Social Science and Humanities Journal
Everant Journal
ISSN: 2456-2653
https://sshjournal.com/
Impact Factor: 2024: 6.576
2023: 5.731
Volume 09 Issue 12 December 2025
DOI: https://doi.org/10.18535/sshj.v9i12.2065

Role of Rwandan Local Governments and Community Based Organisations (CBOs) in Karongi's Environmental Sustainability

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Received 20-10-2025
Revised 30-11-2025
Accepted 03-12-2025
Published 06-12-2025

Abstract:

This study examines the collaboration between local governments and Community-Based Organizations (CBOs) in promoting sustainable environmental practices in Karongi District, Rwanda. Using stakeholder theory and a qualitative approach involving interviews, Focus Groups (FGs), and document analysis, the study evaluated forest conservation, water management, and waste reduction initiatives. Participants included government officials, CBO representatives, community leaders, and program beneficiaries. Findings reveal that local governments enforce regulations and community programs, while CBOs enhance capacity, awareness, and resource mobilization. Challenges include limited funding, technical skills, climate change, land pressure, and low participation. Strengthened collaboration and policy support are vital for advancing environmental sustainability.

Keywords: Environmental sustainability, local governments, CBOs, community engagement, policy analysis, sustainable development.

Introduction:

Rwanda wants to become a leader in environmental sustainability by achieving climate resilience by 2050 (Kabera & Mutavu, 2023). The nation has taken major steps to address environmental preservation and fight climate change over the years, incorporating these initiatives into its main development goals, regulations, and programs. Rwanda is striving to become a low-carbon, climate-resilient country. The government has started large-scale initiatives to put policies that support a sustainable environment into effect in order to achieve this aim (Kabera & Mutavu et al., 2023).

According to REMA (2018&2019), global changes in temperature and precipitation are driving climate-related hazards such as floods, landslides, and droughts, which have had severe impacts on Rwanda's population in recent years. These climate events have disrupted various sectors, including the livelihoods of rural communities, food security in urban areas, agriculture, transportation, communication, energy, health, water resources, and institutional systems that communities rely on, in some cases leading to their failure (Iradukunda et al., 2024).

The Karongi District in the Western Province of Rwanda presents an illustrative case on how to

understand the role of local governments and CBOs collaborating to promote environmental sustainability. With its rich biodiversity, agricultural activities, and proximity to Lake Kivu, the district faces unique environmental challenges such as deforestation, soil erosion, floods from heavy rainfall and water pollution (Rwanda Red Cross Society, 2023). It however offers opportunities for innovative sustainability initiatives that balance environmental conservation with socio-economic development.

This analysis seeks to explore the contributions of Rwandan local governments and CBOs in promoting environmental sustainability in Karongi District. It examines their strategies, achievements, and challenges in implementing sustainable practices, raising community awareness, and integrating environmental policies into development plans. By understanding their role, this study aims to highlight the strengths and areas for improvement in fostering a sustainable future for Karongi District and similar regions in Rwanda.

Literature review:

The World Bank Group (WBG) (2021), reports that Rwanda faces numerous natural hazards, including droughts, floods, earthquakes, landslides, storms (such as windstorms, lightning, rainstorms, and thunderstorms,) wildfires, diseases, and epidemics. These events have had significant impacts on the lives and livelihoods of Rwandans. Since the early 2000s, the frequency and severity of disasters, particularly floods, landslides, and droughts, have increased substantially, leading to more human casualties and greater economic and environmental losses (Rwanda Red Cross Society, 2023). The effects of flooding have worsened, as recent population growth and land scarcity have pushed people to settle in flood-prone areas. Heavy rainfall, and at times flash flooding, have become more frequent, especially in the northern and western provinces which result in infrastructure damage and loss of life (World Bank Group, et al., 2021). Additionally, approximately 70% of Rwanda's population is at risk of experiencing magnitude 6.0 earthquakes, while 30% is exposed to magnitude 5.0 earthquakes. In 2008, two earthquakes struck within hours of one another (magnitudes 6.1 and 5.0), killing nearly 40 people and destroying 1,201 homes in the hardest-hit districts of Rusizi and Nyamasheke, in the Western province (Government of Rwanda, 2022).

According to Kabera et al., (2023) conservation and restoration projects began in the 1920s, indicating that Rwanda's environmental problems have been addressed since the colonial era. The creation of Akagera National Park in 1935 was the result of these early actions. Along with other East African countries like Kenya and Tanzania, Rwanda still faces serious environmental problems such as soil erosion, deforestation, landslides, droughts, high risk zones, resource depletion, and water pollution in spite of these efforts (Radeny et al., 2022).

Clay (2018) highlights that Africa exhibits significant biophysical variation in its mountain landscapes, which is also evident in southwestern Rwanda, particularly in highland areas. This variation presents considerable challenges for agricultural development, including issues related to water availability, soil erosion, and reduced productivity. Poor environmental management in rural agricultural areas further contributes to the unsustainable exploitation of the land.

National Institute of Statistics of Rwanda (2022) reported that Karongi District is located in Rwanda's Western Province, with Rubengera serving as its capital. The district has a population density of 380 individuals per square kilometer making it one of the most densely populated. Karongi shares boundaries with the Democratic Republic of Congo and Lake Kivu to the west, Rutsiro to the north, Ngororero and Muhanga districts to the northeast, Nyamasheke and Nyamagabe districts to the south, and Ruhango district to the east. With a population of 331, 808,

spread across 77,000 homes, Karongi District occupies 993 km². 13 administrative sectors make up Karongi District, which is further split into 538 villages and 88 cells (Akagari) (REMA, 2019).

The altitude of Karongi district is high and was reported by REMA, (2019) as one of Rwanda's regions with high rainfall. Actually, in Rwanda between 1990 and 2016, the long-term average annual precipitation ranged from 805 to 1,725 mm, with an average annual rainfall of about 1,116 mm. Its precipitation is highly uneven, with the northwest receiving more rainfall than other regions (Yang et al., 2021). The amount of rainfall in the district benefits the area and It is characterized by two dry seasons covering the period from December to January and from June to mid-September, and It is also characterized by two rainy seasons the long rains start in midSeptember and end in December and from February to June with an annual average of temperature varying from 16°C to 21° 5C Annual rain falls ranging from 1100 to 1500 mm, thus these features are favorable to agriculture and livestock development.

Its agricultural activities and livestock farming remain the key economic activities. Around 73.7% of households depend on farming, and their revenue is from agricultural activities (Neglo et al., 2021). This means that 85.2% of the households are involved in agriculture. Among the export crops, coffee, tea, and macadamia are the main commercial crops found in the area, while food crops produced in the area comprise maize, sorghum, beans, soybeans, peas, Irish potatoes, bananas, cassava, wheat, vegetables, and fruit trees. The main crops that are cultivated on large land by most of the farmers include beans, sorghum, soybeans, legumes, bananas, maize, potatoes, peas, wheat, and fruit trees. In rural areas, farmers rear some animals such as cows, sheep, goats, pigs, and poultry (REMA, 2019). Karongi district has different projects and among them are the Karongi Integrated Green Village which aims to reduce vulnerability to environmental challenges, build resilience to environment and climate related pressures to improve livelihoods of 854 vulnerable households in Gahabwa and Nyamuhebe villages. It is administered by Rwanda Green Fund who suggested that people who are living in Karongi district are exposed to climate related pressures such as unsustainable land, water and soil management practices, flooding and landslides. Intense rainfall has led to loss of lives and property. In addition, it led to soil erosion since the land is bare due to deforestation (Rwanda Green Fund, 2017).

Before 2008, environmental management for sustainable development was primarily overseen by the Rwanda Environmental Management Authority (REMA), which was created under Organic Law No.04/2005 of 08/04/2005. REMA was the primary institution responsible for coordinating and ensuring that EIAs were carried out for both public and private development projects. With the introduction of the Rwanda Development Board (RDB) in 2008, under Organic Law No.53/2008, a new entity was established to accelerate developmental initiatives. RDB was tasked with facilitating investment and ensuring compliance with environmental regulations, working in collaboration with REMA to uphold environmental standards in line with national legal frameworks (Kabera & Mutavu et al., 2023).

Local governments and CBOs have a clear responsibility to address the increasing needs of residents, particularly in relation to climate change, which impacts all aspects of human life. To improve environmental quality, the government has invested financially through a "race to the top" approach, aimed at discouraging activities that violate high environmental standards (Mughal et al., 2024).

In Rwanda, agriculture presents significant growth potential, but it faces major challenges due to climate change, which impacts land use through soil erosion and landslides. It is estimated that the

country loses around 595 million tons of soil each year. These challenges lead to a 30% reduction in crop yields and exacerbate food insecurity (Seppelt et al., 2022). As a result, many people are forced to exploit the environment unsustainably for survival, contributing to deforestation and land degradation. These issues ultimately hinder agricultural productivity (Sunday et al., 2024).

In different areas of Rwanda, particularly Karongi district, we find waterhole areas because of human activities including agriculture, mining of stones in high risk zones, and landscape areas. The expansion of areas due to building of houses and roads on high risk zones has left the population susceptible to death during rainy seasons. This negatively affects its population and environment from over-exploitation that leads to food insecurity. Large-scale destruction of forests caused changes in the water conservation function of forests, which altered the groundwater cycle at the watershed Karongi District (2023).

The 2018 report by REMA on climate change indicates that Karongi District is the most vulnerable among the seven districts, followed by Nyamasheke and Ngororero districts (Republic of Rwanda, 2018). This aligns with their assessment, which identifies these areas as being significantly impacted by climate change. Although Ngororero District has a high adaptive capacity, it was unable to fully mitigate the high impact of climate change, which notably increased its vulnerability. When all districts in the country are ranked, the districts of Western Province generally fall under the medium vulnerability category, with the exception of Karongi District, which is classified as having high vulnerability (Republic of Rwanda at al., 2018)

In Karongi District, several Community-Based Organizations (CBOs) such as One Acre Fund (OAF), ARCOS, and Agriterra are actively addressing climate change challenges through initiatives like improved seed production, irrigation systems, and crop and livestock insurance. These efforts are particularly crucial in mitigating the impacts of soil degradation caused by floods, infield flooding, and droughts, which result in significant soil moisture loss. These CBOs collaborate closely with local government authorities to promote sustainable environmental practices (Rafique & Khoo, 2018).

For instance, in 2022, One Acre Fund distributed 20 million timber trees and approximately 350,000 grafted avocado seedlings to enhance reforestation and agricultural productivity (Rwanda Green Fund, 2024). Additionally, CARITAS/Kibuye introduced projects in the Rubengera sector focusing on restoring degraded land through soil erosion control, forest rehabilitation, and sustainable land management. These efforts aim to reduce vulnerability to natural disasters and enhance agricultural productivity, benefiting 27,895 community members. World Vision is also playing a critical role in helping communities in Karongi District adapt to the adverse effects of climate change. Their initiatives address key climate challenges, including floods, landslides, droughts, and severe storms, which threaten livelihoods, food security, and natural resources (Rwanda Green Fund at.,2024).

Objectives:

The study sought to:

1. To assess the initiatives and strategies implemented by local government and CBOs in Karongi District to promote environmental sustainability.
2. To evaluate the contribution of 2 CBOs in raising awareness, supporting environmental conservation, and implementing sustainability projects in Karongi District.
3. To develop and recommend at least three practical strategies for improving collaboration between local governments and CBOs in tackling environmental issues in Karongi District.

The theoretical framework

Stakeholder theory was used in this study to make it easier to bring efforts for all concerns in a sustainable environment (Mahajan et al., 2023).

Used a range of normative principles or strategies to address the issues the district encountered, in order to promote environmental sustainability and guarantee that natural resources which are conserved for current and future generations (Hörisch et al., 2014; Sathasivam et al., 2021). This idea suggests that all stakeholders including local people, environmental organisations, environment boosters, or environmental advocacy groups and policymakers should be included in their decision-making. Multiple partnerships, involving the community, CBOs, and local governments, make it easier to communicate and produce long-lasting results (Freeman et al., 2021).

Methodology:

A qualitative approach method to gather in-depth and broad data about the roles and effectiveness of local governments and CBOs in promoting environmental sustainability was adopted for this research (Du et al., 2024). This method was applied in order to understand perceptions, strategies, and hindrances on collaborations that may exist between local authority and CBOs (Rahman et al., 2024). Semi-structured interviews with key stakeholders who included 2 local government officials, 2 representatives from CBOs and 2 community leaders focusing on understanding their roles, strategies, and challenges were conducted (Nkhabu, 2021). A Focus Group Discussion (FGD) was organized with 5 community members who are beneficiaries to different conservation and sustainability programmes to explore their experiences and perspectives on sustainability initiatives in their area. This was also accompanied with a review of policy documents, government reports, CBO project reports, and environmental plans to understand strategies and contributions made by these departments in ensuring sustainability (Martin et al., 2025).

Findings and Discussion:

Local governments and community-based organizations (CBOs) in Karongi District have implemented various initiatives and strategies to address environmental sustainability. These efforts aim to mitigate environmental degradation while fostering community participation and sustainable development. The key initiatives and strategies undertaken by these entities includes:

Reforestation and afforestation programs:

Respondent number D1 from the District office highlighted that “local government and CBOs have promoted tree planting campaigns to combat deforestation and soil erosion. Programs such as "Umuganda" (community work) and volunteering by youth often involve afforestation and reforestation activities” in line with the Forest Sector Strategic Plan (FSSP) 2018-24. These programs have contributed to restoring degraded land, reduction in soil erosion, and increasing carbon sequestration. Ewane (2024) backed it up by stating that volunteers were employed to promote environmental sustainability. However, they encountered difficulties brought on by rivalry for land usage and poor tree maintenance follow-up. Respondent NGO 2 endorsed this, stating that their organisation, the community, and the district environmental department worked together to further conservation initiatives. A Community leader (CL1) claims that native tree species have been planted in Rwanda for a long time. However, many native species became scarce or even extinct as a result of their neglect in favour of exotics. Through discussions and efforts, the government has played a role in protecting the environment (Kim et al., 2021).

ARCOS has collaborated with schools to promote the Eco-Schools Programme, which emphasizes hands-on, project-based learning to cultivate environmental awareness and responsibility among students. Through this initiative, schools were supported in water conservation efforts, covering areas like water management, waste reduction, energy efficiency, and nature conservation. For example, TVET G.S. Gisovu in Karongi District benefited from the construction of a greenhouse, allowing students to apply

theoretical knowledge by growing vegetables. According to Copsey et al. (2024) confirmed the roles of CBOs in support of climate sustainability through quality education and Eco-Schools.

CARITAS Kibuye, through the Tubeho Neza project, has worked to raise environmental protection awareness while improving access to tools and materials that promote the sustainable use of natural resources and reduce greenhouse gas emissions (Hegab et al., 2023). The project has also focused on water resource management, enhancing drinking water supply, sanitation, hygiene, and irrigation, contributing to better health outcomes. Additionally, in 2018, a debate was introduced on the access to and use of climate information, promoting the dissemination of climate-related knowledge to more farmers in the district. It is supported by Hansen et al. (2021) that projects such as CARITAS played a great role to train farmers on a changing Climate toward productivity (Li et al., 2021).

One Acre Fund has established tree nurseries to support agroforestry efforts. These nurseries produced seedlings and have been distributed to farmers, aiding in reforestation and soil conservation in Karongi and other areas to combat deforestation and also enhance soil fertility. It was also reported that farmers got additional income sources.

Respondent FGD1 from the focus group shared that they received both training and practical skills in environmental protection while Respondent FGD 3 revealed that during Umuganda, local leaders and community members planted trees to safeguard the environment and created terraces to support residents in high-risk zones by relocating them to safer areas. Study like Desi et al. (2021) suggests that trainings as one of upgrading skills have been delivered. According to Respondent FGD5 fruit trees, vegetables, and other plants were distributed, with families actively participating in planting trees for soil protection, contributing to erosion control and overall environmental conservation. (CL2) revealed that in Karongi District, local leaders, cooperative representatives, model farmers, and police officers have received training on land use planning, environmental protection, biodiversity conservation, watershed management, and climate change strategies. Respondent FGD4 revealed the challenges such as limited financial and human resources, poor alignment of the objectives and strategies of NGOs with local government priorities, poor capacity building and follow up among local officials. Study like Doucet et al. (2024) suggests that when multiple organisations contribute to beneficiaries they sometimes get challenges due to multiple polices introduced together. Lack of execution of first objective of NGO1 to find if it can contribute to the line of the needs by beneficiaries. Local leader (CL2) reported that they collaborate with NGOs to mobilize additional funding for environmental projects, avail training for beneficiaries. Young people noted that the initiative created job opportunities and improved livelihoods through activities like tree planting, terracing, and soil erosion control. This has led to a significant increase in reforestation efforts, reduced soil degradation, and a rise in environmental awareness among the youth.

Soil and Water Conservation programs:

According to respondent D2 there has been construction of terraces as a measure to reduce the effects of landslides and flooding as experienced in the 2022-23 rain season. There is also the establishment of buffer zones along Lake Kivu, and agroforestry techniques were introduced. This is outlined in the District Forestry Management Plan (DFMP) which is administered by a permanent forest management expert team, responsible for support and supervision. In 2024 the Rwanda Forestry Authority aimed to plant 17 million agroforestry trees so as to reduce severe degradation of the natural environment and soil erosion. Respondent NGO 2 suggested that, “these measures have significantly reduced soil erosion and improved agricultural productivity”.

Nonetheless, limited resources and technical expertise remains the biggest hindrance to the scalability of the programs.

Community Education and Awareness Campaign:

Respondent NGO 2 asserted that NGOs work hand in hand with local governments to conduct capacity building workshops. Public awareness and training campaigns aimed at educating the community about the importance of conserving the environment and undertaking sustainable practices. This was corroborated with respondent D2 and Community leader (CL 2) who both indicated that the education provided was even further to provision of financial resources by NGOs for undertaking sustainable farming. “This has vastly improved our standards of living for we can produce our food and also support our families, at the same time ensuring our children are in school," explained one respondent FGD3 from the focus group. This was also supported by TAFIPRIOS et al. (2022) who contributed to community awareness toward educating people the importance of environmental protection.

CL1 shared the view that increased community involvement and participation in environmental issues enhances their ability to comprehend real issues facing their community. The community is left with no option except to unite and work as a team to ensure sustainable resource management echoed respondent 2 from the FGD2. Just as is the case in most adult literacies, some training and campaigns face low turn up rates due to competing priorities in adult lives, shared by NGO1.

Promotion of renewable energy sources:

There has been an effort to introduce energy efficient stoves which are homemade such as Imbabura suggested respondent CL2. This was corroborated with respondent D1 who highlighted that the government is supporting promotion of biogas systems at local level and improved access to subsidized solar energy solutions. Reduction in dependence on firewood and charcoal, leading to lower deforestation rates can improve air quality through charcoal stoves (Cana make), NGO2 suggested. The high cost and inaccessibility, however, remain a big challenge to widespread adoption of alternative energy efficient sources. As stated by the respondents, Rumbayan et al. (2025) demonstrated that the villages where solar energy was introduced benefited them. Respondent NGO2 emphasised that their group advocates for policies and lobby legislators to support pro-renewable energy laws and policies, such as tax breaks, subsidies, and incentives for the use of renewable energy. Access to electricity has allowed rural enterprises to remain cost-effective, according to respondents FGD1, 2, and 4. Respondent FGD2 has a wood workshop and a cassava milling machine business that runs effectively on solar power. Tazebew et al. (2023) backed up the idea that local biogas systems and easier access to solar energy solutions have been implemented to boost the use of renewable energy sources.

Collaboration with Community-Based Organizations (CBOs):

Respondent CL2 viewed partnerships existing between local government, cooperatives and CBOs as critical in integrating environmental conservation into the community’s way of living, such as eco-tourism and sustainable agriculture.” CL1 asserted that much care and attention is required when it comes to growing trees. The soil has to be fertile if not, manuring is necessary, watering and close monitoring from transplanting of seedlings up to the time of harvesting. This view was shared by D1 by stressing that District Authorities cannot do it alone, so collaboration remains critical. He went on to express his optimism on the potential of the country in achieving its mission to promote forests and make the country green through Rwanda Forestry Commission. Veress (2024) showed that CBO empowerment is essential to attaining sustainable development because of its contributions to

Rwanda's environmental sustainability. Crossley (2021) also discusses environmental sustainability by examining the effect of stakeholders' resources on government and cooperative support for environmental conservation as a means of gaining a competitive edge (Echezu & Patrick, 2022). The view by CBO1 is that there is a need for a strong community ownership of sustainability projects. This forms the basis for long term existence and increased participation by not only the current community members but also future generations. CBOs often require reliable capacity-building for them to disseminate relevant information and financial support to sustain their efforts.

Policy development and enforcement:

Respondent D1 stated that there exists different policies aimed at ensuring environmental sustainability such as the land policy, forestry policy, mine and geology policy, biodiversity policy, wildlife policy and the national meteorology policy. These have been enacted to sustain the environment in the different areas. According to Pudjiastuti (2021) supported the point saying that environment policies or rules can regulate human behavior toward environment protection from degradation. The Rwanda Forestry Authority (RFA) working across districts will keep improving the Forest Monitoring and Evaluation System (FMES), making sure it works better to keep track of the health and growth of the woods. According to respondent D2, this is a technological based system used to check on afforestation and deforestation activities timeously.

Challenges

According to respondent D2, the scarcity of financial resources affects the environmental sustainability programs of both local governments and CBOs, thus restricting the scope and impact of their initiatives in the district. This was echoed by NGO1 who added that the money required to pursue different environmental programs is never enough. In addition, it was noted by D1 that gaps exist in environmental sustainability technical expertise and training opportunities for staff and community members limiting the effectiveness of programs. Sachdeva and Zhao (2021) provided evidence for the idea that funding for environmental protection is still limited. According to Respondent FGD1, this is the result of inadequate cooperation and communication between local governments, non-governmental organisations, and community stakeholders, which causes duplication of effort or implementation gaps. Respondent FGD 3 revealed that the community occasionally rejected involvement because of their beliefs and other pressing demands for a living, which stifled some sustainability initiatives. Doucet et al. (2024) also demonstrated that local government and non-governmental organisations do not work well together on environmental management.

Recommendations:

Strengthen Community Engagement and Capacity Building

Local governments and CBOs should prioritize community involvement and education to ensure environmental sustainability awareness is high in the community. Community participation can be achieved through conducting programs or campaigns to educate community members about sustainable practices, such as waste management, water conservation, and reforestation. Studies like Ibones et al. (2024); Lawan n.d.) Suggest that contributed to support of community's participation and prepare programs that support community based on their specific needs. Integration of environmental education in school curricula to instill sustainable habits in children from a young age.

Implementation of Sustainable Agricultural Practices

Agriculture is a significant part of Karongi's economy, and by promoting sustainable agricultural activities, it can have a substantial impact on environmental sustainability. Farmers are encouraged to adopt agroforestry practices, which integrate trees and shrubs into agricultural

landscapes to maintain or improve soil health, enhance biodiversity, and reduce soil erosion. Studies Fahad et al. (2022); Sauer (2021) suggest that techniques used in farming practice improve soil health towards productivity. This may mean improved access to sustainable agricultural inputs which include organic fertilizers and pest control methods, to reduce the use of harmful chemicals. Studies like Oyetunde-Usman (2021); Gamage et al. (2023) suggested the sustainable agriculture through training on improved seeds and dissemination, and apply zero tillage for better soil sustainability. Health soil assists an agriculture productivity through organic usage. This means that residues can be cut down and used after becoming fertilisers.

Waste Management and Recycling Programs

Effective waste management and recycling are essential components for maintaining environmental sustainability. Local governments and CBOs can set up recycling centers in strategic locations to facilitate the collection and processing of recyclable materials. This can be achieved by promoting waste segregation at the source which ensures recyclable materials are sorted and properly disposed of. Studies like Chowdhury (2023); Budihardjo (2022) suggested that there should be local policies that can assist waste recycling to engage all stakeholders to increase waste recovery rates. This can assist government regulation in the matter. Use of social media can spread information easily to the beneficiaries.

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