

**Assessing The Effectiveness Of Environmental Law In Conservation Of Water Resources. A Case Of River
rwizi In Sheema, Rwampara And Isingiro Districts**

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Abstract

This study was carried out to assess the effectiveness of environmental law in conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts based study objective which is to find out the relationship between environmental laws and conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts. The study employed a mixed research design where it used qualitative and quantitative techniques to analyze the data collected, data analysis was done through transforming information got to a more representative way, simple frequency tables and percentages were employed to facilitate analysis. Qualitative data was analyzed thematically. The research was carried out at river Rwizi in Sheema, Rwampara and Isingiro Districts. The analysis on significance suggests that all three factors (Monitoring, Legal & Institutional Framework, and Institutional Interactions) likely play a role in influencing the conservation of water of resources. Further, analysis indicates a positive significant relationship the relationship between environmental laws and conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts. Basing on the study findings, it is concluded that Monitoring, Legal & Institutional Framework, and Institutional Interactions likely play a role in influencing the conservation of water of resources. Furthermore, it is also concluded that there is a positive significant relationship the relationship between environmental laws and conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts. Stronger legal frameworks with well-defined regulations and penalties, coupled with well-functioning institutions for enforcement, are associated with higher levels of conservation of water resources. Additionally, it is concluded that a multifaceted approach is needed for conservation of water resources. By strengthening legal frameworks, fostering collaboration between stakeholders, and implementing robust monitoring practices, communities can work towards a more sustainable future for their water resources.

Keywords: Environmental Law, Conservation, Water Resources and River rwizi

1.1 Introduction

In this study, environmental law is the independent variable (iv) and conservation of water resources the dependent variable (dv). The study objective is to find out the relationship between environmental laws and conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts. The research was carried out in Sheema, Rwampara and Isingiro Districts in South Western Uganda. The study focused on circumstances surrounding the environmental degradation practices around River Rwizi and policy innovations designed to protect the environment. These districts were chosen because of having utmost and necessary information for the study as

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they are among areas along which River Rwizi is facing a problem of degradation. Further, little research studies have been conducted on this phenomenon in these areas.

Globally, the world is facing a growing crisis of poor conservation of water resources due to increasing human pressure on limited freshwater resources. This environmental challenge has been a focus of international conferences, such as the 1992 UN Conference on Environment and Development (UNCED), which led to the adoption of sustainable development strategies for biodiversity preservation. Effective environmental laws and public awareness campaigns are crucial for sustainable water management (Mwine, 2017).

Conservation of water resource is essential for future generations. However, it has worsened and is expected to worsen more in the coming years unless there is a shift towards improved conservation of water resources (Serge et al., 2022). Water is not only a basic human need but also a cornerstone of sustainable development and poverty alleviation. The Dublin principles and Agenda 21 emphasize the need for integrated water management, recognizing water as a finite resource requiring careful management (Nickerson, 1994).

Sub-Saharan Africa faces intense competition for water resources due to management failures. Many African countries, like Zimbabwe, have environmental legislation for water conservation (government of Zimbabwe, 2002). However, enforcement is a challenge, as seen with the degradation of the Rwizi River in Uganda. Effective environmental legislation must be accompanied by public education and awareness campaigns to achieve sustainable water use. This requires balancing economic development with environmental protection through legislation, education, and improved management practices (Mwine, 2017).

The River Rwizi, a lifeline for millions in southwestern Uganda, faces a growing threat of poor conservation of water resources. This challenge is not unique to Uganda, but reflects a global trend of increasing human pressure on finite freshwater resources (Mugira, 2018). Several studies point to unsustainable practices as key drivers of the Rwizi's woes.

Research by Musingwire (2020) highlights the detrimental effects of poor land management practices in the river's catchment area. Deforestation and encroachment on buffer zones contribute to soil erosion and sedimentation, ultimately reducing the river's capacity and water quality. Additionally, rapid population growth in the region has led to increased water demand for domestic and agricultural purposes. This strain on the resource, coupled with inadequate wastewater treatment, further exacerbates water scarcity and pollution in the Rwizi.

The urgency of the situation demands effective solutions. It emphasizes the need for a catchment management approach, promoting responsible land use and sustainable resource utilization. This aligns with the national water policy of Uganda, which advocates for integrated water resource management (IWRM). Implementing IWRM principles requires collaboration between stakeholders, including government agencies, local communities, and NGOs. Public awareness campaigns and education initiatives can play a crucial role in fostering a culture of water conservation among the communities dependent on the Rwizi.

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Current Ugandan legislation offers a framework for water resource management. The National Environment Act of 2019 is a cornerstone, establishing the National Environment Management Authority (NEMA) to oversee environmental protection. Additionally, the Water Act (Cap. 152) regulates water use, permitting, and pollution control. However, translating these policies into practice can be challenging.

Research by Byaruhanga et al. (2019) investigating the Rwizi River basin highlights the gap between legislation and enforcement. Their findings reveal commercial activities like unregulated sand mining and poor waste disposal practices significantly contribute to riverbed degradation and water pollution. This exemplifies the need for stricter enforcement mechanisms and increased public awareness regarding the importance of river conservation. It was revealed that along river Rwizi in Sheema, Rwampara and Isingiro Districts, a serious commercial construction had occurred in terms of recreational centres, poor waste disposal, farming, and many more illegal activities (Musingwire, 2020). This contravenes National Environment law which states that no activity is allowed along river banks (National Environment Act of 2019). Uganda's legal framework, including the National Environment Act and Water Act, offers a structure for water conservation in Sheema, Rwampara, and Isingiro Districts. Permitting systems regulate water use and pollution. However, challenges like NEMA's enforcement capacity and limited community awareness, economic activities such as farming, brick laying, sand mining among others hinder the effectiveness. Strengthening enforcement, promoting water-saving practices, and utilizing sustainable water management techniques are crucial for these districts to achieve long-term water resource conservation (Musingwire, 2020). Thus this study assesses the effectiveness of environmental laws in conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts.

1.2 Materials and Methods

1.2.1 Area of the study

The research was carried out in Sheema, Rwampara and Isingiro Districts in South Western Uganda. The study focused on circumstances surrounding the environmental degradation practices around River Rwizi and policy innovations designed to protect the environment. These were chosen because of having utmost and necessary information for the study as they are among areas along which River Rwizi is facing a problem of degradation. Further, little research studies have been conducted on this phenomenon in these areas.

1.2.2 Data Collection

The researcher adopted cross-sectional research design with a combination of qualitative and quantitative data collection methods for the purpose of this study (Brannen, 2017). Qualitative data collection methods are methods that enable the researcher to collect data in form of words or texts to explain a phenomenon. Quantitative data collection methods are methods that enable the researcher to collect data in form of numeric or numbers to explain a phenomenon (Hair et al., 2017). The Unit of inquiry comprised of 109 respondents, comprised of Natural resource

Staff, Representatives from Directorate of Water Resources Management Staff, local leaders and Community Members as the study target population and the sample size constituted 91 respondents.

The researcher used both simple random sampling and Purposive sampling (Palinkas, 2015). Simple random sampling was used to select Community Members within the study population since they were expected to have different parameters on the study under investigation while purposive sampling was used to select Natural Resource Staff from selected areas, Representatives from the Directorate of Water Resources Management staff and local leaders. These were selected because they are technical people who are knowledgeable on required information on the study (Etikan, 2016). To acquire information, the researcher basically used questionnaire and interviewing methods. Further, A questionnaire tool that contained closed-ended questions was used to collect quantitative data from community members while interview tool was used to collect data from Natural resource Staff from selected areas, Representatives from Directorate of Water Resources Management and Local leaders

1.2.3 Data Analysis

For quantitative data, the researcher used a computer package SPSS version 20 where data was entered, edited, cleaned and sorted. The data analysis was based on frequencies, percentages and mean which were presented in frequency tables, pie charts and bar graphs. Pearson's correlation analysis was done to establish the significance and association of influence of environmental law on conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts. Furthermore, regression analysis was used to establish the relationship between environmental laws and conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts.

Responses from interviews were recorded under different variables. These responses were reviewed, edited, organized, arranged, sorted, categorized and coded so that themes, patterns and relations are identified using thematic analysis in form of descriptions, narrations and quotations. For a response to be added under a theme, it was checked for its relevance to the study objective.

1.3 Results

This section involves data analysis, presentation and interpretation of findings to assess the effectiveness of environmental law in conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts based on the study objective which is to find out the relationship between environmental laws and conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts. It starts by presenting findings on bio data and there after according to the study objective.

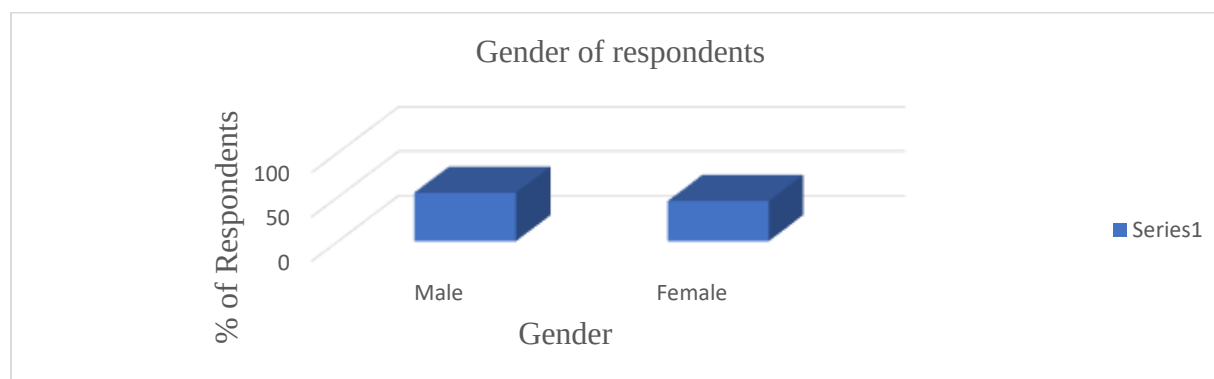
1.3.1 General Information

1.3.1.1 Sex of the respondents

Table 1 Sex of the respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Male	41	54.7	54.7	54.7
Female	34	45.3	45.3	100.0
Total	75	100.0	100.0	

Source: Data 2024



Districts shows a slight male predominance among respondents, with 54.7% being male and 45.3% female. This near-equal gender representation ensures a balanced perspective in the research findings, reflecting both male and female viewpoints on environmental law and water conservation. The standard deviation of 3.5 indicates that the distribution of respondents by sex is relatively close to the mean, reinforcing the study's credibility and the reliability of its conclusions.

Men and women often have distinct experiences and viewpoints due to social norms, cultural expectations, and gender roles. Accounting for gender findings helps capture these differences and ensures the research reflects the full picture.

1.3.1.2 Age of the respondents

Table 2: Age of the respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 20-30	22	29.3	29.3	29.3
31-40	21	28.0	28.0	57.3
41-50	28	37.3	37.3	94.7
Above 51	4	5.3	5.3	100.0

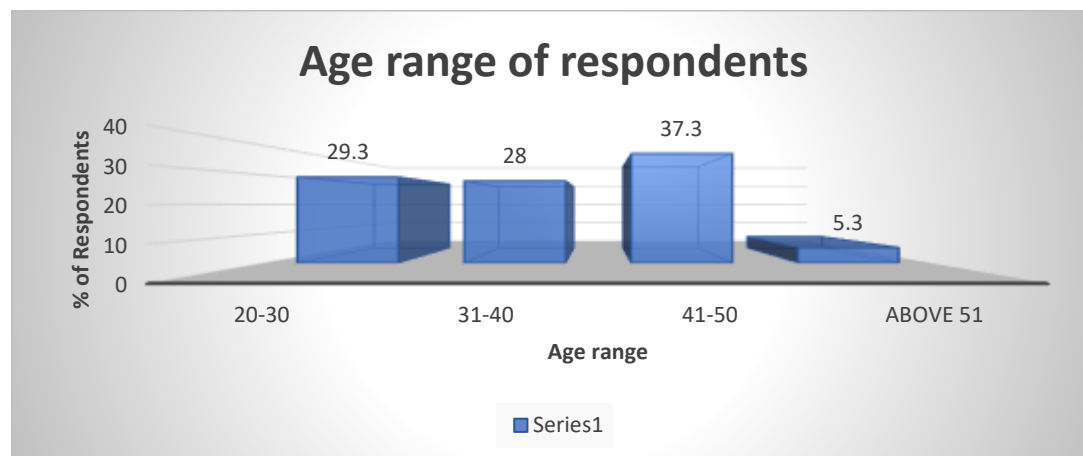
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Total	75	100.0	100.0	
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Source: Data 2024



Source: Data 2024

From the dataset, it is observed that the largest group of respondents is aged 41-50 years, comprising 37.3% of the total, followed by those aged 20-30 years at 29.3%, and those aged 31-40 years at 28.0%. The smallest age group is those above 51 years, at 5.3%. This distribution indicates that the study primarily captures the perspectives of individuals in the middle age range, with a significant representation from younger adults, while older individuals are less represented.

While their voices are valuable, their limited participation could be due to factors like accessibility of the survey or lower internet usage in this age group. Future research might benefit from additional strategies to reach older adults. Overall, the age distribution suggests a thoughtful sample design that captures a multi-generational perspective on environmental issues. Including a range of age groups, strengthens the comprehensiveness and generalizability of the study's findings.

1.3.1.3 Level of Education

Table 3: Level of Education

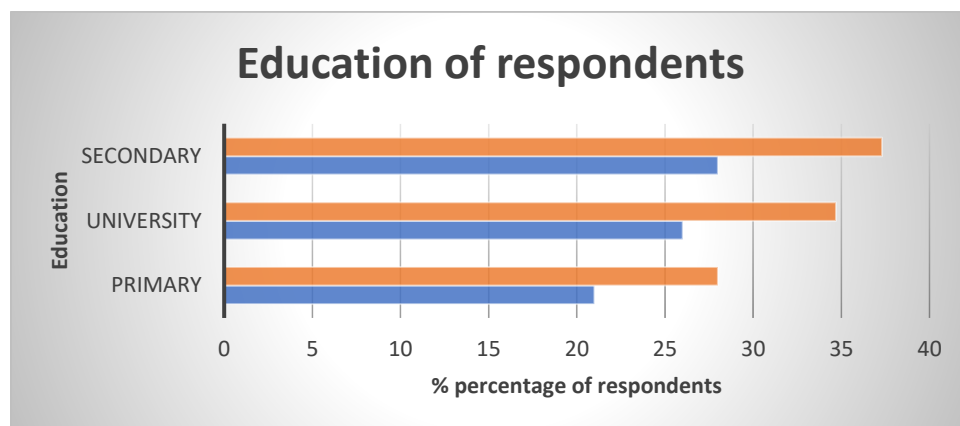
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Primary	21	28.0	28.0	28.0
University	26	34.7	34.7	62.7
Secondary	28	37.3	37.3	100.0
Total	75	100.0	100.0	

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From the dataset, it is observed that the largest group of respondents has a secondary education, comprising 37.3% of the total, followed by those with a university education at 34.7%, and those with primary education at 28.0%. This distribution indicates that the study primarily captures the perspectives of individuals with higher educational levels, but also includes a significant portion of respondents with primary education.

Thus, the study includes respondents with a variety of educational backgrounds (primary, secondary, and university). This diversity allows for a well-rounded understanding of how education level influences perceptions of environmental law and water conservation.

Overall, the data findings indicate a well-considered approach to sample selection, capturing a range of educational backgrounds. This diversity strengthens the generalizability of the study's findings and avoids bias towards any particular educational level.

1.3.1.4 Occupation / position held

Table 4: Occupation / position held

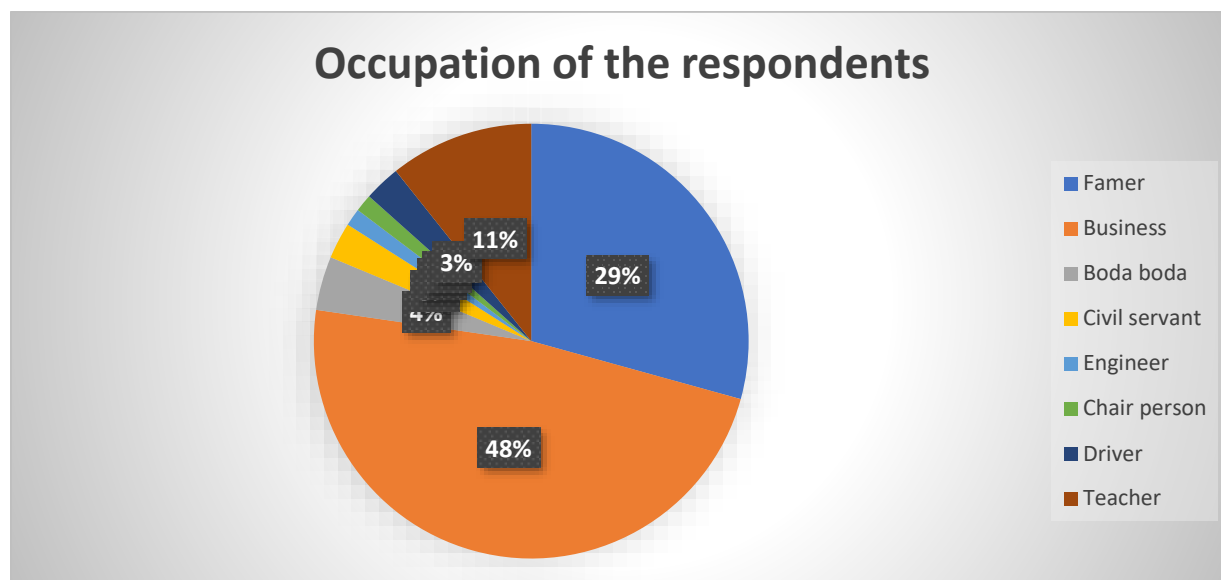
	Frequency	Percent	Valid Percent	Cumulative Percent
Famer	22	29.3	29.3	29.3
Business	36	48.0	48.0	77.3
Boda boda	3	4.0	4.0	81.3
Civil servant	2	2.7	2.7	84.0
Valid Engineer	1	1.3	1.3	85.3
Chair person	1	1.3	1.3	86.7
Driver	2	2.7	2.7	89.3
Teacher	8	10.7	10.7	100.0
Total	75	100.0	100.0	

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From the dataset, it is observed that the largest group of respondents is engaged in business, comprising 48.0% of the total, followed by farmers at 29.3%, and teachers at 10.7%. The remaining occupations, including Boda boda riders (4.0%), civil servants (2.7%), engineers (1.3%), chairpersons (1.3%), and drivers (2.7%), collectively account for 12.0% of the respondents. This distribution indicates that the study primarily captures the perspectives of individuals involved in business and farming, but also includes a variety of other occupations.

The distribution of respondents by occupation offers a rich perspective on how environmental concerns and water conservation practices vary across different professions. Overall, the data results reveal a well-rounded sample that captures the concerns of people from diverse professions who rely on or have a stake in environmental well-being and water conservation. This variety strengthens the comprehensiveness of the study and ensures its findings are relevant to a broad range of stakeholders.

1.3.2 The relationship between environmental laws and conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts.

1.3.2.1: Institutional interactions

Table 5: Institutional interactions

Statement	SD	D	N	A	SA
Institutional interactions and conservation of water resources					
Stakeholders always get directives on roles and responsibilities on conservation of water resources.	1(1.3)	1(1.3)	5(6.7)	52(69.3)	16(21.3)

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There are multiple avenues like suggestion boxes, noticeboards, emails and meetings to communicate roles and responsibilities on conservation of water resources.	3(4.0)	2(2.7)	8(10.7)	36(4.8)	26(37.7)
I am able to provide opinions and suggestions to my superiors on issues related to conservation of water resources	0(0)	8(10.7)	4(5.3)	39(54.0)	24(32.0)
Institutions provide feedback to Stakeholders on issues related to conservation of water resources	1(1.3)	6(8.0)	7(9.3)	29(38.7)	32(24.7)
I have an enhanced participation in performance reporting		7(9.3)	5(6.7)	35(46.7)	28(37.3)
My suggestions and opinions are considered in decision making	1(1.3)	7(9.3)	4(5.3)	33(44.0)	30(40.0)

Source: Data 2024

From the dataset, it is observed that a majority of respondents, 69.3%, agree that stakeholders always receive directives on roles and responsibilities regarding the conservation of water resources. Additionally, 21.3% of respondents strongly agree with this statement. Together, these groups represent 90.6% of the respondents, indicating a strong consensus on the perceived clarity of directives given to stakeholders. Meanwhile, 6.7% of respondents are neutral, and only a very small fraction, 2.7%, disagree. This distribution suggests that most respondents perceive that stakeholders are adequately informed about their roles and responsibilities in water resource conservation, reflecting a general consensus on the effectiveness of directive dissemination in this area. Basing on this, Institutional interactions are the glue that holds water conservation efforts together. Strong institutional interactions, through collaboration, information sharing, and joint initiatives, ensure everyone is working towards the same goal. This fosters a sense of shared responsibility and allows for a more coordinated and impactful approach to conserving this vital resource.

From the dataset, it is observed that a majority of respondents, 48.0%, agree that there are multiple avenues like suggestion boxes, noticeboards, emails, and meetings to communicate roles and responsibilities regarding the conservation of water resources. Additionally, 34.7% of respondents strongly agree with this statement. Together, these groups represent 82.7% of the respondents, indicating a strong consensus on the existence of various communication avenues. Meanwhile, 10.7% of respondents are neutral, and only a small fraction, 6.7%, disagree. This distribution suggests that most respondents perceive the availability of diverse channels for communication regarding water resource conservation roles and responsibilities, reflecting a general consensus on the effectiveness of communication methods in this area.

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From the dataset, it is observed that a majority of respondents, 52.0%, agree that they are able to provide opinions and suggestions to their superiors on issues related to the conservation of water resources. Additionally, 32.0% of respondents strongly agree with this statement. Together, these groups represent 84.0% of the respondents, indicating a strong consensus on their ability to provide input on water resource conservation matters. Meanwhile, 5.3% of respondents are neutral, and only a small fraction, 10.7%, disagree. This distribution suggests that most respondents feel empowered to contribute their opinions and suggestions regarding water resource conservation to their superiors, reflecting a positive organizational environment for feedback and communication in this area. Having multiple avenues for communication, like suggestion boxes, noticeboards, emails, and meetings, creates a rich conversation around water conservation. ensures everyone receives the message, regardless of preferred communication style. This fosters a sense of shared ownership and empowers individuals to contribute to the collective effort of conserving water resources.

From the dataset, it is observed that a significant majority of respondents, 42.7%, strongly agree that institutions provide feedback to stakeholders on issues related to the conservation of water resources. Additionally, 38.7% of respondents agree with this statement. Together, these groups represent 81.4% of the respondents, indicating a strong consensus on the provision of feedback by institutions. Meanwhile, 9.3% of respondents are neutral, and only a smaller fraction, 8.0%, disagree. Thus, Feeling empowered to share ideas on water conservation with superiors is a positive sign. It suggests that the workplace fosters open communication and values employee input on important issues. This allows respondents to contribute their unique perspectives and potentially influence positive changes related to water conservation within the organization. By actively participating in these conversations, every one plays a role in shaping a more responsible and environmentally conscious workplace.

From the dataset, it is observed that a significant majority of respondents, 37.3%, strongly agree that they have enhanced participation in performance reporting. Additionally, 46.7% of respondents agree with this statement. Together, these groups represent 84.0% of the respondents, indicating a strong consensus on the enhanced participation of stakeholders in performance reporting. Meanwhile, 6.7% of respondents are neutral, and only a smaller fraction, 9.3%, disagree.

Overall, enhanced participation in performance reporting signifies a more collaborative and empowering work environment, where your contributions are valued and you have a chance to influence positive outcomes.

From the dataset, it is observed that a significant majority of respondents, 40.0%, strongly agree that their suggestions and opinions are considered in decision making. Additionally, 44.0% of respondents agree with this statement. Together, these groups represent 84.0% of the respondents, indicating a strong consensus on the consideration of

stakeholders' input in decision making. Meanwhile, 5.3% of respondents are neutral, and only a smaller fraction, 9.3%, disagree

Thus, having community members' suggestions and opinions considered in decision-making indicates a positive shift towards a more inclusive and participatory work environment. With this, every one feels valued in this way which boosts morale, increase creativity, and potentially leading to better solutions. When diverse perspectives are considered, decisions are more likely to be well-rounded and effective. This fosters a sense of ownership and accountability, as your input can directly influence the direction of the team or organization.

1.3.2.2 Monitoring

Table 6. Monitoring

STATEMENT	SD	D	N	A	SA
Monitoring and conservation of water resources					
Monitoring promote transparency	1(1.3)	17(22.7)	9(12.0)	28(37.3)	19(25.3)
Political influence does not affect conservation of water resources negatively	6(8.0)	5(6.7)	16(21.3)	34(45.3)	14(18.7)
Monitoring influence success in conservation of water resources	2(2.7)	11(14.7)	12(6.0)	35(46.7)	15(20.0)
Information is always provided to enhance the quality of conservation of water resources	2(2.7)	12(16.0)	13(17.3)	32(42.7)	16(21.3)
Monitoring strengthen relationships between conservation of water resources and its stakeholders	2(2.7)	15(20.0)	11(14.7)	29(38.7)	18(24.0)
Inspection and the sustainability of restored wetland projects	3(4.0)	14(18.7)	6(8.0)	40(53.3)	12(16.0)
Funds are always available to execute the duties of the conservation of water resources inspection	6(8.0)	7(9.3)	9(12.0)	39(52.0)	13(17.3)
Monthly inspections are carried out by the authorities in conservation of water resources	3(4.0)	6(8.0)	12(16.0)	34(45.3)	19(25.3)

Authorities carry out the necessary inspection in conservation of water resources to meet the required standards	4(5.3)	7(9.3)	11(14.7)	35(46.7)	18(24.6)
The stakeholders are in position to identify the possible causes of the problems in the conservation of water resources	5(6.7)	7(9.3)	10(13.3)	31(41.3)	21(28.0)
Constant inspection of the projects in conservation of water resources provides opportunities for the supervisor to understand and deal with conditions that are unfavorable in the attainment of the conservation of water resources' goal and objectives.	1(1.3)	5(6.7)	10(13.3)	35(47.6)	24(34.0)
Timely decisions about the future of the conservation of water resources are always taken	4(5.3)	4(5.3)	5(6.7)	35(46.7)	27(36.7)
Feedback influences the progress of conservation of water resources	0(0)	5(6.7)	7(9.3)	40(53.3)	23(30.7)

Feedback helps stakeholders in conservation of water resources to maximize their potential at different stages by raising their awareness of strengths and areas for improvement	0(0)	7(9.3)	9(12.0)	32(42.7)	27(36.0)
Feedback helps identify actions to be taken to improve conservation of water resources	3(4.0)	6(8.0)	11(14.7)	26(34.7)	28(37.3)
Most effective leaders actively seek feedback to enhance effective conservation of water resources	0(0)	10(13.3)	12(16.0)	26(34.7)	27(36.0)

Source: Data 2024

From the dataset, it is observed that a significant portion of respondents, 25.3%, strongly agree that monitoring promotes transparency. Additionally, 37.3% of respondents agree with this statement. Together, these groups represent 62.6% of the respondents, indicating a substantial agreement on the positive impact of monitoring on transparency. Meanwhile, 12.0% of respondents are neutral, and only a smaller fraction, 22.7%, disagree and 2.7 % strongly disagree. This distribution suggests that most respondents perceive monitoring as a tool that enhances transparency in water resource management, reflecting a positive perception of the role of monitoring in promoting accountability and openness in decision-making processes

Qualitative findings reveal a positive public perception of monitoring as a tool for promoting transparency in water resource management. This suggests that people value accountability and openness in decision-making processes related to water resources.

The data suggests that a plurality of respondents, 45.3%, agree that political influence does not negatively affect water resource conservation. Furthermore, 18.7% of respondents strongly agree with this assertion. Together, these groups represent 64.0% of the total respondents, indicating a substantial portion of stakeholders who perceive political influence as having a neutral or positive impact on water resource conservation efforts. Meanwhile, 21.3% of respondents remain neutral, indicating uncertainty, while only 6.7% disagree and 8.0 strongly disagree with the statement. This distribution implies that there is a generally positive perception or lack of concern regarding the influence of politics on water resource conservation initiatives in the study area. Findings from the key informants reveal that the Political leadership play a crucial role in safeguarding water resources. By enacting and enforcing regulations on water use, investing in infrastructure upgrades to minimize leaks, and supporting research for water-efficient technologies, strong political influence can drive effective conservation efforts. Additionally, a long-term perspective allows politicians to make decisions beyond immediate political pressures, promoting sustainable water

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management practices. Furthermore, political influence on an international scale can foster cooperation on water issues in regions sharing resources, leading to more effective water management strategies for all. The data results also indicates that a plurality of respondents, 46.7%, agree that monitoring influences the success of water resource conservation, while 20.0% of respondents strongly agree with this assertion. Together, these groups represent 66.7% of the total respondents, suggesting a strong belief in the positive impact of monitoring on the conservation of water resources. Meanwhile, 16.0% of respondents remain neutral, indicating uncertainty, while only 14.7% disagree and 2.7% strongly disagree with the statement. This distribution implies that there is a generally positive perception of the role of monitoring in achieving success in water resource conservation efforts in the study area. Findings from the key informants reveal that monitoring acts as a compass for successful water conservation. By tracking water usage patterns, leak detection, and the effectiveness of implemented programs, valuable insights are gained. This qualitative data can reveal positive trends like reduced consumption or identify areas needing improvement, like leaky infrastructure. Monitoring fosters a culture of accountability, prompting adjustments and ensuring conservation efforts are on the right track towards a sustainable water future.

The data suggests that a plurality of respondents, 42.7%, agree that information is provided to enhance the quality of water resource conservation, while 21.3% of respondents strongly agree with this assertion. Together, these groups represent 64.0% of the total respondents, indicating a significant belief in the importance of information provision for improving water resource conservation efforts. Meanwhile, 17.3% of respondents remain neutral, indicating uncertainty, while only 16.0% disagree and 2.7 strongly disagree with the statement. Thus, information is always provided to enhance the quality of conservation of water resources. Qualitative findings reveal that information sharing empowers individuals and communities to make informed decisions about their water usage. Understanding local water sources, consumption patterns, and conservation strategies allows people to actively participate in water-saving practices. Sharing success stories and innovative solutions further motivates communities to embrace conservation. However, simply providing information isn't enough. The information needs to be clear, accessible, and tailored to different audiences to truly enhance the quality of conservation efforts.

The data suggests that a plurality of respondents, 38.7%, agree that monitoring strengthens relationships between water resource conservation and its stakeholders, while 24.0% of respondents strongly agree with this assertion. Together, these groups represent 62.7% of the total respondents, indicating a significant belief in the positive impact of monitoring on stakeholder relationships in water resource conservation efforts. Meanwhile, 14.7% of respondents remain neutral, indicating uncertainty, while only 20.7% disagree and 2.7% strongly disagree with the statement. This distribution implies that there is a generally positive perception of the role of monitoring in fostering stronger relationships between water resource conservation and its stakeholders in the study area. Qualitative findings portray

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that monitoring acts as a bridge, strengthening the relationship between water conservation efforts and the stakeholders involved. By tracking progress and sharing data on water usage and conservation initiatives, stakeholders gain a sense of transparency and accountability. This fosters trust and allows for collaborative decision-making. Additionally, results reveal that monitoring also ensures positive contributions from individual stakeholders, motivating continued participation and a sense of shared responsibility for a sustainable water future. The process itself sparks dialogue and collaboration between stakeholders, leading to more effective and inclusive conservation strategies.

The data suggests that a plurality of respondents, 38.7%, agree that monitoring strengthens relationships between water resource conservation and its stakeholders, while 24.0% of respondents strongly agree with this assertion. Together, these groups represent 62.7% of the total respondents, indicating a significant belief in the positive impact of monitoring on stakeholder relationships in water resource conservation efforts. Meanwhile, 14.7% of respondents remain neutral, indicating uncertainty, while only 18.7% disagree and 4.0% strongly disagree with the statement. This distribution implies that there is a generally positive perception of the role of monitoring in fostering stronger relationships between water resource conservation and its stakeholders in the study area.

The data indicates that a majority of respondents, 69.3%, either agree or strongly agree that funds are available for executing the duties of water resource conservation inspection. Specifically, 52.0% agree and 17.3% strongly agree with this assertion. Together, these groups represent 69.3% of the total respondents, indicating a positive perception regarding the availability of funds for inspection purposes. Meanwhile, 12.0% of respondents remain neutral on the issue, and 9.3% either disagree and 8.0% strongly disagree with the statement. This distribution implies that while a significant portion of respondents perceive funds to be available for inspection, there is still some skepticism or uncertainty among a minority of respondents.

The dataset reveals that the majority of respondents perceive monthly inspections for water resource conservation as effective, with 45.3% agreeing and 25.3% strongly agreeing. Meanwhile, 16.0% of respondents are neutral, indicating neither agreement nor disagreement. A smaller portion of respondents view the inspections negatively, with 8.0% disagreeing and 4.0% strongly disagreeing. This suggests that while most people see the inspections as beneficial, there is still a notable minority who are either skeptical or undecided about their effectiveness.

The dataset indicates that a majority of respondents (70.7%) perceive the inspections carried out by authorities to ensure water resource conservation standards are met as effective, with 46.7% agreeing and 24.0% strongly agreeing. A notable portion, 14.7%, is neutral, suggesting no strong opinion either way, while 14.6% of respondents express skepticism, with 9.3% disagreeing and 5.3% strongly disagreeing. From qualitative findings highlight the

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effectiveness of these inspections, though there is a need to address the concerns of the minority who view them less favorably. Regular inspections are like taking the pulse of a restored wetland project. They provide a qualitative assessment of the project's health and its ability to thrive in the long term. Through inspections, experts can identify potential problems early on, such as invasive species encroachment, erosion issues, or imbalances in water flow. Catching these issues early allows for corrective measures to be implemented, ensuring the restored wetland continues to perform its vital ecological functions. Successful inspections also reveal positive developments, like the return of native plant and animal life, demonstrating the project's progress towards a self-sustaining wetland ecosystem. These insights are crucial for ensuring the restored wetland's long-term sustainability and its continued contribution to the health of the surrounding environment.

The dataset reveals that a majority of respondents (69.3%) believe stakeholders are able to identify the possible causes of problems in water resource conservation, with 41.3% agreeing and 28.0% strongly agreeing. Meanwhile, 13.3% of respondents are neutral, neither agreeing nor disagreeing. A minority of respondents (16.0%) express skepticism, with 9.3% disagreeing and 6.7% strongly disagreeing. This overall positive perception indicates that stakeholders are generally seen as competent in identifying the issues affecting water resource conservation, though there is a small but notable portion of respondents who are either unsure or disagree with this view.

The dataset indicates that a substantial majority of respondents (78.7%) believe constant inspection of water conservation projects provides supervisors with opportunities to understand and address unfavorable conditions. Specifically, 46.7% agree and 32.0% strongly agree with this statement. Meanwhile, 13.3% of respondents are neutral, and a minority (8.0%) express skepticism, with 6.7% disagreeing and 1.3% strongly disagreeing. This suggests that most respondents see value in regular inspections for achieving water conservation goals, though a small segment remains uncertain or disagrees with this viewpoint. Furthermore, The dataset reveals that a majority of respondents (82.7%) believe that timely decisions regarding the future of water resource conservation are always taken, with 46.7% agreeing and 36.0% strongly agreeing. Meanwhile, 6.7% of respondents are neutral, indicating no strong opinion. A minority of respondents (10.6%) express skepticism, with 5.3% disagreeing and 5.3% strongly disagreeing. This suggests that while most respondents view the decision-making process as timely and effective, a small segment is either uncertain or disagrees with this perspective.

The dataset indicates that a substantial majority of respondents (84.0%) believe that feedback influences the progress of water resource conservation. Specifically, 53.3% agree and 30.7% strongly agree with this statement. Meanwhile, 9.3% of respondents are neutral, indicating no strong opinion. A minority of respondents (6.7%) express disagreement. This suggests that most respondents perceive feedback as a significant factor in influencing the progress of water resource conservation efforts, although a small segment is either uncertain or disagrees with this viewpoint.

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The dataset suggests that the majority of respondents (78.7%) perceive feedback as beneficial for stakeholders in water resource conservation. Specifically, 42.7% agree and 36.0% strongly agree that feedback helps stakeholders maximize their potential by raising awareness of strengths and areas for improvement. Meanwhile, 12.0% of respondents are neutral, indicating no strong opinion, while 9.3% disagree with this statement. This indicates that most respondents see feedback as a valuable tool for enhancing stakeholder awareness and effectiveness in water resource conservation efforts, although a small portion holds differing views or remains undecided

The dataset suggests that the majority of respondents (71.9%) perceive feedback as helpful in identifying actions to improve the conservation of water resources. Specifically, 34.7% agree and 37.3% strongly agree that feedback serves this purpose. Meanwhile, 14.7% of respondents are neutral, indicating no strong opinion, while 12.0% express disagreement, with 8.0% disagreeing and 4.0% strongly disagreeing. This indicates that most respondents see feedback as instrumental in guiding actions for enhancing water resource conservation efforts, though a notable portion holds differing views or remains undecided.

The dataset indicates that a significant majority of respondents (70.7%) believe that most effective leaders actively seek feedback to enhance effective conservation of water resources. Specifically, 34.7% agree and 36.0% strongly agree with this statement. Meanwhile, 16.0% of respondents are neutral, indicating no strong opinion, while 13.3% express disagreement. This suggests that most respondents perceive effective leaders as actively seeking feedback to improve water resource conservation efforts, though there is a notable portion holding differing views or remaining undecided. Findings from key informants reveal that feedback acts as a powerful coaching tool, helping stakeholders in water conservation reach their full potential at every stage of the journey. By providing constructive criticism and highlighting successes, feedback fosters a growth mindset. Stakeholders gain a clearer picture of their strengths, like implementing effective water-saving practices or educating their communities. Additionally, At the same time, feedback identifies areas for improvement, such as reducing leaks in irrigation systems or exploring more efficient technologies. This targeted information allows stakeholders to refine their approach and maximize their impact. Through this ongoing cycle of feedback, stakeholders become more informed, adaptable, and ultimately more effective champions for water conservation.

1.3.2.3 Legal institutional framework towards conservation of water resources at River Rwizi in Sheema, Rwampara and Isingiro Districts.

Table 7: Legal institutional framework towards conservation of water resources at River Rizvi in Sheena, Rampart and Singer Districts.

Statement	Frequency (%)				
	SD	D	N	A	SA

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Environmental structures Planning helps in identification and addressing of the gaps in conservation of water resources	0(0)	4(5.3)	17(22.7)	43(57.3)	11(14.3)
Environmental structures helps in identifying roles and responsibilities of stakeholders in conservation of water resources	0(0)	3(4.0)	12(16.0)	16(21.3)	44(58.7)
The Local Government lacks public awareness policy on conservation of water resources	3(4.0)	2(2.7)	9(12.0)	47(62.7)	14(18.7)
The Local Government lacks clear authority and clear rules on conservation of water resources	0(0)	7(9.3)	5(6.7)	25(33.3)	38(50.7)
The local government lacks legal/ institutional frame work to address or management issues on conservation of water resources	2(2.7)	1(1.3)	8(10.7)	19(25.7)	45(60.0)
The local government lacks enforcement capacity to ensure compliance to the conservation of water resources bylaws	0(0)	3(4.0)	3(4.0)	34(45.3)	35(46.7)

Source: Data 2024

From the dataset, it is observed that a majority of respondents, 57.3%, agree that environmental structures planning helps in the identification and addressing of gaps in the conservation of water resources. Additionally, 14.7% of respondents strongly agree with this statement. Together, these groups represent 72.0% of the respondents, indicating a strong consensus in favor of the positive impact of environmental structures planning. Meanwhile, 22.7% of respondents are neutral, and only a small fraction, 5.3%, disagree. This distribution suggests that most respondents recognize the importance of environmental planning in effective water resource conservation, reflecting a general positive attitude towards such initiatives. Qualitative findings revealed that Environmental structures planning acts like a comprehensive blueprint. By incorporating factors like infrastructure mapping, water flow analysis, and environmental impact assessments, it helps identify these very gaps. This allows us to target areas where improvements are most needed, such as upgrading leaky pipes, implementing rainwater harvesting systems, or restoring degraded wetlands. By plugging these gaps, environmental structures planning paves the way for a more efficient and sustainable approach to water resource conservation. Further, environmental structures planning goes

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beyond just identifying problems. It also plays a crucial role in designing and implementing solutions. This planning process considers not only the technical aspects of water infrastructure but also the social and ecological context. For example, it might involve incorporating community input to ensure new systems are culturally appropriate and user-friendly. Additionally, environmental structures planning takes into account the long-term impact on ecosystems, ensuring conservation efforts don't inadvertently harm other aspects of the environment. By fostering a holistic and forward-thinking approach, environmental structures planning helps us build a more sustainable future for water resources.

From the dataset, it is observed that a substantial majority of respondents, 58.7%, strongly agree that environmental structures help in identifying the roles and responsibilities of stakeholders in the conservation of water resources. Additionally, 21.3% of respondents agree with this statement. Together, these groups represent 80.0% of the respondents, indicating a strong consensus in favor of the positive impact of environmental structures in clarifying stakeholder roles. Meanwhile, 16.0% of respondents are neutral, and only a small fraction, 4.0%, disagree. This distribution suggests that most respondents recognize the importance of environmental structures in effectively delineating stakeholder responsibilities, reflecting a general positive attitude towards such frameworks in water resource conservation. Findings from key informants portray those environmental structures, like well-defined policies, regulations, and management frameworks, act as a roadmap for water conservation efforts. These structures don't just outline what needs to be done, but also clarify who needs to do it. Imagine a complex water conservation project – it requires collaboration between various stakeholders. Environmental structures help identify the roles of each player, be it households implementing water-saving practices, industries investing in efficient technologies, or government agencies enforcing regulations. This clear division of responsibilities prevents confusion and ensures everyone contributes their fair share. Think of it like a well-rehearsed play – each stakeholder acts their part, working together to achieve the common goal of sustainable water resource management.

From the dataset, it is observed that a significant majority of respondents, 62.7%, agree that the local government lacks a public awareness policy on the conservation of water resources. Additionally, 18.7% of respondents strongly agree with this statement. Together, these groups represent 81.4% of the respondents, indicating a strong consensus on the lack of public awareness policies from the local government. Meanwhile, 12.0% of respondents are neutral, and only a small fraction, 2.7%, disagree, with 4.0% strongly disagreeing. This distribution suggests that most respondents recognize a significant gap in the local government's efforts to raise public awareness on water conservation, reflecting a general consensus on the need for improved policy measures in this area. Qualitative analysis highlights a potential gap in the local government's approach to water conservation. Public awareness campaigns are crucial for mobilizing the community and fostering a culture of water stewardship. Without a dedicated policy, there's a risk of fragmented

or sporadic efforts that may not have a lasting impact. For example, some people trying to conserve water, some are motivated by personal convictions, while others remain unaware of the urgency. A public awareness policy acts as a unifying force. It educates the public about the importance of water conservation, outlines practical tips for saving water in daily life, and potentially encourages participation in community initiatives. By raising awareness and fostering a sense of shared responsibility, a public awareness policy empowers the local community to become active partners in conserving this vital resource.

From the dataset, it is observed that a significant majority of respondents, 50.7%, strongly agree that the local government lacks clear authority and rules on the conservation of water resources. Additionally, 33.3% of respondents agree with this statement. Together, these groups represent 84.0% of the respondents, indicating a strong consensus on the perceived lack of clear authority and rules from the local government. Meanwhile, 6.7% of respondents are neutral, and only a small fraction, 9.3%, disagree. This distribution suggests that most respondents perceive a significant gap in the local government's regulatory framework and authority regarding water resource conservation, reflecting a general consensus on the need for clearer rules and authority in this area.

Qualitative analysis indicates that the absence of clear authority and rules on water conservation by the local government creates a situation akin to a team without a coach. Everyone might understand the importance of saving water, but without clear direction and established guidelines, individual efforts may be scattered and ineffective. This lack of authority can lead to confusion and a sense of powerlessness among the public. Clear rules and a designated body with the authority to enforce them are crucial for ensuring a coordinated and impactful approach to water conservation.

From the dataset, it is observed that a substantial majority of respondents, 60.0%, strongly agree that the local government lacks a legal/institutional framework to address or manage issues on the conservation of water resources. Additionally, 25.3% of respondents agree with this statement. Together, these groups represent 85.3% of the respondents, indicating a strong consensus on the perceived absence of a clear legal or institutional framework from the local government. Meanwhile, 10.7% of respondents are neutral, and only a very small fraction, 1.3%, disagree and 2.7% strongly disagree. This distribution suggests that most respondents perceive a significant gap in the local government's capacity to address water resource conservation issues through legal and institutional mechanisms, reflecting a general consensus on the need for improved frameworks in this area.

From the dataset, it is observed that a significant majority of respondents, 46.7%, strongly agree that the local government lacks enforcement capacity to ensure compliance with the conservation of water resources bylaws. Additionally, 45.3% of respondents agree with this statement. Together, these groups represent 92.0% of the

respondents, indicating a strong consensus on the perceived lack of enforcement capacity from the local government. Meanwhile, 4.0% of respondents are neutral, and only a very small fraction, 4.0%, disagree. This distribution suggests that most respondents perceive a significant gap in the local government's ability to enforce water resource conservation bylaws, reflecting a general consensus on the need for improved enforcement mechanisms in this area. Thus a local government lacking enforcement capacity for water conservation bylaws is like having a law with no teeth. The bylaws themselves outline important water-saving practices, but without effective enforcement, there's little to deter violations. Imagine a community with water restrictions, but no monitoring or penalties for excessive water use. This can lead to a free-rider mentality, where some residents disregard the rules, undermining the collective effort towards conservation. For the bylaws to be truly impactful, the local government needs the capacity to enforce them, ensuring fairness and encouraging responsible water use across the community.

The qualitative analysis suggests a positive influence of the legal and institutional framework on conservation of water resources at River Rwizi. This means that clear environmental laws, regulations, and well-functioning institutions for enforcement (like environmental agencies with sufficient resources) are associated with a higher level of conservation success. Having a strong legal framework establishes boundaries for acceptable water use practices and deters unsustainable activities. Additionally, well-resourced institutions ensure these laws are upheld through effective monitoring and enforcement, leading to more responsible water management practices along the river. In essence, a robust legal and institutional framework provides the foundation for effective water conservation efforts at River Rwizi.

1.3.2.4 Conservation of water resources

Table 8 Conservation of water resources

Statement	SD	D	N	A	SA
Conservation of water resources					
Project activities in conservation of water resources are always implemented within the required timelines	1(1.3)	7(9.3)	16(21.3)	25(33.3)	26(34.7)
Conservation of water resources reports are always compiled with in the set deadlines	3(4.0)	4(5.3)	15(20.0)	27(36.0)	26(34.7)
Education and public awareness activities are always submitted within the set deadlines	7(9.3)	6(8.0)	16(21.3)	34(45.3)	21(28.0)
Education and public awareness activities on conservation of within the budget limit	5(6.7)	5(6.7)	6(8.0)	28(37.3)	31(41.3)

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The expenditure rate of funds on conservation of water resources is always according to/ donor of funder requirements	2(2.7)	4(5.3)	3(4.0)	34(45.3)	32(42.7)
The set targets on conservation of water resources are always achieved	4(5.3)	5(6.7)	3(4.0)	22(29.3)	41(54.7)
The required resources to ensure implementation of the activities on conservation of water resources are always available	5(6.7)	4(5.3)	2(2.7)	31(41.3)	33(44.0)
So far, majority of the hotspots in the conservation of water resources coverage areas have been covered	0(0)	7(9.3)	5(6.7)	33(44.0)	30(40.0)
Human activities along the river banks have reduced	3(4.0)	2(2.7)	3(4.0)	43(57.3)	24(32.0)

Source: Data 2024

The data suggests that there is a mixed perception regarding the implementation of project activities in water resource conservation within required timelines. A significant portion of respondents, majority either agree or strongly agree that project activities are implemented within the required timelines. Specifically, 33.3% of respondents agree, while 34.7% strongly agree with this statement. On the other hand, a smaller proportion of respondents, totaling 31.3%, either disagree or strongly disagree with the statement. Additionally, 21.3% of respondents remain neutral on the issue. This distribution highlights a varied perception among respondents regarding the timeliness of implementing project activities in water resource conservation efforts.

The data suggests that there is a mixed perception regarding the compilation of reports on water resource conservation within set deadlines. A significant majority of respondents, either agree or strongly agree that conservation reports are compiled within the set deadlines. Specifically, 36.0% of respondents agree, while 34.7% strongly agree with this statement. Conversely, a smaller proportion of respondents, totaling 9.3%, either disagree or strongly disagree with the statement. Additionally, 20.0% of respondents remain neutral on the issue. This distribution highlights a varied perception among respondents regarding the timeliness of compiling reports in water resource conservation efforts.

The data suggests a mixed perception regarding the submission of education and public awareness activities within set deadlines. A majority of respondents, majority of the respondents either agree or strongly agree that these activities are submitted within the set deadlines. Specifically, 45.3% of respondents agree, while 28.0% strongly agree with this statement. Conversely, a smaller proportion of respondents, totaling 17.3%, either disagree or strongly disagree with the statement. Additionally, 9.3% of respondents remain neutral on the issue. This distribution highlights varying perspectives among respondents regarding the timeliness of submitting education and public awareness activities in water resource conservation efforts.

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The data suggests a varied perception regarding the implementation of education and public awareness activities on the conservation of water resources within the budget limit. A majority of respondents, 37.3% of respondents agree, while 41.3% strongly agree with this statement. Conversely, a smaller proportion of respondents, totaling 20.0%, either disagree or strongly disagree with the statement. Additionally, 8.0% of respondents remain neutral on the issue. This distribution highlights differing perspectives among respondents regarding the adherence to budget limits in implementing education and public awareness activities related to water resource conservation.

The data suggests a prevailing belief among respondents regarding the alignment of expenditure rates of funds on water resource conservation with donor or funder requirements. A significant majority, either agree or strongly agree that these expenditures are in accordance with such requirements. Specifically, 45.3% of respondents agree, while 42.7% strongly agree with this statement. In contrast, a smaller proportion of respondents, constituting 12.0%, either disagree or remain neutral on the issue. This distribution underscores the perceived importance of adhering to donor or funder guidelines in managing financial resources allocated for water resource conservation efforts.

The data reveals a predominant agreement among respondents regarding the achievement of set targets in water resource conservation. A significant majority, either agree or strongly agree that these targets are consistently met. Specifically, 29.3% of respondents agree, while 54.7% strongly agree with this statement. Conversely, a smaller proportion of respondents, comprising 16.0%, either disagree or remain neutral on the issue. This distribution underscores a widespread perception among respondents that targets in water resource conservation are effectively achieved, reflecting positively on the efficacy of conservation efforts.

The data indicates a notable agreement among respondents regarding the availability of required resources for implementing activities related to water resource conservation. A significant majority, either agree or strongly agree that these resources are consistently available. Specifically, 41.3% of respondents agree, while 44.0% strongly agree with this statement. Conversely, a smaller proportion of respondents, totaling 14.7%, either disagree or remain neutral on the issue. This distribution highlights a widespread perception among respondents that the necessary resources for implementing water resource conservation activities are readily accessible, which is essential for the effective execution of such initiatives.

The data indicates a prevalent agreement among respondents regarding the coverage of majority of the hotspots in the areas related to water resource conservation. 44.0% of respondents agree, while 40.0% strongly agree with this statement. Conversely, a smaller proportion of respondents, totaling 16.0%, either disagree or remain neutral on the issue. This distribution underscores a widespread perception among respondents that substantial progress has been

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made in covering the hotspots pertinent to water resource conservation efforts, reflecting positively on the extent of coverage achieved in these areas.

The data suggests a prevalent agreement among respondents regarding the reduction of human activities along the river banks. A substantial majority, majority of the respondents either agree or strongly agree that such activities have decreased. Specifically, 57.3% of respondents agree, while 32.0% strongly agree with this statement. Conversely, a smaller proportion of respondents, totaling 10.7%, either disagree or remain neutral on the issue. This distribution underscores a widespread perception among respondents that human activities along the river banks have witnessed a noticeable reduction, which may bode well for the conservation and preservation of these vital water resources.

1.3.3 Model Summary on the relationship between environmental laws and conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts.

Table 8: Model Summary on the relationship between environmental laws and conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.893 ^a	.797	.789	.13278
a. Predictors: (Constant), Monitoring, legal_Institutional_framework, Institutional_interactions				

Source: Data 2024

Strong Predictive Power: The high R-squared value (0.797) suggests that the model explains a significant portion (nearly 80%) of the variation in enforcement effectiveness. This indicates the chosen factors – monitoring, legal and institutional frameworks, and institutional interactions – are strong predictors of how well environmental laws are enforced. Thus environmental laws explain the conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts up to 79% and the remaining percentage being explained by other factors.

Monitoring Matters: The inclusion of "Monitoring" as a significant predictor highlights the importance of actively tracking activities along the river. Effective monitoring, through ranger patrols and community-based reporting systems, can deter illegal practices and ensure timely intervention. **The Institutional Advantage:** The model emphasizes the role of strong legal and institutional frameworks (.789 adjusted R-squared suggests these factors add explanatory power). Clear laws with defined penalties and well-functioning institutions with the authority and capacity to enforce them are crucial for effective conservation of water resources.

1.3.4 ANOVA on the relationship between environmental laws and conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts.

Table 9: ANOVA on the relationship between environmental laws and conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.922	3	1.641	93.052	.000 ^b
	Residual	1.252	71	.018		
	Total	6.174	74			

a. Dependent Variable: conservation_water_resources

b. Predictors: (Constant), Monitoring, legal_Institutional_framework, Institutional_interactions

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This ANOVA table provides statistical evidence supporting the model's effectiveness in predicting water conservation enforcement outcomes along River Rwizi. Here's a breakdown of the key points:

The high F-statistic (93.052) and its corresponding very low significance level (Sig. = .000) indicate a statistically significant relationship between the model's predictors (Monitoring, Legal and Institutional Framework, and Institutional Interactions) and the conservation of water of resources.

The "Sum of Squares" values show how much of the total variance in conservation enforcement (6.174) is explained by the model (4.922) and the unexplained error (residual) (1.252). The model explains a significant portion (79%) of the variation, further supporting its relevance. The overall analysis significance suggests that all three factors (Monitoring, Legal & Institutional Framework, and Institutional Interactions) likely play a role in influencing the conservation of water of resources.

1.3.5 Multiple regression analysis on the relationship between environmental laws and conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts.

Table 10: Multiple regression analysis on the relationship between environmental laws and conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts.

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.383	.065		5.909	.000
	legal_Institutional_framework	.114	.022	.452	5.309	.000
	Institutional interactions	.119	.049	.3034	3.229	.004
	Monitoring	.134	.043	.527	3.126	.003

a. Dependent Variable: conservation water resources

Source: Data 2024

The coefficients table offers a deeper look into the relationship between environmental laws and conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts, revealing the specific influence of each predictor variable (Monitoring, Legal & Institutional Framework, Institutional Interactions) on the conservation water resources. Positive coefficient (.114) for "legal Institutional framework" and its strong significance (Sig. = .000) indicate a positive significant relationship the relationship between environmental laws and conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts. Stronger legal frameworks with well-defined regulations and penalties, coupled with well-functioning institutions for enforcement, are associated with higher levels of conservation of water resources.

The positive coefficient (.119) and significance (Sig. = .004) for "Institutional interactions" indicate a positive significant relationship the relationship between environmental laws and conservation of water resources at river

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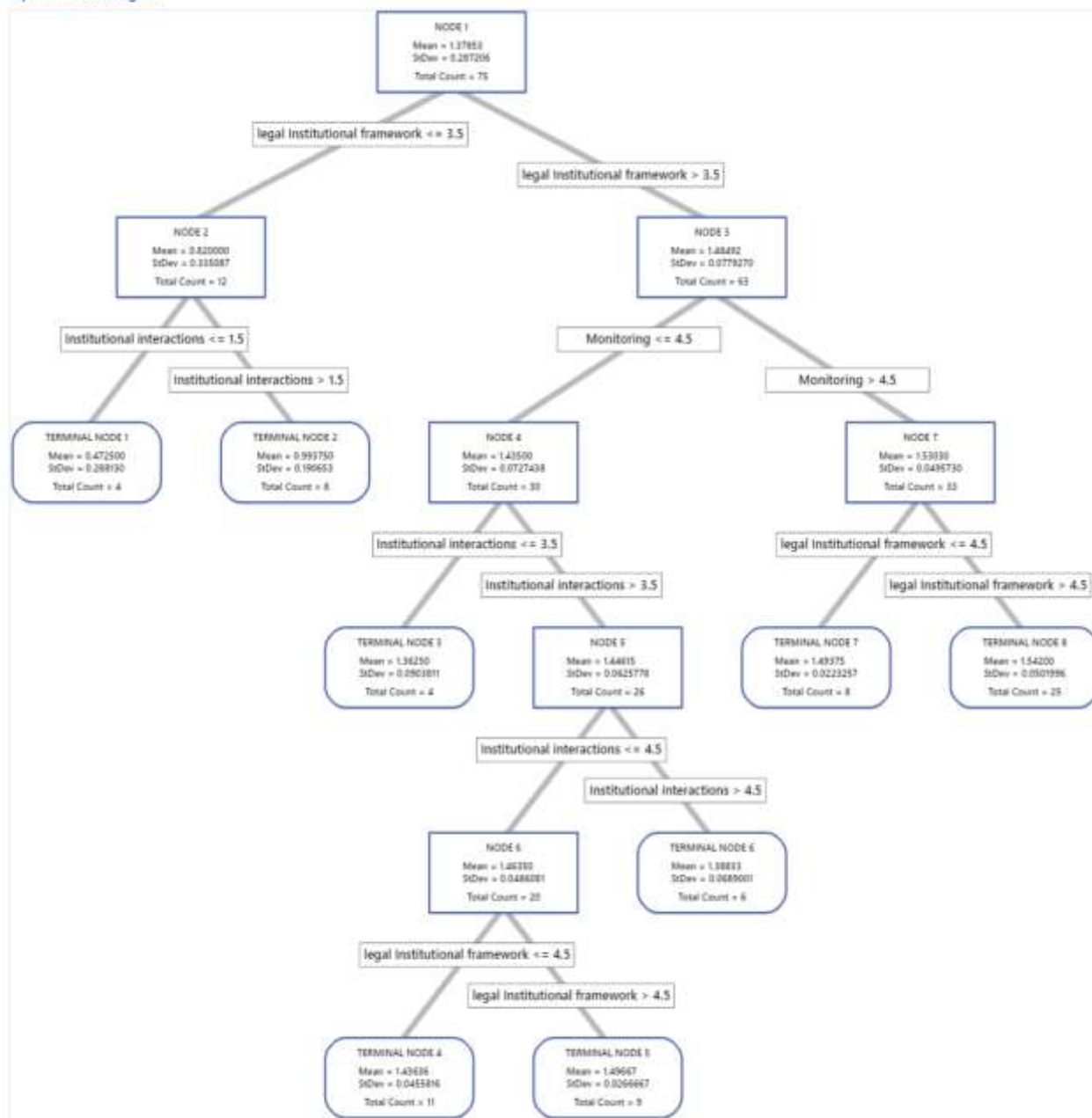
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Rwizi in Sheema, Rwampara and Isingiro Districts. Thus, highlighting the importance of collaboration between different stakeholders. This involves environmental agencies working with local communities or NGOs sharing information and coordinating enforcement efforts. Evidently, such collaboration strengthens the enforcement framework.

The positive coefficient (.134) and significance (Sig. = .003) for "Monitoring" indicate a positive significant relationship the relationship between environmental laws and conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts. Hence showing that active monitoring activities, like patrols and community inspections, are associated with increased conservation of water resources. By keeping a watchful eye on activities along the river, these measures deter illegal practices and ensure timely intervention. The key informants likely highlighted the importance of clear environmental laws that define prohibited activities like sand mining or pollution. These laws establish boundaries and deter unsustainable practices. However, the effectiveness of these laws hinges on enforcement.

CART Regression analysis on the relationship between environmental laws and conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts.

Figure 4.5 CART Regression analysis on the relationship between environmental laws and conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts.



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The analysis reveals that Monitoring, Legal & Institutional Framework, and Institutional Interactions all have a positive influence on conservation water resources. This is because the terminal nodes (those with values and labeled "Mean") that represent these factors have higher mean values compared to the starting node ("Total Cure"=75). The higher the mean, the more effective these aspects are considered to be in conserving water resources.

Institutional Interactions might play a particularly important role. The terminal node for Institutional Interactions (1.5303) has the highest mean value compared to the other two (Monitoring: 1.4350, Legal & Institutional Framework: 1.4337). This suggests that strong collaboration between different stakeholders, such as government agencies, NGOs, and local communities, are a key driver of effective water conservation efforts.

The significance of legal and institutional frameworks is supported by the data. The path leading from the starting node ("Total Cure" - 75) to the terminal node for Legal & Institutional Framework (1.4337) suggests a positive relationship. This aligns with the idea that clear laws and well-functioning institutions to enforce them are essential for successful conservation.

Monitoring also appears to be a contributing factor. The path from "Total Cure" (75) to the Monitoring terminal node (1.4350) shows a positive association. This indicates that practices like ranger patrols or surveillance systems play a role in improving water conservation efforts.

Overall, the results suggest that a multifaceted approach is needed for conservation of water resources. By strengthening legal frameworks, fostering collaboration between stakeholders, and implementing robust monitoring practices, communities work towards a more sustainable future for their water resources.

1.4 Discussion

1.4.1 The relationship between environmental laws and conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts.

The results indicate the factors such as monitoring, legal and institutional frameworks, and institutional interactions are strong predictors of how well environmental laws are enforced. Thus environmental laws explain the conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts. The inclusion of "Monitoring" as a significant predictor highlights the importance of actively tracking activities along the river. Effective monitoring, through ranger patrols and community-based reporting systems, deter illegal practices and ensure timely intervention. The analysis on significance suggests that all three factors (Monitoring, Legal & Institutional Framework, and Institutional Interactions) likely play a role in influencing the conservation of water of resources. Further, analysis indicate a positive significant relationship the relationship between environmental laws and conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts. Stronger legal frameworks with well-defined regulations and penalties, coupled with well-functioning institutions for enforcement, are associated with higher levels of conservation of water resources.

The results also suggest that a multifaceted approach is needed for conservation of water resources. By strengthening legal frameworks, fostering collaboration between stakeholders, and implementing robust monitoring practices, communities can work towards a more sustainable future for their water resources. These findings are in agreement with the following scholars;

Chifamba (2013) contends that inspection has significant influence on the project outcome, the impacts of inspection is equally reflected on the performance of restored wetland projects. Coulter (2010) reveals that effective inspection helps in decision making through which stakeholder management practices affects sustainability of wetland projects(Khisa,2017).

Hamdi (2017) argues that effective inspection of conservation of water resources requires the supervisor to constantly monitor the progress of the team throughout the project life time, constant inspection of project/program activities gives the supervisor opportunities to make corrections or adjustments in work designed in achieving desired outcomes as far as conservation of water resources is concerned.

More so, Brett (2013) reveals that inclusive monitoring also tends to strengthen relationships between the project and its stakeholders, Stakeholder inclusive monitoring influence success in environmental control project, the participatory of project-affected stakeholders in monitoring environmental and social impacts and mitigation led to success in conservation of water resources . It is also good practice, in relation to any type of stakeholder involvement in project monitoring, care should be taken in the choice of representatives and the selection process should be transparent (Arnstein, 2015).

1.5 Conclusion

1.5.1 The relationship between environmental laws and conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts.

It is concluded that as monitoring, legal and institutional frameworks, and institutional interactions are strong predictors of how well environmental laws are enforced. Thus environmental laws explain the conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts The inclusion of "Monitoring" as a significant predictor highlights the importance of actively tracking activities along the river. Effective monitoring, through ranger patrols and community-based reporting systems, deter illegal practices and ensure timely intervention.

Further, it is concluded that Monitoring, Legal & Institutional Framework, and Institutional Interactions likely play a role in influencing the conservation of water of resources. Further more, is also concluded that there is a positive significant relationship the relationship between environmental laws and conservation of water resources at river Rwizi in Sheema, Rwampara and Isingiro Districts. Stronger legal frameworks with well-defined regulations and penalties, coupled with well-functioning institutions for enforcement, are associated with higher levels of conservation of water resources.

Additionally, it is concluded that a multifaceted approach is needed for conservation of water resources. By strengthening legal frameworks, fostering collaboration between stakeholders, and implementing robust monitoring practices, communities can work towards a more sustainable future for their water resources.

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