**INTEGRATING CIVIL ENGINEERS AND OTHER STAKEHOLDERS INTO THE REVITILIZATION PROCESS OF SMALL TOWNS AND RURAL COMMUNITIES**

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**Abstract:** Rapid urban growth often has adverse effects on a nation's economy, rural development, and available amenities. This emphasizes the importance of addressing the revitalization of small towns and rural communities. To achieve this, it is crucial to identify and integrate all stakeholders into the revitalization process effectively. This paper examines the essential roles that civil engineers play in the successful implementation of revitalization projects. The study highlights that the revitalization process encompasses planning, design, construction, and sustainability, and classifies stakeholders into end-users and interceptors, with civil engineers being one of the key interceptor stakeholders. The paper emphasizes the significant role of civil engineers in the revitalization process, stressing that their contribution is essential. The involvement of civil engineers, along with other stakeholders, in the master planning of each stage of revitalization ensures realistic and cost-effective plans, as well as quality, safety, and timely execution. The roles of civil engineers include surveying proposed towns/communities and designing various infrastructural facilities such as road networks, water supply and management schemes, irrigation systems, wastewater disposal systems, flood control systems, security structures, bridges, drainage networks, market stalls, modern buildings, and others. In conclusion, the paper recommends the proper integration of civil engineers into the revitalization process from the planning stage. It also suggests that donor agencies, NGOs, governments at different levels, and other stakeholders should involve civil engineers in their plans for revitalizing small towns and rural communities. This paper serves as a valuable resource for all those involved in revitalization projects.

**Keywords:** civil engineers, revitilisation process, stakeholders, sustainability, small towns and rural communities.

**1.0 Introduction**

Small towns and rural community revitalization appear to be a more appropriate approach to address challenges faced by Africa and other developing countries (Małgorzata and Magdalena, 2015; Kidokoro et al., 2008). For a nation's balanced growth, it is essential that small towns and rural communities grow into larger centers. However, in many African countries, rural areas and small towns, especially in remote locations, have declined, while some others near urban areas have been absorbed into urban expansion (Hasan, 2017). This poses a serious threat to a nation's growth as each of these geographical components contributes to the nation's economic prosperity. The decline of rural communities and small towns results in the loss of their potential contributions to the overall development.

To address this issue, urgent attention should be given to the revitalization of rural communities and small towns, a practice already undertaken in countries like Japan. This approach has yielded positive effects on long-term depopulation, urban migration, and agricultural productivity (Hasan, 2017). Revitalization processes have successfully transformed abandoned areas and wastelands into resourceful lands with new functions, enabling communities to effectively manage their local resources. This, in turn, has positively impacted urban growth and Japan's national income (Małgorzata and Magdalena, 2015).

However, achieving rural community revitalization requires proper infrastructure planning. The involvement of civil engineers becomes crucial in effectively planning and implementing the necessary infrastructure for successful revitalization. This calls for collaboration among all stakeholders, integrating their roles and responsibilities into the revitalization process.

The focus of this paper is to explore the position and roles of civil engineers in the revitalization of rural communities and small towns in Africa, emphasizing the need for proper integration of all stakeholders. The paper also addresses key areas that enhance readers' insights into the revitalization of small towns and rural communities. It serves as a vital resource for government bodies, non-governmental organizations, donor agencies, and other stakeholders involved in revitalization efforts. Additionally, the paper contributes to the limited literature available on the subject of rural community and small-town revitalization.

**2.2 African Rural Communities-Small Towns and Challenges facing their Revitilisation**

Rural areas and small towns face similar challenges in terms of their growth and development (Jacob et al., 2001). Both can be described as landscapes and geographies that have not been fully shaped by human development, serving as a link between human societies and the natural environment. They play a crucial societal role in connecting human populations with natural places. These areas often harbor natural resources that contribute to the development of urban centers, as cities rely on them for basic needs such as food, building materials, and energy. Revitalizing abandoned rural areas can significantly contribute to a nation's income and the well-being of the people living in and around these regions (Howe et al., 1997; Keller, 2001).

The concept of revitalization aims to revive and rejuvenate these abandoned rural areas, especially in developing countries, to prevent their extinction (Hasan, 2017). Revitalization involves various efforts, including revalorization, restoration, reconstruction, modernization, and actions to revive buildings, social amenities, and the devastated social and economic structures. Many countries, such as Japan and Berlin, have successfully utilized revitalization to harness their local resources and transform abandoned areas into valuable assets (Małgorzata and Magdalena, 2015).

However, the process of revitalization comes with challenges that need to be addressed, and this paper aims to explore these challenges. Properly identifying and integrating all stakeholders involved in the revitalization process can effectively handle these challenges and ensure the successful revival of these areas.

**2.2.1 Challenges facing Revitilisation of Small Communities and Rural Areas**

The challenges encountered in revitalizing small communities and rural areas, particularly in developing African nations, are numerous, with this paper focusing on the most distinctive ones. These challenges encompass insufficient government funding, weak institutional and organizational structures, issues regarding project sustainability, conflicts of interest among stakeholders, variations in schemes, political interests, inadequate technical skills among end-users, and a lack of interest in local activities like farming.

**Inadequate Funding from the Government**

Despite the numerous policies and programs designed by governments at all levels, rural areas and small towns often receive the least attention in terms of project funding (Hall and Aliber, 2010). The budget allocation percentage for rural areas in the national budget is consistently very low. While many of these government efforts aim to empower rural dwellers, little attention is given to other projects that could make this empowerment sustainable (Greenberg, 2010). As a result, some of the empowered individuals end up migrating to urban centers due to the lack of social and infrastructural amenities in rural areas to support their newly acquired skills and sustain their businesses. This situation leads to the unfortunate consequence that the empowerment meant to contribute to rural development ends up contributing to its decline.

Moreover, some of these individuals become exposed to urban life while traveling to urban centers for empowerment that ideally should have been provided in their rural communities. It is worth noting that the cost of executing a bridge project in an urban center may be sufficient to revitalize a rural area, attracting comparatively more benefits.

Hence, it is crucial for the government, as a significant stakeholder in small towns and rural communities, to continually prioritize and allocate sufficient resources to these areas in the budget. Such a change in attitude should be consistently emphasized until it becomes embedded in the system and genuinely reflects in the budget allocation. Unfortunately, the government's approach may also impact foreign government intervention in the revitalization process.

**Weak Institution and Organizational Structures**

One of the critical factors for achieving sustainable poverty reduction among rural residents is enhancing institutional and organizational capacity-building within the community (Audinet and Haralambous, 2005). Institutions, as described by (Edquist and Johnson, 1997), encompass common habits, established practices, rules, or laws that regulate interactions between individuals and groups.

The revitalization process involves multiple stakeholders, and without a well-articulated guiding policy, it becomes challenging to derive substantial benefits from the process. The policy should establish a structure defining the input of each stakeholder, a monitoring mechanism, and the anticipated benefits for individuals. This will create a clear understanding among stakeholders of the importance of their active participation in making the process successful and will help them see their contributions in the overall project.

**Project sustainability**

Sustainability has emerged as a crucial concern in various developmental projects and interventions. It refers to the process or ability to maintain, support, uphold, or affirm the ongoing viability of a project. Despite the efforts put into many interventions, their impact on the revitalization of rural communities and small towns has often been limited or ineffective. The main reason for this, as pointed out by Mosad (2008), is that such intervention projects are not sustained by the rural dwellers. One of the key causes for this issue is the failure to adequately integrate end-users into the planning, design, and construction of the projects.

An approach developed by the Local Empowerment and Environmental Project (LEEMP), a World Bank initiative, involves a people-driven project, as outlined by Mosad (2008). In this approach, the local communities are informed about the intervention from the outset, and they are guided through the application process. They are encouraged to conduct a baseline study to identify their specific problems and propose solutions. The project execution policy is drafted by the community members under professional guidance. Moreover, they are trained in selecting appropriate contractors and given the skills to effectively supervise and maintain the project. The involvement of civil engineers and other professionals in guiding the community ensures that they are well-equipped to sustain the project after its completion. This stands in contrast to many interventions that lack such comprehensive community involvement, which leads to non-sustainability and project failure.

**Conflict of Interest among stakeholders**

All stakeholders have unique roles to play and potential benefits to derive from a successfully realized revitalization process. However, many revitalization initiatives have failed due to individual interests among the various stakeholders. The personal agendas of community leaders and other individuals could lead to the improper location of projects, ultimately contributing nothing to the revitalization process in the long run. Additionally, political interests have been a significant obstacle, adversely affecting numerous interventions. It is crucial to address these challenges in the revitalization policy and include measures to prevent conflicts from interfering or halting the revitalization process. To achieve this, it is essential to involve relevant professional stakeholders who can thoroughly analyze the issue and develop a reliable approach to overcome the problem.

Properly capturing the diverse interests and perspectives in the revitalization policy will foster effective collaboration and ensure that the revitalization process aligns with the community's needs and long-term goals. By integrating relevant professional stakeholders into the decision-making process, a well-informed and comprehensive strategy can be developed to address the challenges and pave the way for successful revitalization. This inclusive approach will not only enhance the chances of successful project implementation but also promote sustainable development and lasting positive impacts on the community.

**2.0 Rural Communities and Small Towns Revitilisation Processes**

Rural community and small-town revitalization involve primarily four stages: planning, design, construction, and sustainability. These stages must be meticulously executed to achieve the successful revitalization of the area. As illustrated in Figure 1, these four stages revolve around the concept of revitalization, making them collectively known as the revitalization process. A failure in any of these stages indicates an inadequate revitalization effort, and the rural communities or small towns undergoing such flawed revitalization may encounter issues and eventually decline in their quest for sustainability.

Properly implementing each stage is crucial as it sets the foundation for the overall success of revitalization initiatives. Careful planning is essential to identify the community's needs, resources, and long-term goals. The design phase allows for creative solutions that align with the community's unique characteristics and requirements. The subsequent construction stage brings the envisioned improvements to life, contributing to the physical transformation of the area. Finally, ensuring the sustainability of the revitalization efforts is vital to secure the continued growth and well-being of the rural community or small town. By successfully navigating through these stages, communities can foster enduring growth and prosperity.

**Figure 1: Small town and Rural Communities Revitilisation Process**

**2.1 Planning Stage**

The planning stage is the conceptualization phase, which involves gathering necessary information for designing a solution to properly implement the revitalization process. This stage provides an understanding of the communities in focus, each with their unique physical and spiritual aspects. Before initiating any revitalization intervention, it is crucial to have a comprehensive understanding of past successes and failures to address the specific challenges that need resolution in the area.

During this stage, consulting geographical and geological maps of the area and its surrounding communities is essential to familiarize oneself with the terrain and natural features. If such maps do not exist, generating them may be necessary. Properly understanding the area's geology will help geotechnical engineers and other professionals in selecting suitable geotechnical foundations for the proposed revitalization structures. Additionally, having a map will aid in proper referencing and further development research in the area.

In the planning stage, it is vital to integrate all stakeholders involved in the revitalization exercise and consider their perspectives. The subsequent section of this paper presents these stakeholders in detail.

**2.2 Design Stage**

The design stage involves generating appropriate solutions to the problems identified during the planning stage. Since it is not possible to address all the community's issues at once, prioritization of the solutions may be necessary. Problems that have direct links with others should be given higher priority. These projects include road networks, security facilities, health facilities, water management schemes, power supply, and more. Each project undergoes a design loop process to develop cost-effective, easily executable, and maintainable solutions, involving problem identification, research, generation of solutions, selection of the most viable option in terms of cost and quality, construction, and model testing (see figure 2). If the solution is deemed suitable, it is adopted, otherwise, another solution is selected and goes through the process again. Sustainability considerations must also be integrated into the design.

The specifications, drawings, and costs of the adopted solution are prepared and can be incorporated into the revitalization working document. This stage involves collaboration among various professionals from the stakeholders, but the decisions should be end-user-centered, with end-user preferences taking precedence, although proper guidance should be provided.

A baseline report, outlining the planning and design processes, as well as the execution procedures for the preferred design, needs to be prepared for documentation. This report will serve as a valuable resource and reference material during and after the revitalization project, aiding in monitoring, evaluation, and ensuring the project's sustainability.

Identify the

Problem

Research the

Problem

Find Possible

Solutions

Select

One Solution

Construct an

Initial Design

Test and Modify

Design

Present Your

Design

Redesign

Design Process in the Revitilisation of small towns and rural communities

Figure 2: Design Process Loop

**2.3 Construction Stage**

The stage where the chosen revitalization solution is put into action is known as the construction stage, also referred to as the execution stage. During this phase, construction materials are utilized, and it is essential to prioritize the selection of locally sourced materials from end-user stakeholders within the community and neighboring areas. If any materials, technical equipment, or tools need to be purchased from the city, the end-user should be actively involved in the procurement process.

Additionally, human resources, including unskilled, semi-skilled, and skilled workers, play a crucial role in this stage. While finding skilled resources among the end-users can be challenging, it is important to give priority to engaging them if available. In situations where semi-skilled individuals can be trained to handle skilled tasks, providing training will be highly beneficial for the revitalization process, especially concerning the project's long-term maintenance and sustainability. By involving end-user stakeholders in the work, a higher sense of responsibility and commitment is likely to be exhibited during project execution, empowering the community and reducing costs during the sustainability stage. Moreover, keeping the resources invested in revitalization within the community will contribute to continuous development, except when end-user stakeholders divert funds to the city.

If sourcing skilled resources among the end-users proves extremely difficult, other relevant stakeholders within the interceptor should be considered. However, it is essential to mandate such stakeholders to provide the necessary capacity building for end-users to master the technology used, ensuring the project's long-term sustainability. The activities of the involved stakeholders must be supervised by the end-users and must adhere to the construction procedures outlined in the baseline report.

**2.4 Sustainability Stage**

Sustainability stage can be referred to as maintenance stage. This is a stage where the revitilisation project is kept renewed on daily basis. This is done with a view to ensure that the project continue to deliver the goal of revitilisation. This is a critical stage that without its success, all the other three revitilisation process will amount to a waste. Although, the revitilisation process awareness might have been achieved but the main vision which is to make community to be revived will soon die off (Kidokoro *et al.,* 2008). The other three processes contribute immensely to this stage. Therefore, a proper implementation of the other three stages implies that the problem of sustainability would have been halved solved. In order to fully ensure sustainability of the project, a structure must be put in place to ensure routine and periodic maintenance of the project. This is expected to be included in the baseline report. The use of monitoring and evaluation (M&E) tool must also be employed. This must be well taught to the end-user for their implementation.

In the sustainability stage, the end-user stakeholders have more stakes because they are the user of the projects. This is the reason why the project must be end-user driven.

**3.0 Stakeholders and their responsibilities**

In the implementation of the revitalization process, various individuals must be involved, referred to as revitalization stakeholders in this article. The stakeholders are categorized into two groups for easier reference during each stage of the revitalization process (see Figure 3). These groups consist of end-users, which includes community members, and interceptors, who stand between the revitalization process and the end-users. Active participation from all members of both groups is essential at every stage of revitalization, as they each have specific roles and responsibilities crucial for the process to proceed smoothly.

While the article primarily focuses on the responsibilities of civil engineers, it does not imply that other stakeholders' responsibilities are less important. The emphasis on the civil engineer's role is subject to review by other authors.

End-User Stakeholders

Community Members proposed to be revitalized

Members of Community around the targeted community

Members of public or company Perceived to migrate to the community after revitalization

Professionals Stakeholders

Funding/Sponsor Stakeholders

Researchers

Other Professionals such as engineer, health officer etc security

Rural Community and Small town Revitilisation Stakeholders

Interceptors

A - Spiritual fathers e.g. pastor/Imam/others

B - Community Development Association e.g. CDA

C – Youth group, D – Women group E- men group

E

D

C

B

A

**Figure 4: Small towns and rural communities’ revitilisation stakeholders**

The end-user stakeholders consist of members of the community proposed for revitalization, members of neighboring communities, and individuals or organizations that may potentially migrate to the revitalized community. Their contribution will ensure the project is driven by the end-users, enhancing its sustainability. Being end-user driven means the community itself will suggest solutions to its problems, instilling a sense of responsibility for the project's sustainability. While professionals in the interceptor group may modify or improve the suggested solutions, the involvement of end-users is crucial.

It is important to note that revitalization goes beyond physical processes; it involves reviving infrastructure, materials, and the mindset of people living in the area (Małgorzata and Magdalena, 2015). Wallace (1956) defines revitalization movement as members of a society's efforts to construct a more satisfying culture through internal revival. Therefore, spiritual leaders (Figure 3) should be properly integrated into the revitalization process, as spiritual aspects are often neglected but may be essential for certain lands to experience meaningful revitalization.

The interceptor stakeholders primarily include professionals and funders. Researchers play a crucial role by continuously studying the factors influencing the success and failure of revitalization processes, providing recommendations to other stakeholders. Engineers, health officers, security officers, financial organizations, donor agencies, non-governmental organizations (NGOs), and other relevant parties are involved in the implementation of the revitalization process. This article specifically focuses on the role of civil engineers in this implementation.

**4.0 Needful Infrastructures in Rural Communities and Small Towns Revitilisation**

Rural communities and small towns are often considered to be the best places to live in the world. These areas are less crowded, offering much more open space to enjoy fresh air. Moreover, the rates of property crime and violence are significantly lower compared to urban centers, and the air is cleaner due to less pollution from traffic and factories. Life in rural areas is characterized by less anxiety and a greater sense of relaxation, providing mental health advantages over urban dwellers. Despite these benefits, there is an increasing trend of migration from rural areas to urban centers, driven by the unique challenges faced by rural dwellers, which calls for revitalization efforts focused on addressing these issues without replicating urban problems.

To successfully revitalize rural communities and small towns, various infrastructures must be developed. These include building structures such as housing, health facilities, and storage facilities. It is crucial to establish a well-connected road network that links farm settlements to marketing places, reducing exploitation from middlemen and ensuring cost-effective transportation. Prioritizing the construction of road networks is essential in minimizing overall revitalization costs. Additionally, proper planning should incorporate drainage structures into road networks to ensure effective water management.

In this revitalization process, all stakeholders must be actively involved, especially civil engineers, as they play a critical role in the success of these projects. By focusing on the necessary infrastructural developments, rural communities can thrive and offer improved living conditions while preserving their unique advantages over urban centers.

**5.0 Civil Engineers as a Stakeholder**

Civil engineering, the oldest branch of engineering, involves applying knowledge from mathematics and physical sciences to connect available materials for the betterment of human existence. The profession is concerned with human development and the well-being of their environments, making civil engineers’ crucial stakeholders in the revitalization of small towns and rural communities. The field of civil engineering encompasses various categories, including surveying, materials procurement, construction technology, structural engineering, geotechnical engineering, water resources and irrigation engineering, transportation engineering, hydraulic engineering, environmental engineering, architecture, and town planning.

During the planning stage of revitalization, it is essential to establish the area and relative positions of features like rivers and rocks in the proposed community. This information is used to create a revitalization plan, guiding the distribution and location of proposed infrastructures. Engineering surveying plays a vital role in this process.

During the construction stage, different materials are needed, and a Material Engineer can effectively procure these materials, including stones, timber, sand, bricks, cement, and more. Local sourcing of materials not only saves costs but also benefits the community's economy. Construction technologists are responsible for carrying out the construction of various engineering structures, while geotechnical engineers ensure the soil's suitability to support the structures safely.

Structural engineers analyze and design the stability of revitalization structures against external forces, ensuring their safety. Water and road networks are crucial components of revitalization, requiring the expertise of water and highway civil engineers to plan and design cost-effective and convenient systems. Additionally, environmental engineers and architects collaborate to address environmental concerns and create an aesthetically pleasing community that attracts investors and end-users. Overall, these various disciplines work together to achieve successful revitalization and sustainable development.

**5.1 Specific Roles and Responsibilities of Civil Engineers in the Revitilisation Process**

As evident from the findings of this review, civil engineers play a significant role in the revitalization process of small towns and communities. Therefore, it is crucial to clearly understand their roles and responsibilities to ensure effective collaboration with other stakeholders. Some of these roles include designing structures, preparing a Bill of Engineering Measurement and Evaluation (BEME), procuring materials, constructing structures, developing sustainable maintenance approaches, monitoring and evaluating projects, and providing capacity building to end-users and other stakeholders related to project maintenance.

The civil engineer carries the responsibility of ensuring that the community proposed for revitalization is built in a manner conducive to living. This involves incorporating essential amenities such as health centers, efficient communication systems, water supply, and road networks within the budget allocated for revitalization. To achieve this, the engineer prepares the Bill of Engineering Measurement and Evaluation (BEME), which outlines the step-by-step procedure for the proposed work, specifications of materials to be used, their quantities, and the associated costs, including materials and construction expenses.

In the procurement of materials and services, the engineer collaborates with an account officer to ensure proper implementation of the procurement process. In some cases, the engineer may also serve as the procurement officer for the revitalization project, obtaining at least three different price quotes for each work item and selecting the lowest viable price. To ensure the sustainability of the revitalization projects, ongoing monitoring and evaluation are essential, tasks in which the civil engineer must actively participate.

**6.0 Conclusion and Recommendations**

Revitalization is a well-established concept in nation-building, aiming to transform underdeveloped areas into thriving regions that can effectively retain and benefit their residents, reducing the need for migration to other places. This paper focuses on the revitalization of rural communities and small towns, outlining the various processes involved and the key stakeholders required for successful implementation. The role of civil engineers in this process is emphasized, highlighting their significant contribution from the planning to the sustainability stages of revitalization.

The paper identifies four essential stages that revitalization must go through to achieve its objectives: planning, design, construction, and sustainability. The stakeholders involved in these stages include the end-users and interceptors, with civil engineers being one of the crucial interceptor stakeholders. During the planning stage, civil engineers play a vital role in conceptualizing appropriate infrastructural projects tailored to address the specific issues of the community. They are also responsible for preparing essential documents, providing cost estimates, and supervising technically complex projects. Additionally, they train the end-users on effective sustainability approaches to maintain the projects.

***Based on these findings, several recommendations are proposed:***

- Properly integrate civil engineers into the revitalization process to ensure its successful implementation and cost-effectiveness.

- Make revitalization projects in rural communities and small towns end-user driven whenever possible, encouraging community involvement and fostering sustainability.

- Ensure all stakeholders are involved from the planning stage to optimize expertise and resources and streamline the revitalization process.

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