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Challenges Associated with Road Infrastructure in the Galili Community, Nyandeni Local Municipality, Eastern Cape Province, South Africa

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Abstract

Background: Rural road infrastructure is a critical determinant of socio-economic development, influencing access to essential services, mobility, and quality of life. In South Africa, inadequate road infrastructure in rural areas perpetuates poverty and social exclusion, raising concerns about human dignity and sustainability. Within an ecohumanist framework, these infrastructural challenges are not merely technical but relate to broader issues of social justice and environmental stewardship.Aim: The aim of this article is to examine the challenges associated with road infrastructure in the Galili community and to explore the measures adopted by community members to address these challenges.Setting: The study was conducted in the Galili community under the Nyandeni Local Municipality, Eastern Cape Province, South Africa, a predominantly rural area with severe road infrastructure limitations.Methods: A qualitative research design was employed, using semi-structured interviews with residents aged 18 to 65 years. Convenience sampling was applied, and data collection continued until thematic saturation was achieved. Data were analysed thematically, following the six-phase approach.Results: Findings revealed significant infrastructural challenges, including road impassability during rainy seasons, dust-related health risks during dry periods, restricted emergency service access, and limited public transport options. Community members adopted coping measures such as pooling resources for ad hoc repairs, reporting issues to local authorities, and engaging in informal advocacy. However, these measures were temporary and unsustainable due to a lack of technical expertise and institutional support.Conclusion: The study demonstrates that poor rural road infrastructure compromises mobility, access to essential services, and quality of life, contravening the ecohumanist principles of equity and human dignity. While community initiatives show resilience, long-term solutions require systemic interventions integrating participatory governance and climate-resilient designs.Contribution: This article contributes to the ecohumanist discourse by highlighting the lived experiences of rural communities in infrastructural governance, offering insights for policy frameworks that combine sustainability, inclusivity, and community empowerment.

Keywords: *Community Resilience, Eastern Cape, Ecohumanism, Participatory Governance, Rural Road Infrastructure, Sustainability.*

Introduction

Road infrastructure is a fundamental component of socioeconomic growth, influencing social integration, economic opportunity, and access to necessary services (Pillay, 2023). The quality of roads affects how well communities can access markets, healthcare, and education, as well as participate in productive activities in rural areas where mobility is crucial to livelihoods (Nkomo et al., 2016). Insufficient rural road networks are linked to marginalisation of remote populations, inequities in service delivery, and ongoing poverty on a global scale (Khatri, 2022). Governance limitations and unequal infrastructure investment exacerbate these issues for emerging nations like South Africa (van Rensburg & Krygsman, 2019).

In the discussion of infrastructure, technical and financial factors are frequently given precedence over more extensive ethical and ecological ramifications. Road infrastructure is reframed as a socio-ecological imperative rather than a simple engineering endeavour by ecohumanists, which promotes social justice, environmental stewardship, and human dignity (Patterson, 2008). According to this viewpoint, poor rural roads create vulnerabilities that hinder community resilience and compromise basic human needs like health and education (Pillay, 2023). Therefore, ensuring fairness and sustainability in human-environment interactions is just as important as physical connectivity when it comes to road construction.

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Evidence indicates that South Africa's rural roads continue to be mainly under-resourced and badly maintained, despite national promises of rural development. Van Rensburg and Krygsman (2019) claim that systemic underfunding and poor governance have led to significant backlogs in road repair, which disproportionately affect rural communities. According to Nkomo et al. (2016), many rural roads are in poor condition, which limits mobility, makes it difficult to access medical facilities, and raises transportation expenses. In violation of the fairness and sustainability tenets of ecohumanism, these systemic flaws worsen social and economic marginalisation.

These dynamics are best illustrated by the Galili community in the Eastern Cape, which is part of the Nyandeni Local Municipality. During the rainy season, residents have severe transportation issues as roads become impassable and muddy, cutting off houses from necessary services. Excessive dust during dry periods reduces quality of life and increases respiratory health risks (Pillay, 2023). The community is further marginalised by poor road conditions, which also make it more difficult to provide emergency services, limit the movement of commodities, and lengthen travel times. Rural South Africa's inadequate infrastructure has been discussed in some literature, but communities' own adaptive measures have received less attention. This gap motivates the present study, which examines both the challenges faced by Galili and the measures its residents adopt in response.

This article aims to examine the challenges associated with road infrastructure in the Galili community and to explore the measures adopted by community members to address these challenges. To achieve this, the article first reviews relevant literature on rural road issues and solutions from an ecohumanist perspective, and thereafter outlines the qualitative approach that was used. The results are arranged according to the two research objectives, and they are discussed considering ecohumanist principles and related research. The article concludes with recommendations for policy and practice.

Literature Review

Challenges of Road Infrastructure in Rural Communities

The severe and complex challenges that South African rural roads face are frequently brought to light by research. Field observations conducted in KwaZulu Natal by Nkomo et al. (2016, 45) showed "moderate to severe surface distress" in unpaved roads, which was exacerbated by inadequate maintenance and poor drainage. Similar trends were noted across the country, with rural gravel roads continuing to be neglected because of financial limitations and technical shortcomings (van Rensburg & Krygsman, 2019). According to Pillay (2023), this kind of degradation impedes access to essential services, jeopardises livelihoods, and prolongs cycles of poverty.

According to Agumba's (2016, 2) evaluation, "technically inexperienced constituency roads committees" and "inadequate supervision capacity" are two examples of institutional and technical flaws that significantly contribute to rural road failure. These structural difficulties are consistent with the general governance problems that rural municipalities face, where inadequate resource allocation and bad administration exacerbate the deterioration of infrastructure (Nkomo et al., 2016; Pillay, 2023; van Rensburg & Krygsman, 2019). When taken as a whole, these studies show a chronic infrastructure catastrophe that stems from both systemic governance shortcomings and physical degradation.

Measures to Address Road Infrastructure Challenges

Numerous programmes have shown promise in mitigating rural road issues. To avoid surface discomfort, Nkomo et al. (2016) advise better drainage systems and regular monitoring. According to Pillay (2023), participatory government and community involvement can improve resource allocation and maintenance schedules. In support of this, a Limpopo study highlighted the need to use high-quality materials, schedule maintenance, and use qualified builders to construct more resilient roads (Ikuabe et al., 2021).

According to research from Uganda, community fund contributions that are connected to local agricultural output aid in setting maintenance priorities and improving road quality through public-private partnerships

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(DfID, 2003; World Bank, 2010, as cited in Khatri, 2022, 168). The ecohumanist values of sustainability and social justice are reflected in these cooperative models. Even if these actions appear promising, a significant gap is highlighted by the fact that most rural South African studies do not assess long-term sustainability or scaling prospects.

There are still significant gaps in the literature, even though it accurately portrays infrastructure deterioration and a variety of mitigating techniques. Without properly considering institutional capacity or implications for ecohumanist sustainability, empirical investigations frequently concentrate on short-term technical solutions, such as drainage improvement and material upgrades. The investigation of community agency is especially lacking: few studies look at how rural inhabitants may support their efforts with policy or how they might self-repair infrastructure failures over time.

Furthermore, a large portion of the literature uses survey or descriptive methodologies instead of comparative case studies or longitudinal analyses, which restricts our knowledge of the factors that support rural road improvements over time. Addressing these gaps would enable more successful ecohumanist interpretations that position infrastructure as a channel to social justice, ecological balance, and human dignity rather than merely as a technical tool.

This study fills a critical gap by investigating both the challenges and communally driven measures, with a focus on ecohumanist values in the decision-making processes of the Galili community. Beyond the conventional technical and institutional narratives, this research provides theoretical and practical insights by recording local coping methods and placing them within governance frameworks.

Research Methods

This study used a qualitative research design to investigate citizens' lived experiences with road infrastructure concerns and the strategies they use to address them. When examining phenomena in-depth, a qualitative technique was suitable since it allowed for a nuanced comprehension of participants' perspectives and contextual reality (Creswell & Poth, 2018). The study's ecohumanist perspective, which emphasises human-centered and participatory knowledge production, is consistent with this design (Patterson, 2008).

The study was carried out in Galili village, which is part of the Nyandeni Local Municipality in South Africa's Eastern Cape Province. Limited infrastructure development and a reliance on poorly constructed gravel roads are characteristics of this rural area that have a big impact on socioeconomic mobility. The target population comprised community residents aged between 18 and 65 years, representing a broad demographic range engaged in daily transport needs.

A non-probability sampling approach was used because of the exploratory character of the study and the lack of a comprehensive sample frame. Convenience sampling was specifically selected since it made it possible to include people who were willing and able to participate (Etikan et al., 2016). Data saturation, the point at which no new themes or insights surface from further interviews, was used to establish the final sample size (Guest et al., 2006). This method ensured there was no unnecessary redundancy and that there was sufficient depth and breadth of data.

Semi-structured interviews were used to gather data since they allowed flexibility in examining new topics while staying true to the objectives of the study. An interview guide was developed based on the two research questions: (1) the challenges of road infrastructure in the Galili community, and (2) the measures adopted to address these challenges. Interviews were conducted in isiXhosa and subsequently translated into English. With the participants' permission, all interviews were audio recorded, and the verbatim transcriptions were then analysed. Strict adherence to ethical principles, such as voluntary participation, informed consent, and secrecy, was maintained. Participants received guarantees that the data would only be used for academic research and that their identities would remain anonymous.

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The data was interpreted using thematic analysis, as explained by Braun and Clarke (2006). Six iterative steps make up this method: (1) getting to know the data, (2) creating preliminary codes, (3) looking for themes, (4) evaluating themes, (5) defining and naming themes, and (6) creating the report. Patterns and categories emerged inductively from the data throughout the manual coding process. In line with the ecohumanist emphasis on the human condition, this analytical method was suitable since it made it possible to systematically identify recurring themes pertaining to infrastructure problems and community-driven solutions.

The study followed the four evaluative criteria of credibility, transferability, dependability, and confirmability proposed by Lincoln and Guba (1985) to guarantee the credibility and truthfulness of the results. Long-term involvement with the study context and participant assessment of interview transcripts improved credibility. To address transferability, detailed descriptions of the study environment were provided. To guarantee dependability and confirmability, an audit trail was kept, recording all methodological choices and data analysis procedures.

The study received ethical clearance from the Walter Sisulu University (WSU) Research Ethics Committee and permission to conduct research in the Galili village from the Nyandeni Local Municipality (NLM). Each participant provided informed consent, and their right to withdraw at any time was respected. To ensure anonymity, all identifying information was removed from transcripts and pseudonyms were employed. Interviews were conducted in private settings, and digital content was securely stored on password-protected devices. Hard copies of the consent forms were stored in a locked file cabinet and were only accessible by the researcher. The study adhered to the ethical principles of autonomy, beneficence, non-maleficence, and fairness and was conducted solely for academic purposes.

Results

Challenges of Road Infrastructure in the Galili Community

Challenges During Rainy Seasons

According to the respondents, Galili's roads deteriorate considerably during the rainy season. Streams and tiny ponds emerge along the roads because of heavy rainfall, which also makes the roads muddy and soggy. Potholes form as a result, and the road surface sustains significant damage. Residents thus have trouble getting to town since cars frequently get bogged in the mud. Many respondents said that during these times, they are compelled to give up driving and use public transport instead. Walking is equally difficult, and locals must wear gumboots to get over the muddy streets.

Challenges During Dry Seasons

Even in dry conditions, the poor state of the roads presents challenges. According to the respondents, gravel roads can get quite dusty, which can be harmful to people's health, especially those who have respiratory diseases like asthma. Residents find it challenging to maintain hygiene because of dust that is carried by the wind and collects on laundry and domestic surfaces. Since most families rely on water tanks that get contaminated by dust, the lack of clean water further exacerbates this problem. Additionally, dust exposure was found to be a source of pain for regular commuters and schoolchildren.

Emergency Services

One of the biggest challenges for emergency response agencies was the condition of the roadways. Medical aid is delayed because ambulances frequently have trouble getting to residences. Patients frequently must be driven to the main road in private vehicles or travel on foot. The respondents were concerned that patients, especially pregnant women, are put under more stress by bumpy and uneven gravel roads, which can sometimes result in difficulties and miscarriages. This demonstrates the serious threat that poor road infrastructure poses to community health and safety.

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Other Issues

Respondents identified several issues in addition to those connected to emergencies and the seasons. Due to bad gravel road conditions, public transportation services like taxis avoid the community, leaving people to carry their belongings on foot or with wheelbarrows. Similar restrictions apply to delivery trucks, so clients must find other ways to transport necessities like furniture and building supplies. Additionally, respondents stated that bad road conditions make it impossible to use motorbikes, bicycles, and other alternative forms of transportation. These restrictions have a big impact on day-to-day activities like social interaction, healthcare access, and education. One of the main causes of road damage and flooding, which in turn causes property devastation and agricultural loss during periods of high rainfall, has been shown to be the lack of adequate drainage systems.

Suggested Measures to Address the Identified Challenges

Community Engagement and Meetings

Respondents reported that community members often request meetings with their local government structures, such as the ward committee and local council, to discuss road infrastructure issues. Even when meetings are called from time to time, attendees become frustrated because they hardly ever result in concrete results. According to the respondents, local council members usually interact with the public just prior to elections and pledge to make improvements to the state of the roads. However, after elections are over, these promises are not kept, which breeds mistrust and a sense of governmental neglect.

Reporting Road Conditions to Authorities

Participants clarified that the ward committee typically receives community complaints about roads and offers to bring the issue up with the local council. Residents said that no progress was made despite letters being addressed to the municipality and promises that action would be taken. Some people in the community go one step further and lobby for help by going to the municipality in person. Respondents reported that although they occasionally receive responses indicating that municipal authorities will visit the area, these visits have not taken place. Residents have felt disregarded by local officials because of unsuccessful phone follow-up attempts.

Community-Led Road Repairs

According to the respondents, the absence of official backing has led to the neglect of road repairs being a prevalent practice in the community. In addition to renting trucks to move supplies, residents pool their resources to buy commodities like concrete, sand, and cement. They mix building materials using their own equipment, such as wheelbarrows and spades, and bring water in their cars. Since potholes and steep slopes present the biggest mobility challenges, these areas receive many repairs. Respondents did concede, though, that these repairs are only temporary because they are made by untrained personnel using subpar supplies. As a result, roads deteriorate rapidly, causing the community to frequently repeat this process. Participants bemoaned the cost of these initiatives, emphasising that they sacrifice limited resources to preserve fundamental accessibility.

Discussion

The purpose of this study was to examine the challenges associated with road infrastructure in the Galili community and to explore the measures adopted by community members to address these challenges. The results showed socioeconomic disruptions from poor roads, restricted access to emergency services, health concerns from dust exposure, and significant seasonal vulnerabilities. Although these actions were mainly unsustainable and showed systemic neglect, community reactions included resource pooling, advocacy through local government systems, and informal repairs.

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The data shows that Galili's inadequate road infrastructure is a structural impediment with repercussions on the social level rather than just a technical one. In line with previous studies that link rural road degradation to ingrained poverty and fewer possibilities for livelihood, seasonal deterioration, especially during the rainy season, limits mobility and access to necessary services (Pillay, 2023). The community's reliance on unofficial repairs supports the idea that rural municipalities frequently struggle with resource limits and governance inefficiencies by highlighting the continued neglect of infrastructure and the lack of institutional responsiveness (van Rensburg & Krygsman, 2019).

The results also highlight health hazards during dry seasons, when exposure to dust impairs respiratory health, especially for susceptible populations, including the elderly and children. These findings align with research that links poor rural road conditions to reduced quality of life and public health consequences (Nkomo et al., 2016).

The findings of this study are consistent with national and international research on the problems facing rural infrastructure. In line with the conclusions of Nkomo et al. (2016), the Galili scenario illustrates how poor drainage makes road degradation worse. Additionally, the identified obstacles to emergency medical access are consistent with the findings of Ikuabe et al. (2021), who highlight how inadequate rural road networks put lives at risk by delaying healthcare treatment.

However, by describing the agency of rural communities in reducing infrastructure failures, this research offers a fresh viewpoint. Although earlier research recognised the value of participatory methods (Pillay, 2023), few of these studies offer detailed information on community-driven initiatives like combining resources for road repairs. Despite being unsustainable, this localised adaptation exemplifies social solidarity and resilience, two fundamental concepts in ecohumanist discourse.

The ecohumanist perspective emphasises the connection between social justice, sustainability, and human dignity by framing infrastructure as an ethical and ecological issue (Patterson, 2008). Road failures that prevent Galili residents from accessing markets, healthcare, and education are a violation of their fundamental human rights to movement and well-being. While admirable, community members' self-organised repairs highlight structural injustices that go against ecohumanist principles of shared accountability and equitable resource distribution. Furthermore, sustainability is further complicated by the environmental effects of improvised repairs, such as the use of non-sustainable materials.

The results point to the need for immediate policy changes in the governance of rural infrastructure. First, climate-resilient road designs that can tolerate seasonal variations should be incorporated into proactive maintenance plans in favour of reactive ones (Khatri, 2022). Second, community involvement could be formalised and legitimised through institutional frameworks for participatory budgeting, guaranteeing that local knowledge enhances technical skills (Makinde et al., 2025). These methods are consistent with ecohumanist pledges to promote equitable development and participatory governance.

Conclusion

This study examined the challenges associated with road infrastructure in the Galili community and explored the measures adopted by residents to address these challenges. Under the aegis of ecohumanism, the study aimed to shed light on how human well-being is impacted by inadequate infrastructure and how local agency arises in situations including resource constraints and governance. This investigation was structured by two research questions:

What are the road infrastructure issues in the Galili community? What steps might be taken to resolve the issues that have been identified?

The results show that Galili's road infrastructure deteriorates significantly during the rainy seasons, leading to inaccessible routes, disruptions in mobility, and a lack of access to necessary services. Excessive dust increases health hazards and jeopardises cleanliness during dry periods. Other issues include inadequate drainage systems that exacerbate flooding and property damage, a lack of dependable emergency access,

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and public transportation operators avoiding the neighbourhood. These results are consistent with earlier studies that found a connection between poor rural roads and social exclusion, poverty, and health risks (Nkomo et al., 2016; Pillay, 2023).

Responses from the community were noteworthy but not long-lasting. Self-funded repairs were common among residents, who pooled funds for short-term fixes with subpar materials. Even though these actions show resiliency and teamwork, they also highlight structural disregard on the part of local government. Political mistrust was cultivated as a result of the significant failure of attempts to involve local government mechanisms. These factors support grave concerns that institutional flaws and a lack of ability plague South Africa's rural road governance (van Rensburg & Krygsman, 2019).

The study advances ecohumanist studies by redefining infrastructure as a socio-ecological and ethical problem. Road networks are the cornerstone of justice, dignity, and sustainable lives; they are more than just useful resources. Therefore, inclusive governance, participatory planning, and climate-resilient designs must be given top priority in policies pertaining to rural infrastructure (Khatri, 2022). To ensure that local knowledge complements professional skill, practical methods should include structured community collaborations, clear reporting mechanisms, and allocated funds for rural road maintenance.

While the qualitative approach provided deep insights into the Galili community, the study's geographic focus limits its generalisability. Future studies might use mixed-method techniques, compare designs across various rural settings, and assess the ecological sustainability of community-led repairs. The long-term impacts of participatory governance approaches on infrastructure resilience might be better understood through longitudinal research.

Resolving issues with rural road infrastructure is both morally and developmentally necessary. Galili demonstrates how infrastructure neglect runs counter to ecohumanist ideals of justice and sustainability by limiting opportunity, compromising health, and perpetuating inequality. To turn rural mobility into a means of achieving equitable and sustainable development, infrastructure policy must incorporate human dignity and ecological responsibility.

Recommendations

The study's conclusions highlight the pressing need for multi-level actions to address the Galili community's ongoing problems with rural road infrastructure. The recommendations are based on ecohumanist concepts, which place a high value on social justice, ecological sustainability, and human dignity (Patterson, 2008). These recommendations focus on three interconnected areas: community-based initiatives, policy-level reforms, and future research areas.

Policy-Level Recommendation

Institutionalise Proactive Maintenance Frameworks

Instead of using reactive measures, local and district municipalities must implement preventative maintenance plans. This necessitates setting up specific funds for regular grading, drainage upgrades, and prompt repairs. Research indicates that in rural transport networks, preventive maintenance dramatically lowers long-term expenses and service interruptions (van Rensburg & Krygsman, 2019).

Adopt Climate-Resilient Road Designs

Galili roads' susceptibility to seasonal changes emphasises the necessity of context-appropriate building codes. To endure intense rainfall and reduce erosion, municipalities could use climate-resilient materials like stabilised gravel and reinforced culverts (Khatri, 2022).

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Strengthen Participatory Governance Mechanisms

The current methods of engagement, which are restricted to pre-election gatherings, erode accountability and community confidence. To ensure that citizens have a say in infrastructure planning and funding allocation, municipal governments should set up official participatory forums like road-user committees (Makinde et al., 2025). This is consistent with ecohumanist pledges to promote equity and inclusive decision-making.

Community-Level Recommendations

Formalise and Support Community Road Maintenance Groups

According to the report, locals already use their own resources to perform ad hoc repairs. Municipalities ought to formalise these initiatives by providing technical assistance and material grants. Community-Based Maintenance Programmes provide models for partnership-driven sustainability and have been effectively implemented in other sub-Saharan contexts (Nkomo et al., 2016).

Promote skills transfer and local employment

Labour-intensive techniques should be used in road repair projects, giving local employment and capacity building the priority. In line with ecohumanist ideas of social justice and human development, this strategy not only maintains infrastructure but also helps to reduce poverty (Pillay, 2023).

Future Research Recommendations

This study identifies two key areas for further inquiry:

- Longitudinal assessment of community-led interventions: Future studies should look into the socio-ecological effects and durability of community-driven road maintenance approaches over an extended period.

- Case studies that compare different provinces: Examining differences in road conditions and governance methods among rural municipalities would offer a more comprehensive body of evidence for policy innovation and harmonisation.

Community groups, civil society, and local government must work together to implement these proposals. Policymakers may design transport systems that not only facilitate movement but also uphold environmental responsibility and human dignity by incorporating ecohumanist ideas into rural road governance.

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