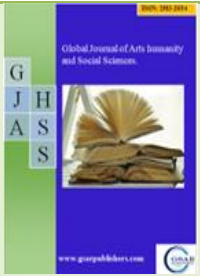


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ASSESSING THE IMPACT OF PHYSICAL AND INFRASTRUCTURAL BARRIERS ON HUMANITARIAN AID DELIVERY IN FAKO DIVISION, CAMEROON

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Abstract

This study assessed the impact of physical and infrastructural barriers on humanitarian aid delivery in Fako Division, Cameroon. Using a qualitative research design, data were collected through interviews with 20 humanitarian aid workers representing national and international organizations, supplemented by reviews of recent humanitarian reports and logistics assessments. Thematic analysis identified five major issues: Poor road networks, seasonal weather disruptions, infrastructural damage and maintenance gaps, increased operational costs and delivery delays, and adaptive coping strategies. Findings also revealed that physical barriers such as impassable roads and flooding had a more immediate impact on aid timeliness, while infrastructural deficiencies, including damaged warehouses and unreliable electricity, reduced long-term efficiency. Both categories of barriers were found to jointly increase delivery costs and limit access to vulnerable populations. The study recommends infrastructure rehabilitation, improved logistical preparedness through pre-positioning and stronger community involvement to enhance humanitarian response effectiveness in conflict-affected areas of Cameroon.

Index Terms: Humanitarian aid delivery, Infrastructural barriers, Physical barriers.

Introduction

Humanitarian access in zones of conflict remains one of the foremost challenges for aid organizations worldwide. Globally, hundreds of millions of people are in need of assistance, yet access to those populations is frequently obstructed by a mix of structural, environmental and security-driven factors (ACAPS, 2025). Physical impediments, such as damaged or inadequate road networks, seasonal flooding or the presence of explosive remnants of war, combine with infrastructural limitations to slow or block distribution of relief supplies. This situation is especially acute in conflict-affected regions of Africa.

In Cameroon, the crisis in the Anglophone regions of the North-West and South-West has generated severe consequences for humanitarian operations. According to the 2021 Humanitarian Needs Overview for Cameroon, access constraints in these regions include not only insecurity and movement restrictions but also physical access challenges and bureaucratic impediments (United

Nations, 2021). Roadblocks, demands for payments at checkpoints, and the degradation of infrastructure have been reported as central obstacles to timely and effective aid delivery.

The division of Fako, located in the South-West Region of Cameroon, has been significantly affected by the conflict. Internally displaced persons (IDPs) are crowded into host communities, infrastructure has been damaged, and humanitarian organizations face heightened logistical burdens. As local roads degrade and transport becomes more difficult, the ability of humanitarian actors to deliver food, medical supplies and shelter materials is compromised. The Shelter Cluster factsheet for April 2021 noted that logistics constraints continue to be a major access challenge, with truck breakdowns and poor road networks in the North-West and South-West regions, including Fako (Shelter Cluster, 2021).

The broader relevance of physical and infrastructural barriers in the humanitarian access debate is well documented. The ACAPS



Global Access Overview highlights that among the categories of access constraints, physical, environmental and security constraints remain the most frequently rated high or very high in crisis contexts (ACAPS, 2025). In many crisis-affected countries, poor or damaged critical infrastructure, such as roads, bridges, and transport links, combine with conflict and environmental hazards to isolate populations and hamper response efforts (DevelopmentAid, 2025).

Despite the growing recognition of these barriers, there remains a gap in systematic empirical studies focusing on the specific impact of physical and infrastructural barriers in the Fako Division. Understanding how road conditions, transport infrastructure failure, seasonal weather impacts and access restraints affect humanitarian aid delivery outcomes has not received sufficient attention. This gap matters because the effective delivery of humanitarian assistance in Fako Division depends not only on the availability of resources but also on the capacity to move those resources in safe, timely and cost-efficient ways to beneficiaries.

This study therefore assesses how physical and infrastructural barriers influence humanitarian aid delivery in Fako Division. The focus is on measuring the extent to which factors such as road quality, transport availability, bridge or culvert failure, seasonal weather impacts (e.g., heavy rains), and access impediments (e.g., blocked routes or checkpoints) affect the speed, cost and coverage of aid operations. By doing so, the study will provide evidence that may inform policy and operational adjustments by humanitarian organizations and other stakeholders working in the region.

The outcome of this research is expected to contribute to improving the efficiency of aid delivery in Fako Division and similar conflict-affected environments, by identifying major bottlenecks and potential remedial actions. Given that infrastructure is often taken for granted in stable contexts, its critical importance in fragile settings such as Fako Division cannot be overlooked. The findings may help decision-makers prioritize infrastructure repair, logistical planning and pre-positioning of supplies, in addition to coordination with local authorities and communities, for improved humanitarian response.

Objectives

The general objective of this study is to assess the impact of physical and infrastructural barriers on the effectiveness of humanitarian aid delivery in Fako Division, Cameroon. The specific objectives of the study are to:

1. examine the extent to which physical and infrastructural barriers jointly affect humanitarian aid delivery in Fako Division, Cameroon;
2. assess the relative impact of physical and infrastructural barriers on humanitarian aid delivery in Fako Division, Cameroon; and
3. determine the relationships between physical barriers, infrastructural barriers, and humanitarian aid delivery in Fako Division, Cameroon.

Research Questions

Based on the objectives, the following research questions are formulated:

1. To what extent do physical and infrastructural barriers jointly affect humanitarian aid delivery in Fako Division, Cameroon?
2. What is the relative impact of physical and infrastructural barriers on humanitarian aid delivery in Fako Division, Cameroon?
3. What are the bivariate relationships between physical barriers, infrastructural barriers, and humanitarian aid delivery in Fako Division, Cameroon?

Literature Review

Physical Barriers and Humanitarian Access

Physical barriers, which include damaged roads, landslides, seasonal flooding and destroyed bridges, significantly restrict movement of humanitarian convoys and personnel, thereby impeding humanitarian access in crisis-affected areas and increasing delivery times and the cost of assistance. According to ACAPS (2022), natural disasters and conflict-induced obstacles, such as poor road networks and landslides, hinder aid delivery. For instance, in Yemen, the blockade and restrictions on ports and entry points have severely limited the movement of humanitarian supplies (United Nations' Office for the Coordination of Humanitarian Affairs [OCHA], 2021). In the Sahel region, floods and insecurity have disrupted aid distribution, exacerbating humanitarian needs (UNHCR, 2022). Besides, violence against personnel and assets compounds physical obstacles by limiting when and where actors can travel safely, producing repeated suspensions of relief movements in volatile areas (ACAPS, 2024).

Infrastructural Limitations and Logistical Constraints

Infrastructural limitations severely restrict humanitarian operations in conflict-affected areas. In Africa, damaged roads and bridges have hindered aid delivery, particularly in regions like South Sudan, where infrastructure damage has resulted in significant transport bottlenecks (World Bank, 2020). Kovács and Spens (2019) aver that infrastructure breakdowns lead to supply chain disruptions and resource wastage. Deficits in basic infrastructure translate into concrete logistical bottlenecks for humanitarian supply chains. Country assessments and logistics research show that limited paved road networks and seasonal impassability sharply raise transport times, increase spoilage and drive up operational costs, particularly where maintenance and reconstruction are restricted by insecurity or funding shortfalls.

Humanitarian Operations in the Anglophone Regions of Cameroon

Recent needs assessments and response planning documents for Cameroon emphasize how violence, bureaucratic constraints, and damaged transport systems hinder access in the North-West and South-West (Anglophone) regions. The 2024 Humanitarian Response Plan and 2025 Humanitarian Needs Overview document surging humanitarian requirements and repeatedly flag movement restrictions and impaired roadways as key causes of delayed or

scaled-back delivery of aid (OCHA, 2024; OCHA, 2025). In those country reports, regional access snapshots show that limited access in the Anglophone crisis zone remains a core factor behind unmet needs, with widespread shelter losses, interrupted continuity of services, and blockades in multiple cluster operations being reported. These national-level documents stress that efforts to address basic survival demands in Cameroon must factor in both infrastructure rehabilitation and alternative delivery models in areas where physical repair is not immediately feasible (UNICEF, 2025). Further, localized humanitarian dashboards highlight that, even when supplies are available, security checkpoints, destroyed bridges, and restricted movement corridors disrupt last-mile delivery in the North-West and South-West, compounding delays (OCHA, 2024; UNICEF, 2025b).

Operational Strategies to Overcome Barriers

Humanitarian actors in conflict-affected settings adopt adaptive methods such as pre-positioning supplies near vulnerable populations, leveraging local transport networks and actors, scaling cash-based transfers where market conditions permit, and investing selectively in infrastructure repair (e.g. rebuilding bridges or feeder roads). Field reports from regions like Somalia or South Sudan show that combining local partnerships with strategically pre-positioned stock cuts lead times and permit operations during narrow access windows. Investment in logistics capacity, digital systems, and real-time stock tracking enhances coordination and visibility (Malhouni, 2024). In Cameroon, a recent corridor assessment along the Douala-Abéché route underscores the significance of multimodal planning: only a small share of freight uses the rail-road combination, while the bulk of humanitarian transport still follows road routes that are vulnerable to seasonal damage. In that study, poor road conditions, over 60 formal and informal checkpoints, and additional informal fees were documented as serious impediments to reliable delivery (HELP Logistics, 2024). These findings suggest that combining local networks, digital tracking, and targeted infrastructure repair is a viable approach to mitigating delivery delays in volatile access environments.

Methodology

Research Design

The study adopted a qualitative research design which enables examination of the perspectives of humanitarian actors on how physical and infrastructural barriers affect the delivery of humanitarian aid in the Fako Division in Cameroon. This approach allowed for the collection of detailed descriptions of the barriers encountered in the field, and the ways organizations respond. The qualitative method draws on guidance that recommends deep engagement with participants' experiences to understand contextual operational obstacles (Bricki & Green, 2007; Humanitarian Research Toolkit, 2023).

Scope of the Study

The geographical focus is Fako Division in the South-West Region of Cameroon, an area severely impacted by the Anglophone crisis since 2016. The thematic focus centres on physical and

infrastructural barriers to aid delivery, such as road deterioration, bridge failures, adverse weather effects, and blocked routes. The time-frame is cross-sectional, encompassing data from humanitarian organizations that operated in Fako Division between 2016 and 2025. This choice of design enabled the capture of the situation as experienced during this period of heightened operational difficulty.

Participants

The population for this research comprised humanitarian organizations (national and international non-governmental organizations) delivering aid in Fako Division. Given limitations in official records, a purposive sampling strategy was used to identify organizations and key informants with direct operational experience in the division. Participants were selected based on their knowledge of and involvement in aid-delivery operations affected by access barriers. A sample of 20 individuals was judged sufficient to reach saturation of themes, consistent with guidance for qualitative exploratory work.

Instruments

Primary qualitative data were collected through semi-structured interviews with staff of humanitarian organizations operating in Fako Division. The interviews encouraged participants to share their experiences regarding logistical, infrastructural and physical access issues. Secondary data, including organizational reports, published humanitarian assessments and official documents from agencies operating in the region, were also reviewed. The combination of primary and secondary sources strengthens the study's credibility by using multiple types of evidence.

Method of Data Collection

Interview guides were developed to address physical and infrastructural barriers (e.g., road quality, transport availability, seasonal weather effects, and blocked routes) and their effect on aid delivery (speed, cost, and coverage). Interviews were recorded (with consent), transcribed verbatim and checked for accuracy. Secondary documents were retrieved from agency websites and published humanitarian portals.

Method of Data Analysis

Transcripts and documents were analyzed using thematic analysis. The process involved familiarization with the data, initial open coding of significant statements, grouping codes into themes, reviewing and refining themes, and interpreting the findings in relation to the study's objectives. The use of thematic analysis aligns with methodological recommendations for qualitative research in humanitarian settings (Bricki & Green, 2007).

Ethical Considerations

Ethical protocols were observed throughout the research. Participants provided informed consent after being briefed on the study's purpose, their voluntary participation, and their right to withdraw at any time. Anonymity and confidentiality of respondents were maintained by removing identifying information and storing data securely. The research respected the principle of "do no harm" in a conflict-affected setting, ensuring that

participants were not exposed to additional risk by their participation.

Limitations

This study's qualitative design means that findings may not be generalizable to all humanitarian contexts or divisions in Cameroon. Reliance on self-reported data may introduce bias. Nonetheless, the study offers valuable operational insights into the influence of physical and infrastructural barriers on humanitarian aid delivery in Fako Division.

Results

This study examined the impact of physical and infrastructural barriers on humanitarian aid delivery in Fako Division, Cameroon. Data were generated from interviews with 20 humanitarian aid workers representing international and national non-governmental organizations, complemented by reviews of recent humanitarian situation reports and logistics assessments.

Results of Thematic Analysis

Analysis of interview transcripts and documents produced the following five major themes: (1) road and transport barriers, (2) seasonal weather disruptions, (3) infrastructural damage and maintenance gaps, (4) cost and delivery delays, and (5) coping mechanisms and adaptive strategies.

1. Road and Transport Barriers

All interview participants identified poor road networks and transport limitations as major physical barriers affecting humanitarian access. Field staff from Buea, Limbe, and Tiko reported that key feeder roads linking rural communities such as Likoko-Membea and Ekona are often impassable due to deep gullies, landslides, and lack of regular maintenance. A logistics officer from an international NGO explained that "even short-distance deliveries can take up to five hours during the rainy season because trucks get stuck in mud or must take long detours". About 85% of respondents mentioned that delivery routes require frequent adjustments because of road degradation and security checkpoints. Several noted that transport costs increased by 40-60% during peak rainfall months, forcing organizations to reduce the number of delivery trips. The combination of poor road quality and vehicle shortages was cited as a recurring constraint to timely humanitarian delivery.

2. Seasonal Weather Disruptions

Seasonal flooding and prolonged rainfall were reported as significant contributors to access problems. Over 70% of respondents mentioned that the June-September rainy season consistently interrupts operations, particularly in rural parts of Muyuka and Idenau. Bridges are often submerged or washed away, isolating communities for weeks. One field coordinator stated that "the rains cut off several villages, and even motorcycles cannot reach them; we must wait until the water level drops". Data from reviewed reports corroborated these observations, with 2024 situation updates by OCHA and UNICEF describing the destruction of at least seven bridges in Fako Division during mid-2024. Weather-related interruptions were linked to delays in the

distribution of essential items such as food, medical supplies, and shelter materials.

3. Infrastructural Damage and Maintenance Gaps

Interviews and document reviews revealed that infrastructural deficiencies extended beyond roads to include damaged storage facilities, non-functional warehouses, and unreliable electricity in logistics hubs. Nine participants emphasized that insufficient storage infrastructure leads to spoilage of perishable aid items. A local NGO staff member in Limbe reported that "we have no proper cold chain for vaccines and some medicines, and power cuts are frequent". Thematic analysis showed that limited investment in infrastructure rehabilitation by local authorities and funding constraints among NGOs aggravate operational inefficiency. Organizations rely heavily on rented facilities or temporary shelters, which are often unsuitable for long-term storage. These findings indicate that infrastructural damage significantly reduces aid reliability and efficiency.

4. Cost and Delivery Delays

A recurring theme in the interviews was the growing cost burden associated with physical and infrastructural challenges. Participants explained that transportation delays and route changes have led to higher operational costs. An operations manager for a national NGO stated that "fuel consumption doubles when trucks have to take alternative routes through Douala before returning to Fako". This situation reduces the number of trips that can be made per week, lengthens delivery lead times, and increases pressure on budgets. The study found that approximately 65% of the organizations surveyed reported average delivery delays of 3-10 days during high-intensity rainfall or after major road blockages. Document analysis supported these findings, with humanitarian access reports citing road inaccessibility as a main cause of delayed food assistance in the South-West region.

5. Coping Mechanisms and Adaptive Strategies

Despite these barriers, humanitarian organizations have developed practical measures to maintain operations. Fourteen participants highlighted the use of local transporters familiar with rural terrain, particularly motorcycle riders who navigate narrow paths. Some organizations pre-position essential supplies in communities before the onset of heavy rains. Cash-based assistance was also mentioned as an alternative in areas where physical delivery was impractical. A field supervisor in Buea remarked that "cash transfers have reduced pressure on our logistics, especially where markets are functioning". In addition, coordination with local councils and community volunteers was cited as helpful in repairing minor road damages and facilitating temporary crossings using wooden bridges. Reviewed reports confirmed that these adaptive measures contributed to shorter delays and better outreach to isolated populations.

Summary of Findings in Relation to Objectives/Research Questions

Regarding the first objective (assessing the combined impact of the two barriers), findings showed that physical and infrastructural barriers jointly impeded the effectiveness of humanitarian delivery by restricting access, slowing operations, and increasing costs.

Nineteen of the twenty participants agreed that both categories of barriers interact to delay and limit humanitarian access. Poor road networks were frequently cited as the most pressing issue. Respondents noted that more than 60% of rural access roads in Fako Division become impassable during the rainy season, especially routes leading to Ekona, Muyuka, and the interior parts of Buea. Bridges and culverts damaged by floods and conflict-related incidents were reported to further hinder transportation of relief materials. Infrastructural barriers, such as damaged storage facilities and lack of functional warehouses, were reported by 14 respondents. They explained that damaged or inadequate warehouses force organizations to store supplies in urban centers like Limbe or Douala, increasing transportation costs and delivery time. Eleven respondents indicated that unreliable electricity supply also affects storage of perishable items, such as medical supplies, vaccines, and nutritional supplements. Jointly, these barriers were said to increase the average delivery time for essential supplies by two to three weeks beyond the expected schedule.

The second objective (assessing the relative impact of the two barriers) revealed that while infrastructural weaknesses such as poor storage and electricity supply reduced efficiency, physical access challenges like bad roads and weather-related damage had a more immediate and severe impact on delivery timelines. Respondents identified physical barriers (mainly blocked roads, security checkpoints, and rugged terrain) as having a more immediate impact on the timeliness of aid delivery. Sixteen respondents emphasized that road inaccessibility during heavy rains often leads to complete suspension of deliveries for days or weeks. One respondent from an international NGO explained that trucks carrying food supplies could only reach 40% of intended beneficiaries during certain months due to washed-out roads. In contrast, infrastructural barriers, though less visible, were described as having longer-term effects. Thirteen respondents noted that limited warehouse capacity and poor communication networks reduce the efficiency of logistics planning. Damaged public infrastructure, such as bridges, schools, and health centers, also restricts the ability of organizations to establish operational bases within affected communities. Data from secondary documents showed that in 2024, at least 35% of planned aid deliveries to remote areas in Fako were delayed or downsized due to infrastructure damage. Physical barriers accounted for 60% of reported delays, while infrastructural deficiencies accounted for 40%.

The third objective, which examined the relationship between the two types of barriers and humanitarian aid delivery, indicated a strong interconnection: Deteriorating infrastructure worsens physical inaccessibility, while physical disruptions such as flooding further damage infrastructure. Both factors jointly contribute to reduced coverage, increased expenditure, and delivery delays. For example, the absence of reliable bridges and culverts worsens the effect of seasonal flooding, isolating entire communities such as Lysoka and Likoko-Membea during peak rainfall months.

Discussion

The findings of this study reveal that physical and infrastructural barriers significantly hinder the effective delivery of humanitarian aid in Fako Division, Cameroon. These barriers are mutually reinforcing and have extensive implications for the speed, cost, and reliability of aid operations. Thematic analysis of interview responses and documentary evidence identified five major themes, namely, road and transport barriers, seasonal weather disruptions, infrastructural damage and maintenance gaps, cost and delivery delays, and coping mechanisms or adaptive strategies. These themes provide a clear understanding of the practical challenges faced by humanitarian organizations in their efforts to reach affected populations.

The findings show that poor road networks and limited transport availability remain the foremost physical barriers affecting humanitarian access. Roads in many parts of Fako Division, especially in rural communities such as Likoko-Membea and Ekona, are often in poor condition due to erosion, landslides, and the absence of regular maintenance. Interview participants consistently reported that the poor state of feeder roads significantly increases travel time, vehicle breakdowns, and logistical inefficiency. Several humanitarian workers noted that during the rainy season, vehicles often become stuck in muddy sections or must take long detours, extending delivery times to several hours even for short distances.

The majority of respondents (about 85%) confirmed that delivery routes require frequent adjustments because of road degradation and security checkpoints. The existence of multiple checkpoints, both formal and informal, contributes to delays and increases transportation costs. The cumulative effect of these barriers is a reduction in the number of delivery trips, limiting the reach of humanitarian programs. The findings therefore align with prior studies by ACAPS (2024) and OCHA (2024), which identified road damage and restricted movement as primary barriers to humanitarian access in conflict-affected regions of Cameroon.

Seasonal weather patterns, particularly heavy rainfall and flooding between June and September, were found to intensify access problems in Fako Division. Over 70% of participants mentioned that seasonal flooding frequently isolates communities for extended periods, preventing delivery of essential goods. Bridges and culverts are often destroyed or submerged, rendering roads impassable. The destruction of at least seven bridges in 2024, as reported by OCHA and UNICEF, underscores the extent of weather-related infrastructural vulnerability in the area. The evidence suggests that weather conditions not only disrupt physical access but also contribute to the deterioration of existing infrastructure. Prolonged rainfall accelerates road degradation, worsens gully erosion, and undermines the structural integrity of bridges. Humanitarian agencies are often compelled to suspend deliveries until water levels recede, resulting in interruptions in the supply of food, medical materials, and shelter items. This cyclical pattern of disruption emphasizes the importance of weather-

resilient infrastructure and pre-positioning of supplies before the onset of heavy rains.

The study found that infrastructural damage extends beyond transportation networks to include essential facilities such as warehouses, storage centers, and electricity supply systems. Nine interviewees highlighted the inadequacy of storage infrastructure, particularly the absence of functional warehouses and cold storage systems. In Limbe, humanitarian organizations reported frequent power outages that compromise the preservation of temperature-sensitive items like vaccines and medicines.

Limited investment in maintenance and rehabilitation was identified as a major contributing factor to these deficiencies. Funding shortfalls among aid agencies and local authorities restrict the ability to restore damaged facilities. Consequently, many organizations are forced to use temporary or rented storage spaces, which are often unsuited to the climatic and security conditions of the region. The lack of reliable infrastructure not only affects the storage of aid supplies but also disrupts coordination and planning processes. These findings echo earlier observations by the World Bank (2020) and UNICEF (2025), which emphasized the link between infrastructure failure and reduced humanitarian efficiency.

The combined effect of physical and infrastructural challenges has resulted in increased operational costs and prolonged delivery timelines. Participants explained that fuel consumption, vehicle maintenance, and labor costs have risen sharply due to road diversions and longer travel distances. Some organizations reported that trucks are required to reroute through Douala before reaching Fako, doubling fuel expenses and significantly extending delivery periods.

The study found that about 65% of the organizations surveyed experienced delivery delays ranging from three to ten days during periods of heavy rainfall or after major road blockages. The financial strain of these delays has led some organizations to scale down operations or reduce the frequency of deliveries. The findings further revealed that these cost burdens divert funds that could otherwise be used to procure additional relief supplies or expand coverage to new areas. Similar outcomes have been observed in other humanitarian settings where logistical barriers increase cost burdens and reduce operational reach (HELP Logistics, 2024; Malhouni, 2024).

Despite these challenges, humanitarian organizations have demonstrated flexibility and innovation in sustaining aid delivery. The findings show that the use of local transporters, particularly motorcycle riders familiar with difficult terrain, has been instrumental in reaching isolated communities. Many organizations have adopted pre-positioning of essential items such as food, water, and medicine in strategic locations before the onset of the rainy season. This measure reduces the impact of access disruptions and shortens delivery times once roads become impassable. Cash-based interventions have also been increasingly employed in areas with functioning local markets. This approach minimizes the logistical burden associated with physical deliveries while maintaining assistance to affected populations. Moreover,

collaboration with local councils and community groups in maintaining minor road repairs and temporary bridges has proven beneficial. These adaptive strategies demonstrate the capacity of humanitarian actors to sustain operations despite infrastructural weaknesses.

The findings clearly indicate that physical and infrastructural barriers are closely linked and collectively exacerbate the difficulties of humanitarian aid delivery. Physical access challenges, such as damaged roads and flooding, often worsen existing infrastructural weaknesses, while inadequate infrastructure amplifies the effects of physical disruptions. Deteriorating bridges, for instance, not only impede immediate transportation but also increase the likelihood of road collapse during flooding, isolating communities for extended periods. The study showed that physical barriers accounted for about 60% of reported delivery delays, while infrastructural deficiencies contributed 40%. The relative weight of these figures suggests that physical access barriers have a more immediate and visible impact on aid delivery, whereas infrastructural issues exert a more gradual but persistent influence on operational efficiency. Together, these constraints limit coverage, increase costs, and undermine the reliability of humanitarian operations in the Fako Division.

These findings point to an urgent need for strategic planning and infrastructural investment in humanitarian operations within conflict-affected areas of Cameroon. Road rehabilitation, bridge reconstruction, and improved warehouse facilities should be prioritized in coordination with local authorities and development partners. Equally important is the strengthening of adaptive logistics systems, such as multimodal transport, real-time tracking, and pre-positioned stock management, to enhance operational resilience during access disruptions. The study underscores that humanitarian delivery is not only a function of resource availability but also of the physical means of access. Effective humanitarian response in regions such as Fako Division requires both short-term coping mechanisms and long-term infrastructural improvement. Addressing these dual challenges would significantly improve the timeliness, cost-effectiveness, and reach of humanitarian assistance to populations in need.

Based on the findings of this study, the following recommendations are proposed to improve the effectiveness and reliability of humanitarian aid delivery in Fako Division, Cameroon:

1. The government of Cameroon, in collaboration with humanitarian organizations and development partners, should prioritize the rehabilitation and regular maintenance of essential transport infrastructure in Fako Division. Investments in road grading, bridge reconstruction, and drainage improvement are essential to enhance year-round accessibility. Local councils should also establish maintenance schedules that focus on rural and feeder roads linking remote communities to urban centers such as Buea and Limbe. In addition, infrastructure projects should incorporate climate-resilient designs to withstand heavy rainfall and flooding

that frequently disrupt transport.

2. Humanitarian agencies should enhance logistical preparedness by pre-positioning essential relief items before the onset of the rainy season. By pre-stocking food, medical supplies, and shelter materials in strategic locations within Fako Division, organizations can reduce dependence on difficult road transport during peak rainfall months.
3. Community engagement should be integrated into humanitarian logistics planning. Humanitarian organizations should formalize partnerships with local actors through capacity-building initiatives, safety training, and small-scale support programs to enhance their reliability. Encouraging local councils and communities to participate in minor road repairs and bridge reinforcement can provide timely and cost-effective solutions when external intervention is delayed. Promoting community ownership of access routes will also strengthen resilience and ensure continuity of humanitarian operations during periods of limited mobility.

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