adoption. The findings of this study reveal that these barriers are not primarily technical or financial, but rather communicative and psychological.

The Central Role of Strategic Communication

The results demonstrate that strategic communication is the foundational lever for renewable energy mainstreaming at MRT Jakarta. The powerful relationships between strategic communication and both sense of importance ($\beta = 0.989$) and stakeholder ownership ($\beta = 0.978$) indicate that how initiatives are communicated fundamentally shapes how they are perceived and embraced by stakeholders.

This aligns with contemporary sustainability communication theory, which posits that communication functions as “communicative niche construction” - actively shaping the conditions for sustainability transitions rather than merely transmitting information (Weder, 2023). For renewable energy projects specifically, effective communication frameworks have been identified as critical success factors that transform technical feasibility into social legitimacy and operational reality (Ishola et al., 2024).

Global evidence from transport decarbonization initiatives confirms that stakeholder engagement through strategic communication accelerates implementation, reduces conflicts, and improves financial outcomes (KPMG, 2022; OECD, 2024). MRT Jakarta’s current communication gap, therefore, represents not merely an administrative oversight but a strategic vulnerability that constrains the organization’s sustainability transformation.

Psychological Mediators: Importance and Ownership

The study confirms that a sense of importance and stakeholder ownership serve as critical psychological mediators, converting communication into tangible support. Notably, stakeholder ownership ($\beta = 0.677$) had a more substantial effect than sense of importance ($\beta = 0.316$) on stakeholder support.

This finding underscores that fostering ownership surpasses merely creating awareness. Recent research on organizational commitment demonstrates that psychological ownership fully mediates the relationship between communication and behavioral outcomes (Hsieh & Chiu, 2024). When stakeholders feel personally connected to renewable energy initiatives - perceiving them as “ours” rather than “theirs” - they transition from passive observers to active champions.

For MRT Jakarta, this suggests that communication strategies must move beyond informational campaigns toward participatory approaches that invite stakeholder co-creation, input, and shared decision-making. Renewable energy stakeholder engagement frameworks emphasize that meaningful participation - not mere consultation - builds the ownership necessary for sustained support (Bergstrom et al., 2024; Ishola et al., 2024).

Financial Sustainability Outcomes

The powerful relationships between stakeholder support and both financial efficiency ($\beta = 0.991$) and financial independence ($\beta = 0.969$) reveal a critical insight: stakeholder engagement is not supplementary to financial sustainability - it is constitutive of it.

Infrastructure projects with robust stakeholder engagement experience faster implementation, lower costs, reduced conflicts, and enhanced access to diverse funding mechanisms, including green bonds, public-private partnerships, and performance-based contracts (Boreal, 2024; OECD, 2024). In the renewable energy sector specifically, stakeholder support facilitates access to innovative financing while reducing political and operational risks.

For public transport agencies facing fiscal constraints, this finding is particularly significant. The future of public transport funding requires revisiting traditional subsidy models and optimizing contributions from multiple sources - users, indirect beneficiaries, and the public sector (OECD, 2024). Stakeholder support unlocks these diverse revenue streams by building the political will, public legitimacy, and partnership networks necessary for financial sustainability.

Implications for MRT Jakarta

The empirical evidence suggests that MRT Jakarta's renewable energy implementation gap stems primarily from inadequate strategic communication that fails to cultivate shared urgency and collective commitment. Technical feasibility studies and international partnerships, while necessary, are insufficient without an accompanying communication architecture that aligns internal and external stakeholders around common goals.

Moving forward, MRT Jakarta must reposition communication from an auxiliary function to a strategic priority. This requires:

1. Developing targeted messaging that frames renewable energy in terms of stakeholder values - emphasizing co-benefits such as air quality, energy security, cost savings, and climate leadership
2. Creating participatory platforms where stakeholders can contribute ideas, voice concerns, and shape implementation pathways
3. Establishing transparent reporting mechanisms that demonstrate progress, challenges, and stakeholder contributions
4. Building communication capacity among leadership to consistently champion sustainability goals

These actions would transform renewable energy from a technical initiative owned by specialists into an organizational mission embraced by stakeholders.

Broader Theoretical Contributions

This study contributes to the emerging literature on communication as a catalyst for sustainability transitions. While prior research has examined communication's role in corporate sustainability reporting or crisis management, less attention has been paid to how public infrastructure organizations can strategically deploy communication to mainstream renewable energy.

The validated mediation pathways - communication → importance/ownership → support → financial outcomes - provide an empirically grounded framework applicable beyond MRT Jakarta to other public transport operators and infrastructure agencies pursuing sustainability transitions.

Additionally, the study responds to calls for integrating sustainability science with strategic communication to catalyze collective action (Martin et al., 2025). By demonstrating quantifiable relationships between communication quality and organizational outcomes, the research strengthens the evidence base for investing in communication infrastructure as an essential sustainability enabler.

6. Conclusion

This study provides robust empirical evidence that strategic communication plays a pivotal role in shaping stakeholder attitudes and behaviors toward renewable energy in public infrastructure contexts. The research confirms that effective communication cultivates both a sense of importance and psychological ownership among stakeholders - two critical psychological drivers that mobilize support for sustainability initiatives. This support, in turn, substantially enhances perceptions of financial efficiency and independence, creating a virtuous cycle that reinforces organizational capacity for renewable energy implementation.

The findings reveal that MRT Jakarta's challenges in implementing renewable energy are not fundamentally technical or financial, but rather communicative and organizational. While the agency has secured technical partnerships, conducted feasibility studies, and articulated ambitious decarbonization goals, these elements remain insufficiently integrated through a coherent communication strategy that aligns diverse stakeholders around shared purposes.

The robust path coefficients observed in this study - particularly the near-perfect relationships between strategic communication and psychological mediators ($\beta > 0.97$), and between stakeholder support and financial outcomes ($\beta > 0.96$) - demonstrate that communication is not a peripheral concern but a central strategic lever. Organizations that invest in deliberate, values-aligned, and participatory communication can fundamentally transform stakeholder engagement, accelerate implementation timelines, and strengthen financial sustainability.

For PT MRT Jakarta specifically, success in mainstreaming renewable energy depends on the organization's ability to transition from technical planning to strategic communication - from feasibility studies to stakeholder mobilization. This requires positioning communication professionals as strategic partners in sustainability governance, developing multi-channel engagement platforms, and fostering a culture of transparency and co-creation.

More broadly, this research contributes to sustainability transitions scholarship by empirically validating the pathways through which communication drives institutional change. The study demonstrates that public sector organizations can operationalize sustainability not merely through policy mandates and infrastructure investments, but fundamentally through effective, targeted, and psychologically informed communication that transforms individual awareness into collective action.

7. Recommendations

Based on the empirical findings and discussion, the following recommendations are proposed for PT MRT Jakarta and similar public infrastructure organizations pursuing renewable energy transitions:

7.1. For PT MRT Jakarta leadership

1. Establish a strategic communication unit for sustainability

Create a dedicated team to design, implement, and evaluate communication strategies for renewable energy initiatives. This unit should report directly to senior management, ensuring communication is integrated into strategic decision-making rather than treated as an afterthought.

2. Develop stakeholder-specific communication frameworks

Design tailored messaging for distinct stakeholder groups - employees, government partners, community members, investors, and media. Each framework should align renewable energy benefits with stakeholder-specific values and concerns, employing appropriate channels and formats.

3. Implement participatory engagement platforms

Establish formal mechanisms for stakeholder input into renewable energy planning and implementation, including advisory committees, public consultations, digital engagement platforms, and co-design workshops. These platforms should demonstrate how stakeholder contributions influence actual decisions.

4. Create transparent progress reporting systems

Develop regular, accessible reports on the progress of renewable energy implementation, including successes, challenges, financial implications, and stakeholder contributions. Transparency builds trust and reinforces stakeholder ownership.

5. Invest in communication capacity building

Train leadership and staff in sustainability communication competencies, including framing techniques, dialogic engagement, and values-based messaging. Communication effectiveness requires organizational capability, not just external consultants.

7.2. For policy makers and regulators

6. Integrate communication requirements into sustainability mandates

Regulatory frameworks for public transport decarbonization should explicitly require communication and stakeholder engagement plans, with performance metrics and accountability mechanisms.

7. Provide funding for communication infrastructure

Recognize communication as a legitimate infrastructure investment by including stakeholder engagement costs in renewable energy project budgets and grant programs.

7.3. For researchers and practitioners

8. Expand research on communication-sustainability linkages

Future studies should examine:

- Longitudinal impacts of communication interventions on implementation outcomes
- Comparative analyses across different public transport contexts
- The role of digital and social media in sustainability communication
- Cultural and linguistic factors in framing renewable energy initiatives

9. Develop evidence-based communication toolkits

Create practical resources that translate research findings into actionable communication strategies for infrastructure organizations, including templates, case studies, and evaluation frameworks.

7.4. Final reflection

This study demonstrates that renewable energy transitions in public infrastructure are as much social and communicative challenges as they are technical and financial ones. By positioning strategic communication as a core component - not an auxiliary function - organizations like MRT Jakarta can align stakeholder interests, build long-term trust, accelerate implementation, and enhance both the perception and reality of financial sustainability.

When communication strategies foster shared importance and collective ownership, they transform renewable energy from an organizational initiative into a societal mission. This transformation is essential for achieving the ambitious decarbonization goals that cities like Jakarta have committed to in pursuit of sustainable urban futures.

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Conflicts of interest

The authors declare no conflict of interest.

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