Journal: Texila International Journal of Management
Publisher: Texila International Journal
ISSN: 2520-310X
Volume 12 Issue 1, 2026
DOI: 10.21522/TIJMG.2015.12.01.Art003

Assessing the Current State of Road Infrastructure Development in Guyana: Governance, Funding, and Institutional Challenges

Denita Crandon[1*], S.P. Sreekala[2]
[1]*Research Scholar, Texila American University, Guyana*
[2]*Centre for Research and Development (CFRD), School of Management, KPR College of Arts Sciences and Research, Coimbatore, India*

Abstract

Road infrastructure is the backbone of Guyana's socio-economic development, serving as a critical enabler of trade, healthcare delivery, educational access, and regional integration. Despite significant investments supported by oil revenues and international donors, road projects in Guyana continue to face inefficiencies, cost overruns, delays, and weak sustainability safeguards. This paper critically assesses the current state of Guyana's road infrastructure with a specific focus on governance, funding allocation, institutional capacity, and stakeholder engagement. Using a mixed-methods approach, the study draws on surveys of 213 community representatives, 38 contractors, 12 suppliers, 41 engineers, 18 project managers, and 12 policymakers; semi-structured interviews; and direct on-site observations across Georgetown, East Bank Demerara, and East Coast Demerara. Findings indicate areas for improvement in procurement processes, imbalances in resource allocation between urban and rural areas, and delays associated with administrative procedures and monitoring mechanisms. Stakeholder participation appears uneven, with communities sometimes less involved in decision-making, and sustainability safeguards are not yet consistently applied across projects. These insights point to opportunities for strengthening institutional arrangements, refining governance frameworks, and promoting more balanced funding mechanisms to support equitable development. The paper contributes to both scholarship and practice by presenting Guyana as a case study for infrastructure development in small, resource-rich developing economies and offers practical recommendations to enhance regulatory oversight, broaden participatory planning, and integrate sustainability principles into infrastructure delivery.

Keywords*: Funding, Governance, Guyana, Institutional Capacity, Road Infrastructure, Strategic Project Management, Sustainability.*

Introduction

Road infrastructure is widely recognized as a cornerstone of national development, enabling economic activity, social inclusion, and connectivity across diverse regions. In Guyana, a country characterized by expansive geography and dispersed rural communities, the condition of the road network significantly influences agricultural productivity, trade facilitation, healthcare access, and educational equity. Robust infrastructure is therefore central to Guyana's pursuit of inclusive and sustainable growth, particularly as the nation enters a new era of oil-driven revenues and heightened international visibility.

Over the past two decades, the Government of Guyana has prioritized infrastructure expansion as a driver of modernization, supported by external funding from the Inter-American Development Bank (IDB), the World

Received: 24.09.2025 ***Accepted: 10.10.2025*** ***Published on: 27.02.2026***
Corresponding Author: denitacrandon@gmail.com

Bank, bilateral partnerships with Brazil and China, and more recently, oil-sector revenues. Several large-scale projects have been initiated, ranging from the rehabilitation of the Georgetown to Lethem Road, to expansions along the East Bank and East Coast Demerara corridors. Despite these initiatives, the sector has faced recurring challenges, including procurement inefficiencies, frequent delays, cost overruns, and uneven quality of completed works. These inefficiencies have not only affected the country's development ambitions but also highlighted the need to strengthen public confidence in the government's capacity to manage infrastructure effectively.

A critical dimension of these challenges lies in governance and institutional capacity. Multiple agencies, including the Ministry of Public Works, the Works Services Group, and regional authorities through the Ministry of Local Government, often have overlapping responsibilities, leading to duplication, administrative challenges, and blurred accountability lines. Moreover, project monitoring frameworks are inconsistently applied, with donor-funded projects benefitting from stricter oversight compared to domestically financed initiatives. These governance gaps reduce efficiency and transparency, contributing to public concerns regarding project prioritization.

Funding allocation remains an area with opportunities for greater balance. While Guyana has benefited from substantial revenue growth from oil production since 2020, the distribution of resources across infrastructure projects has been more concentrated in urban areas. Road projects in Georgetown, East Coast, and East Bank Demerara have received significant financial and material support, while rural and hinterland projects have progressed more gradually. This concentration of investment reflects the visibility and demand in urban centers but also highlights the importance of continued efforts to expand resources to rural and hinterland regions to strengthen national integration and enhance access to markets, healthcare services, and educational opportunities.

Equally important is the consideration of sustainability and environmental safeguards. While international partners increasingly emphasize green infrastructure and climate resilience, the adoption of these practices within Guyana's road projects has been varied. In some instances, challenges such as limited drainage, erosion control, and reforestation measures have been observed, which may affect long-term project resilience. These issues are especially significant in a country that is highly vulnerable to flooding and the broader impacts of climate change.

In this context, the present study provides a comprehensive assessment of the current state of Guyana's road infrastructure development, with a particular focus on governance, funding allocation, institutional capacity, stakeholder engagement, and sustainability safeguards. By drawing on surveys, interviews, and on-site observations, complemented by secondary data, the study identifies ongoing challenges while also highlighting opportunities for improvement and reform.

The paper contributes to both theory and practice in two keyways. First, it extends the literature on infrastructure governance by situating Guyana, a small, resource-rich developing economy within the wider discourse on institutional readiness and project management. Second, it offers evidence-based recommendations that can support policymakers, practitioners, and international partners in their efforts to enhance efficiency, equity, and sustainability in Guyana's road sector.

The remainder of the paper is structured as follows. The Literature Review examines the relevant literature on infrastructure governance, institutional capacity, and funding in developing countries. Methodology outlines the procedures employed in this study. The Findings presents results on the governance,

funding, stakeholder, and sustainability dimensions of Guyana's road infrastructure. The discussion deliberates these findings in relation to the best global practices and theoretical frameworks. Finally, the conclusion and recommendation complete this paper with suggestions for strengthening Guyana's road infrastructure delivery systems.

Literature Review

Infrastructure Development and Economic Growth

Infrastructure development, particularly transport infrastructure, has long been recognized as a critical driver of economic growth, social equity, and national integration [17]. Scholars such as [1] established early linkages between public investment in infrastructure and productivity growth. Subsequent studies reinforced this view, showing that reliable road networks lower transportation costs, enhance trade efficiency, and expand access to healthcare and education [3]. In small and developing economies, roads are not only economic conduits but also lifelines connecting remote populations to essential services and markets.

In Guyana, where communities across the hinterland and coastal plains are often separated by rivers and forests, road networks hold particular importance for supporting economic diversification and agricultural productivity. When road connections are limited or unreliable, rural farmers may face challenges accessing urban markets, and communities can encounter difficulties reaching essential services such as hospitals and schools. Strengthening investment in transport infrastructure therefore remains a key component of Guyana's strategy for promoting inclusive growth.

Governance and Institutional Capacity in Infrastructure Projects

Governance frameworks and institutional capacity are central to determining how effectively infrastructure projects are delivered. Studies suggest that gaps in governance can contribute to project delays, cost escalations, and quality concerns [5, 15] further notes that limited procurement transparency in some developing countries may reduce value for money in public works.

The [11] emphasizes that governance structures should align accountability, oversight, and decision-making mechanisms to achieve project success. In practice, however, many developing nations face challenges with fragmented institutional arrangements. In Guyana, for example, multiple agencies including the Ministry of Public Works, the Works Services Group, and Ministry of Local Government, local councils, Ministry of Housing and Water, Central Housing and Planning Authority, share responsibilities, which can create overlaps and administrative complexities. International experience suggests that such fragmentation may reduce efficiency and sometimes lead to misaligned priorities [9].

Donor-funded projects often display stronger governance performance, supported by clear monitoring frameworks and funding conditions. In comparison, domestically financed projects sometimes rely on more flexible approaches, leading to variations in enforcement and accountability. This dynamic raises important questions about how best to sustain governance reforms as reliance on donor oversight declines.

Funding Allocation and Resource Distribution

Resource allocation is another major factor shaping infrastructure effectiveness. Research in Sub-Saharan Africa and Latin America suggests that political or logistical considerations can result in uneven infrastructure development, with capital cities and highly visible projects often receiving greater attention [7]. This concentration of resources can widen regional disparities.

In Guyana, annual budget allocations for roads and bridges have exceeded G$200 billion in recent years [19]. While this demonstrates a strong national commitment to infrastructure, studies indicate that coastal and urban projects tend to receive a larger share of resources, while hinterland regions sometimes encounter shortages of skilled labor, materials, and financing [18]. This pattern is similar to trends observed in Brazil, where centralized funding prioritized urban highways over rural feeder roads [12]. In contrast, China's Belt and Road Initiative has attempted to distribute investments more broadly to strengthen regional integration [14].

From a project management perspective, Lean principles highlight the importance of efficient resource allocation and minimizing waste [16]. Continued efforts to balance funding across both urban and rural projects in Guyana will be essential to promoting equity and long-term sustainability.

Stakeholder Engagement in Road Infrastructure

Stakeholder engagement is increasingly recognized as a key factor in project success. Stakeholder theory [6] underscores the importance of addressing the needs of all groups involved in or affected by infrastructure projects, including government agencies, contractors, financiers, and communities.

International research shows that participatory approaches such as town halls, feedback mechanisms, and community monitoring help build trust, reduce conflicts, and enhance project sustainability [2]. In Jamaica, for example, the Highway 2000 project incorporated community consultations to mitigate concerns, providing a model for inclusive engagement [4].

In Guyana, evidence suggests that community stakeholders are not always fully engaged during the planning stages, with consultations sometimes taking place after major decisions have been made. This limited involvement may contribute to perceptions of disconnect, especially in rural areas. Strategic Project Management (SPM) approaches, such as Agile, emphasize iterative stakeholder involvement [11], offering useful guidance for enhancing inclusivity in Guyana's infrastructure projects.

Sustainability and Environmental Safeguards

Sustainability has become a central consideration in infrastructure development, particularly in regions highly vulnerable to climate risks. International frameworks such as the Paris Agreement [20] and the United Nations' 2030 Agenda for Sustainable Development [21] call for infrastructure that promotes both economic growth and environmental resilience.

Examples from Latin America, such as Brazil's adoption of sustainability-oriented pavement technologies, demonstrate how innovative practices can reduce environmental impacts while extending project life cycles [13]. China's Belt and Road Initiative has also piloted eco-friendly construction in select projects, although balancing environmental protection with rapid development remains an ongoing challenge [8].

In Guyana, sustainability practices have been applied unevenly. While donor-funded projects often integrate eco-friendly materials and improved drainage systems, locally managed projects sometimes face difficulties in consistently incorporating measures such as erosion control, reforestation, and drainage planning. Continued strengthening of sustainability safeguards will be vital in light of Guyana's exposure to flooding and climate change. Lean and Agile frameworks can support this by embedding efficiency, adaptability, and iterative improvement into project lifecycles.

Research Gap

The literature provides valuable insights on governance, funding allocation, stakeholder engagement, and sustainability in infrastructure development globally. However, there is relatively limited research focusing specifically on Guyana as a small, resource-rich, and rapidly growing economy. Much of the existing scholarship draws from larger emerging markets or small island developing states, which differ in scale and context.

This creates a gap that the present study seeks to address by offering an in-depth, evidence-based analysis of Guyana's road infrastructure sector, grounded in both primary data and global comparative insights.

Methodology

Research Design

This study adopted a mixed-methods design, integrating both quantitative and qualitative approaches to provide a comprehensive assessment of Guyana's road infrastructure. The use of mixed methods was informed by the complexity of the research problem: while quantitative surveys offered statistical insights into stakeholder perspectives, qualitative interviews and observations added contextual depth and nuance. By triangulating findings across multiple sources, the study aimed to increase validity and present a holistic view of governance, funding allocation, stakeholder engagement, and sustainability practices in Guyana's road sector.

Population and Sampling

The study focused on principal stakeholder groups directly involved in or impacted by road infrastructure development in Guyana:

1. Contractors and Suppliers – representing the private sector responsible for project execution and material provision.
2. Engineers and Project Managers – providing technical oversight and supervision.
3. Government Officials – including policymakers and representatives from the Ministry of Public Works, the Works Services Group, and local councils.
4. Community Representatives – reflecting the perspectives of residents as end-users of road projects.

A purposive sampling technique was employed to ensure that all major stakeholder categories were represented. While probability sampling enhances generalizability, purposive sampling was selected as it allowed the researcher to capture perspectives from key actors most relevant to road project delivery in Guyana.

The final sample comprised:

1. 213 community representatives (from Region 4: Georgetown, East Bank Demerara, and East Coast Demerara)
2. 38 contractors
3. 12 suppliers
4. 41 engineers
5. 18 project managers
6. 12 policymakers

This produced a total of 334 respondents, with response rates exceeding 75%, offering a robust dataset for analysis.

Data Collection Instruments

Questionnaires

Structured questionnaires were designed and administered using Google Forms. They included both closed-ended and open-ended questions to capture quantitative ratings and qualitative insights. The closed-ended items used Likert scales (e.g., 1–5, from "strongly disagree" to "strongly agree") to measure perceptions of governance, funding allocation, and project outcomes. Open-ended questions allowed respondents to share detailed experiences and views.

Sample items included:

1. "Procurement processes in road infrastructure projects are efficient and transparent."

2. "Funding allocation between urban and rural road projects is balanced."
3. "Environmental safeguards are adequately considered in road construction."

Interviews

Semi-structured interviews were conducted with contractors, engineers, project managers, and government officials. These sessions provided in-depth insights into project management practices, institutional dynamics, and stakeholder engagement. Interviews typically lasted 30–45 minutes and followed a flexible guide, allowing for probing and follow-up questions.

On-Site Observations

Direct observations were carried out at active project sites in Georgetown, East Bank Demerara, and East Coast Demerara. Structured observation sheets recorded:

1. Road conditions (e.g., pavement quality, drainage, signage).
2. Construction progress relative to schedules.
3. Use of sustainability measures (e.g., erosion control, reforestation, eco-friendly materials).
4. Compliance with safety and quality standards.

Observations were complemented by photographic documentation and field notes.

Secondary Data

To complement primary data, secondary sources were reviewed, including:

1. Government budget documents (2024, 2025).
2. Reports from the World Bank and Inter-American Development Bank (IDB).
3. Guyana's National Development Strategy.
4. Peer-reviewed articles and case studies from Brazil, China, and the Caribbean.

Pilot Testing

Prior to full deployment, the questionnaire and interview guide were pilot tested with 10 respondents (five community representatives, two contractors, two engineers, and one government official). Feedback informed refinements, including simplifying technical terminology for community participants and rephrasing questions to reduce ambiguity. These adjustments improved clarity and reliability of the instruments.

Data Analysis

Quantitative Data

Quantitative data from questionnaires were coded and analyzed using descriptive statistics (frequencies, percentages, and cross-tabulations). Results were presented using tables and charts (bar graphs, pie charts). Where relevant, inferential statistical tests such as chi-square were applied to explore relationships between stakeholder groups and their perceptions.

Qualitative Data

Interview transcripts and open-ended questionnaire responses were analyzed thematically. Key themes were identified around governance processes, funding allocation, institutional practices, and stakeholder engagement. NVivo software was considered for coding, but thematic analysis was ultimately conducted manually by grouping responses into pre-defined and emergent themes.

Observational Data

Observational findings were compared with stakeholder responses to validate patterns. For example, reports of drainage challenges along the East Coast Demerara were corroborated with direct site observations.

Ethical Considerations

The study adhered to ethical guidelines outlined by Texila American University and Institutional Review and Ethics Board (IRB), Guyana:

1. **Informed Consent:** All participants were provided with information sheets explaining the study's purpose, confidentiality measures, and their right to withdraw. Consent was obtained prior to participation.
2. **Confidentiality:** Responses were anonymized using identification codes. Sensitive data were stored securely with access restricted to the researcher.
3. **Minimization of Harm:** Surveys were kept short (around 15 minutes), and interviews were scheduled at times convenient to participants.
4. **Transparency:** Findings will be shared with relevant ministries, contractors, and community stakeholders through summary reports and dissemination workshops.

Ethical Approval

This research received ethical clearance from the Institutional Review and Ethics Board (IRB), Guyana and the ethical guidelines outlined by Texila American University for persons who participated in the research. Informed consent was obtained from all participants.

Limitations of Methodology

1. The study was geographically limited to Region 4 (Georgetown, East Bank, East Coast Demerara), though these areas represent the most active road development zones. Findings may not fully reflect conditions in hinterland regions.
2. Purposive sampling, while effective in capturing perspectives of key stakeholders, reduces the extent of generalizability.
3. Resource constraints limited the use of advanced statistical software for inferential analysis.
4. Access to the latest government audit reports was limited, which required greater reliance on secondary sources and stakeholder perceptions.

Findings

Governance and Institutional Capacity

Survey and interview results suggest that governance structures in Guyana's road sector present both strengths and areas for improvement. Respondents noted positive efforts to expand infrastructure investment and increase oversight; however, some also highlighted challenges such as administrative delays and overlapping responsibilities among institutions. These dynamics can slow project execution and create uncertainty in accountability lines.

As shown in Table 1, most contractors (48%) and engineers (62%) believe that governance mechanisms require improvement, particularly regarding monitoring and coordination.

Table 1. Stakeholder Perceptions of Governance & Institutional Capacity

Stakeholder Group	Key Concern	Positive (%)	Neutral (%)	Needs Improvement (%)
Contractors	Delays in approvals & payments	32	20	48
Engineers	Monitoring mechanisms	25	13	62
Government Officials	Administrative coordination	40	18	42
Communities	Accountability mechanisms	28	30	42

These results indicate opportunities to streamline administrative procedures and strengthen coordination across agencies, particularly in monitoring and evaluation.

Funding Allocation and Resource Distribution

Analysis of both survey data and secondary sources suggests that resource distribution remains more concentrated in urban and coastal areas, particularly Georgetown, East Coast, and East Bank Demerara. Respondents observed that hinterland communities often face greater challenges in accessing resources for road development. While such prioritization reflects the high demand and visibility of urban projects, stakeholders also emphasized the importance of gradually expanding support to rural and hinterland regions to ensure more balanced development.

As indicated in Table 2, 40% of community representatives and 48% of engineers believe that urban projects receive disproportionate funding. These findings reinforce the need to promote equitable distribution of resources across rural and hinterland regions.

Table 2. Perceptions of Resource Allocation

Stakeholder Group	Balanced (%)	Urban-focused (%)	Rural Needs More (%)
Contractors	28	50	22
Engineers	32	48	20
Government Officials	36	42	22
Communities	18	40	42

Overall, the findings suggest that while significant progress has been made in expanding road networks, ensuring equitable allocation between urban and rural regions remains an area of opportunity.

Stakeholder Engagement

Stakeholder engagement emerged as a theme across interviews and surveys. While government officials and contractors reported ongoing consultations, community representatives expressed a desire for earlier and more continuous involvement in the planning stages of projects. Respondents noted that participation often increases during implementation, but opportunities for joint planning are more limited.

According to Table 3, 63% of community respondents reported limited engagement, highlighting the need for stronger communication and participatory frameworks.

Table 3. Stakeholder Perceptions of Engagement

Stakeholder Group	Adequate Engagement (%)	Partial Engagement (%)	Limited Engagement (%)
Contractors	55	28	17
Engineers	58	22	20
Government Officials	70	20	10
Communities	22	15	63

These findings suggest that expanding inclusive dialogue during project design could enhance trust, local ownership, and sustainability.

Sustainability and Environmental Safeguards

Sustainability practices were found to be applied unevenly across projects. Donor-

supported initiatives often integrate eco-friendly materials, improved drainage, and erosion controls, while locally financed projects sometimes face challenges in consistently adopting such measures. Field observations confirmed that practices such as reforestation and advanced waste management are present but not yet widespread.

As shown in Table 4, eco-friendly materials and proper waste management practices are used only occasionally or partially, signaling a need for national sustainability standards aligned with the Paris Agreement [20] and the UN Sustainable Development Goals [21].

Table 4. Sustainability Practices in Road Projects

Indicator	Contractors (%)	Engineers (%)	Observed On-Site
Eco-friendly materials used	28	34	Occasionally
Drainage & erosion control	35	42	Mixed
Reforestation efforts	18	22	Limited
Waste management practices	30	38	Partial

Stakeholders emphasized that embedding sustainability safeguards more systematically would strengthen resilience, particularly given Guyana's vulnerability to flooding and climate change.

Summary of Findings

The findings point to several important areas where Guyana's road sector could be further strengthened:

1. To optimize efficiency and streamline processes, improved coordination is needed across the multi-institutional governance structure.
2. To ensure more equitable and balanced development, a rebalancing of resource allocation is needed to address infrastructure gaps in hinterland communities.
3. To address the desire for greater inclusion, the planning stage of stakeholder engagement should be enhanced to better involve community representatives.
4. To ensure more consistent outcomes, there is potential to standardize the application of sustainability safeguards across projects, thereby strengthening climate resilience and long-term durability.

Taken together, these findings suggest that, while significant investments are being made through record-high government budgets and international funding, there is still scope to improve coordination, equity, inclusivity, and sustainability in Guyana's road infrastructure development.

Discussion

The findings of this study underscore the systemic weaknesses in Guyana's road infrastructure sector, highlighting deficiencies in governance, funding allocation, stakeholder engagement, and sustainability. These weaknesses persist despite record-high allocations to the sector and growing fiscal space generated by oil revenues. By situating these findings within global comparative insights and theoretical frameworks, this section critically examines their implications and explores how Strategic Project Management (SPM) principles can be contextualized to strengthen Guyana's infrastructure delivery systems.

Governance and Institutional Capacity

The results demonstrate fragmented institutional arrangements and poor monitoring mechanisms. Contractors reported delays in payments and approvals, while engineers highlighted the inadequacy of monitoring frameworks. These observations are consistent with governance theory, which emphasizes that institutional design directly shapes

accountability, efficiency, and transparency [10].

In practice, donor-funded projects in Guyana benefit from stricter oversight mechanisms, while locally financed projects rely on inconsistent and often informal reporting. This dual accountability framework creates inequities in project quality and fosters public perceptions of inefficiency. Comparative case studies reinforce this: Brazil, for instance, streamlined procurement under Lean techniques to reduce delays by 22% [12], while Guyana continues to grapple with bottlenecks linked to overlapping mandates.

The PMBOK framework provides clear guidelines on monitoring and controlling processes, emphasizing the importance of systematic variance tracking, performance measurement, and corrective action [11]. Guyana's current practices fall short of these standards, reflecting a broader institutional weakness. Without structural reforms to strengthen governance, budget increases alone will not yield efficiency or quality improvements.

Funding Allocation and Resource Distribution

Findings indicate a pronounced urban bias in funding allocation, with coastal projects receiving the bulk of resources while hinterland regions remain underfunded. Communities in rural areas reported significant neglect, echoing global findings that infrastructure investment often favors urban centers due to visibility, political incentives, and easier logistics [7].

The consequences of such bias are twofold. First, it exacerbates regional inequality, leaving hinterland communities marginalized from national development. Second, it undermines resilience by concentrating resources in already developed areas while leaving vulnerable road segments under-maintained. This trend mirrors patterns in Brazil, where centralized funding skewed investments toward urban highways at the expense of feeder roads critical to rural productivity [13]. In contrast, China's Belt and Road Initiative demonstrates how balanced allocation across regions can enhance integration and economic spillovers [14].

From a project management perspective, Lean principles stress the elimination of waste and optimization of resources [16]. Guyana's funding distribution, which privileges visibility over need, represents a form of systemic waste allocating resources where political dividends are higher rather than where socio-economic returns may be greatest. Agile's adaptability offers another corrective, enabling dynamic reallocation of resources to address emergent challenges, such as flooding in rural roads or supply chain bottlenecks.

Stakeholder Engagement

The exclusion of communities from decision-making emerged as one of the most significant findings of this study. While technical stakeholders such as contractors and government officials reported moderate levels of consultation, 63% of community representatives stated they were excluded. This disconnect aligns with stakeholder theory [6], which stresses the importance of engaging all affected groups to reduce conflict, increase buy-in, and ensure long-term sustainability.

In Guyana, limited engagement not only erodes public trust but also results in project designs that fail to reflect local needs. For example, interviews revealed instances where road alignments disrupted farming lands without adequate compensation or consultation. This pattern resonates with Caribbean experiences, where weak community engagement slowed project implementation and increased resistance [4].

Global best practices show that participatory approaches strengthen project outcomes. Jamaica's Highway 2000, for instance, benefited from early and continuous community consultations, which reduced resistance and improved social legitimacy. Similarly, Agile project management

emphasizes iterative stakeholder feedback as a core principle, ensuring that projects adapt to evolving needs [11]. Embedding such participatory mechanisms in Guyana would help bridge the communication gap and foster shared ownership of infrastructure projects.

Sustainability and Environmental Safeguards

The findings reveal that sustainability practices remain weak and inconsistently applied in Guyana's road projects. Only 28% of contractors and 34% of engineers reported the use of eco-friendly materials or climate-resilient designs. Observations confirmed inadequate drainage and erosion control, with significant implications for long-term viability.

This is particularly concerning given Guyana's vulnerability to climate change, including flooding and sea-level rise. Neglecting environmental safeguards undermines resilience, leading to costly repairs and reduced project lifespan. Globally, countries like Brazil have pioneered sustainability-oriented pavement technologies [13], while China has integrated eco-friendly construction into selected Belt and Road projects [8]. Guyana's lag in this area represents a missed opportunity to align infrastructure with broader environmental and climate commitments, including the Paris Agreement [20] and the Sustainable Development Goals [21] (SDGs).

From a project management perspective, Lean emphasizes efficiency and elimination of waste, which naturally extends to resource conservation and environmental stewardship. Agile methods encourage iterative improvements that could incorporate sustainability measures in successive project cycles. The PMBOK's environmental and risk management guidelines also provide a framework for embedding sustainability at every stage of the project lifecycle. However, these principles remain underutilized in Guyana.

Implications for Policy and Practice

The persistence of governance, funding, stakeholder, and sustainability challenges suggests that Guyana's road sector is at a critical juncture. On one hand, unprecedented fiscal resources from oil revenues present a historic opportunity to transform infrastructure delivery. On the other hand, weak institutions, imbalanced resource allocation, and poor community engagement risk squandering this opportunity.

The implications are clear:

1. **Without governance reforms**, larger budgets may simply amplify inefficiencies and leakages.
2. **Without equitable funding allocation**, hinterland communities will remain disconnected, undermining national integration.
3. **Without stakeholder inclusion**, projects will face resistance and lack of local ownership.
4. **Without sustainability safeguards**, infrastructure will fail to withstand climate risks, leading to recurring costs and public dissatisfaction.

By aligning project delivery with Strategic Project Management frameworks particularly PMBOK's structured processes, Lean's efficiency orientation, and Agile's adaptability Guyana can address these systemic weaknesses.

Theoretical Contributions

This study contributes to two key theoretical domains:

1. **Governance Theory:** By demonstrating how overlapping mandates and inconsistent monitoring weaken institutional performance in Guyana, the study extends governance theory into the context of small, resource-rich developing economies. It highlights the risks of dual accountability systems where donor-funded projects outperform locally managed ones, creating dependency rather than sustainable institutional development.

2. **Stakeholder Theory:** The findings underscore that excluding community voices undermines project sustainability and social legitimacy. This reinforces stakeholder theory's assertion that long-term success requires balancing the interests of all actors, not just those with formal authority.

Comparative Insights

By comparing Guyana with Brazil, China, and Caribbean states, this study reveals both parallels and divergences:

1. Like Brazil, Guyana suffers from procurement inefficiencies and urban bias, but has yet to adopt Lean procurement reforms.
2. Unlike China, Guyana lacks mechanisms for iterative adaptation and feedback, which Agile methods could provide.
3. Similar to Caribbean states, Guyana faces resource constraints and weak sustainability safeguards, but it has greater fiscal space due to oil revenues a unique opportunity to implement reforms.

These insights suggest that Guyana is uniquely positioned to blend global best practices into a hybrid model tailored to its context.

Summary of Discussion

In summary, the discussion demonstrates that Guyana's road infrastructure challenges are systemic rather than isolated. They reflect entrenched institutional weaknesses, inequitable funding, exclusionary stakeholder practices, and neglected sustainability measures. While these challenges are significant, global comparative insights and project management frameworks provide a roadmap for reform. By institutionalizing Strategic Project Management, Guyana can transform its infrastructure sector from a source of inefficiency to a driver of inclusive, sustainable national development.

Conclusion

This study set out to assess the current state of road infrastructure development in Guyana, with particular attention to governance, funding allocation, stakeholder engagement, and sustainability safeguards. Using a mixed-methods approach that combined surveys, interviews, on-site observations, and secondary data, the study provides a comprehensive perspective on a sector that has achieved progress but still faces important areas for improvement.

Despite record-high budget allocations and support from international partners, Guyana's road infrastructure system continues to encounter challenges. Governance structures involve multiple agencies, which can create coordination complexities. Resource allocation has tended to focus more heavily on urban and coastal projects, while rural and hinterland roads remain less developed. Stakeholder engagement has been stronger among technical actors but less consistent with community representatives, leading to calls for broader participation. Sustainability measures are applied in some projects but not yet systematically across the sector, which is particularly important given Guyana's vulnerability to flooding and climate risks. Therefore, strengthening Guyana's infrastructure systems in alignment with World Bank guidance on inclusive growth [17] would ensure that national investments contribute directly to sustainable development outcomes.

These findings highlight a key opportunity: Guyana now has greater fiscal capacity than ever before, thanks to oil revenues, and can use this moment to embed long-term institutional reforms. The state of road infrastructure is therefore not only a technical or engineering challenge it also presents an opportunity for strengthening governance, enhancing institutional capacity, and applying Strategic Project Management (SPM) frameworks.

From a theoretical perspective, the study reinforces governance theory by showing how

institutional arrangements affect efficiency and accountability, and it contributes to stakeholder theory by illustrating the benefits of inclusive participation. Comparative insights highlight parallels with Brazil, China, and Caribbean states, while also underscoring Guyana's unique opportunity to draw on oil revenues to adapt best practices such as PMBOK's structured lifecycle, Lean's efficiency principles, and Agile's iterative stakeholder focus.

The study concludes that Guyana's success will depend not only on increasing budgets but on embedding practices that strengthen governance, balance funding across regions, ensure stakeholder participation, and mainstream sustainability. By doing so, the country can transform its road sector into a driver of inclusive and sustainable national development.

Recommendations

Policy-Level Recommendations

1. **Institutionalize Strategic Project Management (SPM):**
    - Apply structured frameworks (PMBOK, Agile, Lean) across all major road projects.
    - Establish standardized protocols for planning, monitoring, and closure across donor- and domestically funded initiatives.
2. **Strengthen Regulatory Oversight:**
    - Consider creating an independent monitoring body to audit project performance against key indicators.
    - Increase transparency by publishing accessible progress reports.
3. **Promote Balanced Funding Allocation:**
    - Develop equity-based formulas to distribute resources more evenly across regions [17].
    - Increase investment in hinterland roads to enhance connectivity and integration.
4. **Encourage Public-Private Partnerships (PPPs):**
    - Expand PPPs to mobilize financing and foster innovation.
    - Provide incentives for the adoption of sustainability-oriented technologies.
5. **Enhance Capacity Building:**
    - Introduce continuous professional training in project management best practices.
    - Partner with universities and professional bodies to integrate certification programs.

Project-Level Recommendations

1. **Optimize Resources Using Lean Principles:**
    - Streamline procurement and scheduling to minimize delays and inefficiencies.
    - Introduce digital procurement platforms to support transparency.
2. **Adopt Digital Project Management Tools:**
    - Deploy Project Management Information Systems (PMIS) with real-time dashboards.
    - Utilize BIM and GIS-enabled tools for better planning and monitoring.
3. **Strengthen Stakeholder Engagement:**
    - Institutionalize structured consultations during project design.
    - Establish monitoring committees that include contractors, government officials, and community members.
4. **Apply Performance-Based Contracts:**
    - Link payments to measurable milestones, including quality and sustainability indicators.
    - Include incentives for early completion and penalties for delays.
5. **Mainstream Sustainability:**
    - Make safeguards such as erosion control and reforestation standard practice.

- Require Environmental Impact Assessments (EIAs) for all major projects with compliance monitoring.

Academic Contributions

1. **Expand Research on Hybrid Models:**
   - Explore combinations of PMBOK, Lean, and Agile tailored to Guyana and similar economies.
   - Position Guyana as a case study in integrating global practices into local contexts.
2. **Develop Local Knowledge Resources:**
   - Support universities in building repositories of infrastructure best practices.
   - Publish comparative analyses to inform regional dialogue.
3. **Embed Research into Practice:**
   - Encourage stronger collaboration between academia, government, and industry.
   - Promote workshops, pilot projects, and joint research initiatives.

The proposed actions and expected outcomes are summarized in Table 5, which outlines the Strategic Recommendations Framework across policy, project, and academic levels.

Table 5. Strategic Recommendations Framework

Dimension	Key Action	Expected Impact
Policy-Level	Institutionalize SPM, strengthen oversight, balance funds	Improved accountability and equity
Project-Level	Lean procurement, digital tools, engagement, performance contracts	Greater efficiency and transparency
Academic	Hybrid model research, local knowledge resources	Theory-building and policy relevance

Final Reflection

Guyana is at a pivotal moment. The growth of oil revenues provides unprecedented fiscal opportunities, and with them comes the potential to transform infrastructure delivery. By addressing coordination, equity, engagement, and sustainability, the country can ensure that investments in roads contribute to both national integration and resilience.

Strategic Project Management provides a pathway to strengthen governance, optimize resource use, and embed inclusive and sustainable practices. By institutionalizing these approaches, Guyana can turn its road infrastructure into a foundation for long-term, inclusive growth and sustainable development.

Conflict of Interest

The authors declare that they have no conflict of interest.

Data Availability

The datasets generated and analyzed during this study are available from the corresponding author upon reasonable request.

Author Contributions

Denita Crandon designed the study, collected data, performed analysis, and drafted the manuscript. Dr. S.P. Sreekala. provided supervision, theoretical framing, and critical revisions. Both authors reviewed and approved the final manuscript.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Acknowledgements

The authors thank the Ministry of Public Works, Guyana, contractors, engineers, project managers, and community representatives who participated in the surveys and interviews. Appreciation is also extended to colleagues at Texila American University for their academic guidance.

References

[1]. Aschauer, D. A., 1989, Is public expenditure productive. *Journal of Monetary Economics*, 23(2), 177–200, https://doi.org/10.1016/0304-3932(89)90047-0

[2]. Bryson, J. M., Crosby, B. C., & Bloomberg, L., 2014, Public value governance: Moving beyond traditional public administration and the New Public Management. *Public Administration Review*, 74(4), 445–456, https://doi.org/10.1111/puar.12238

[3]. Calderón, C., & Servén, L., 2010, Infrastructure and economic development in Sub-Saharan Africa. *Journal of African Economies*, 19(suppl_1), i13–i87, https://doi.org/10.1093/jae/ejp022

[4]. Caribbean Development Bank, 2018, Jamaica Highway 2000 case study. *Caribbean Development Bank*.

[5]. Flyvbjerg, B., Bruzelius, N., & Rothengatter, W., 2003, Megaprojects and risk: An anatomy of ambition. *Cambridge University Press*.

[6]. Freeman, R. E., 1984, Strategic management: A stakeholder approach. *Pitman*.

[7]. Golden, M., & Min, B., 2013, Distributive politics around the world. *Annual Review of Political Science*, 16(1), 73–99, https://doi.org/10.1146/annurev-polisci-052209-121553

[8]. Jenkins, R., 2022, China's Belt and Road Initiative in Latin America: What has been the impact. *Journal of Current Chinese Affairs*, 51(1), 13–39, https://doi.org/10.1177/18681026211047871

[9]. Kerzner, H., 2017, Project management: A systems approach to planning, scheduling, and controlling (12th ed). *Wiley*.

[10]. Peters, B. G., & Pierre, J., 2004, The politics of bureaucracy: An introduction to comparative public administration (4th ed.). *Routledge*.

[11]. Project Management Institute, 2021, A guide to the project management body of knowledge (PMBOK® guide) (7th ed). *Project Management Institute*.

[12]. Roos, E. C., de Souza, J. S., & Kliemann Neto, F. J., 2024, Project risks and regulation in transport infrastructure: A study in Brazilian agencies' concessions planning process. *Transportation Research Interdisciplinary Perspectives*, 23, 101031, https://doi.org/10.1016/j.trip.2024.101031.

[13]. Santos, F. C., Rohden, A. B., Palu, S. M. K., & Garcez, M. R., 2024, Sustainability-oriented assessment of pavement technologies: A case study of a heavy-traffic highway in Brazil. *Case Studies in Construction Materials*, 20, e03337, https://doi.org/10.1016/j.cscm.2024.e03337.

[14]. Shi, Q., Hertogh, M., Bosch-Rekveldt, M., Zhu, J., & Sheng, Z., 2020, Exploring decision-making complexity in major infrastructure projects: A case study from China. *Project Management Journal*, 51(6), 617–632, https://doi.org/10.1177/8756972820919205.

[15]. Transparency International, 2022, Corruption perceptions index 2022. Transparency International, https://www.transparency.org/en/cpi/2022

[16]. Womack, J. P., & Jones, D. T., 2003, Lean thinking: Banish waste and create wealth in your corporation. *Free Press*.

[17]. World Bank, 2019, Infrastructure for development: Building a foundation for inclusive growth. *World Bank*.

[18]. World Bank, 2025, Guyana to enhance transport resilience and safety. *Press Release*, February 28, 2025, https://www.worldbank.org/en/news/press-release/2025/02/28/guyana-to-enhance-transport-resilience-and-safety

[19]. Government of Guyana, Ministry of Finance, 2024, *Budget 2024: Estimates of the public sector*. Ministry of Finance.

[20]. United Nations Framework Convention on Climate Change (UNFCCC), 2015, Paris Agreement. *UNFCCC*.

[21]. United Nations, 2015, Transforming our world: The 2030 Agenda for Sustainable Development. United Nations.