

# **ENVIRONMENTAL POLICY IMPLEMENTATION EFFECTS ON RIVER WATER POLLUTION CONTROL AND PREVENTION IN KENYA: A CASE OF NGONG RIVER, NAIROBI CITY COUNTY**

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## **ABSTRACT**

Water scarcity and rising demand for water have become important challenges in many regions of the world. Water pollution, population increase, urbanization, and insufficient water resource management are all contributing to the growing severity of the water crisis. The potential effects of water shortage on economical activity, food security, education, health, and the severity of climate change have piqued the public's interest. Drinking water and sanitation are part of the United Nations' Sustainable Development Goal (SDG) 6 for 2030. Water scarcity, on the other hand, remains difficult to quantify. Kenya, a rapidly growing country, is thought to have limited renewable freshwater resources (1,000 m<sup>3</sup>/capita/year). To help with the management and mitigation of water resources, a number of programs are put into place. Among them are water policies that ensure the protection of water catchment areas, a reduction in pollution, and easier access to sanitary facilities. One of the Nairobi city's rivers, the Ngong River, provides riparian communities with a wide range of crucial environmental services. Since the Ngong River is a very fragile ecosystem that can suffer if an appropriate management plan is not in place, it needs protection and special consideration. Over the past thirty years or so, the Ngong River has come under increasing and significant pressure from a variety of interrelated human activities, such as industrial pollution, eutrophication, and sedimentation. This research proposal focuses on how the application of environmental policies affects the prevention of pollution in the Ngong River and offers potential policy choices that can assist in remediating or reducing environmental degradation. The

available Acts and policies will be examined, with a focus on those that particularly address water protection and conservation, and the difficulties that each required institution faces will be highlighted. A sample size of 100 respondents from various resource user groups and villages residing along the Sinai, Tetra Park, Katoto, and Lungalunga slums were used to collect data. The data was obtained using structured surveys, observations, and interviews. It was analyzed using SPSS windows and presented using tables, charts, and graphs. In addition to eleven key informant interviews with key leading government office representatives, non-governmental organizations, and long-term residents along the Ngong River, the household survey will include five Focused Group Discussions (FGDs) with community members. In order to identify policy gaps and potential for the protection of the river from pollution in the study region, the researcher will analyze the policy instruments review of the current policy and legislative framework. It is vital that institutional mandates between the national environmental management and Kenya Water and Sanitation Service be thoroughly clarified in order for these government organizations to accept and support the management plans for the area. Additionally, depending on the present pressure-state condition, the researcher will analyze the rules and regulations that are not currently in place and need to be updated, and will then recommend policy enforcement, stringent regulation, and guidelines to preserve this environment.

**Key Words:** Environmental Policy                      Financial Appropriation and River Water  
Implementation, Community Participation,                      Pollution Prevention

## **INTRODUCTION**

About 42% of the world's population, or 3.2 billion people, reside in cities (UN, 2019). Currently, the majority of the world's population experiences moderate to severe water stress, lacks access to an adequate supply of safe water, and suffers from diseases brought on by contaminated drinking water and a lack of water for sanitation and hygiene. More than half of these deaths are young children. There has never been a more pressing need to safeguard and manage water resources correctly than there is today due to limited freshwater resources and rising demand (Macharia, 2015).

Statistics from the present century indicate that the most serious pollution is the direct result of human' activities. As soon as industries, factories, manufacturing plants residential areas, commercial enterprises, and unplanned settlements like slums became common, the problem of disposal of domestic, industrial and commercial waste increased. Sewage treatment plants and septic tanks could no longer cater for the increasing amount of municipal and industrial sewage (Cronje, 2021).

Dump sites were created next to river systems and direct disposal of untreated sewage into river water began to take place. This was followed by outbreaks of water related diseases like diarrhea, typhoid, ascaris, cholera, scabies, trachoma and bilharzia. Aquatic assemblages of species such as phytoplankton, macro-algae, macrophytes, zooplankton, macroinvertebrates, amphibians, fish, crabs and mollusks began facing serious problems for their survival and existence (Humphrey, 2019).

Water quality is compromised by the absence of pollution prevention regulations or their ineffective execution, which increases treatment and maintenance costs and harms inland, estuarine, and coastal aquatic habitats. Because it restricts downstream customers' use or increases the expense of treatment, river pollution makes water scarcity worse (Shaffer, 2015).

Improper waste management and unsafe discharge of these wastes into the water environment are two of the most serious issues facing emerging nations, and this has the greatest impact on fresh river water. These natural resources have frequently become unusable as a result of this (Fakayode, 2005). The activities of the occupant populations and industrial operations frequently cause industrial direct effluent contamination into rivers, which has been a significant concern (Adekunle, 2008).

Human-caused water contamination is now a major challenge on a global scale. Nairobi's environmental management has been hampered by issues with policy implementation, weak enforcement, and less environmentally friendly disposal techniques, with 30 to 40 percent of the total solid waste generated in urban areas not being collected and less than half of the population receiving services (Otieno, 2010).

If environmental governance is not reined in, trash generation will be a significant concern because Nairobi's urban population is rising at a rate that is almost twice as fast as the country's overall population growth rate. Due to Kenya's rapid urbanization, trash creation has been increasing; by 2030, it is predicted

that the current volume (about 4 million tons/year) will have doubled (Njoroge et al. 2014). The ability of the appropriate urban authorities and financial responsibility to address the challenge of pollution prevention, however, has not increased in tandem with the rise in trash generation (Gakungu 2012; Oyake, 2017). Nairobi's sustainability plan should be centered on meeting the demands of the current generation without compromising future generations, which should also apply to preventing water pollution. This can be done by giving policy implementation a means of combining environmental governance with a focus on monitoring and evaluation (UNEP 2018).

Nairobi inhabitants were supposed to have access to clean water from the Ngong River. However, the once-cool and pure water has been contaminated as a result of urbanization, rapid urban population development, poor farming practices along the Ngong river basin, human waste from the informal settlement, and trash from industrial effluents. Cleaning up this important resource and keeping track of the different factors contributing to its contamination call for a solution (NETWAS, 2005).

Ngong River which is a tributary of Ngong River is considered to be the most polluted river in Kenya which is flooded with plastics garbage. The pollution of these rivers are due to population of slums dwellers along the river bank in Sinai, Lungalunga, katoto and tetra park sites of informal settlements where water and sanitation facilities are limited and the fact that people throw garbage in the rivers and along their banks by slums dwellers killing crucial Ngong River is slowly choking to death (UN Habitat, 2007).

This research is significant since the results will be helpful to the government, particularly in developing policies for the prevention of water pollution in Nairobi County and raising awareness of the risks associated with using contaminated water in the affected community in order to implement controls and avoid the effects of water pollution. Through the cooperation of County government, NEMA, and local government institutions, the community would also gain from the research on better utilization of the river water. The study will also advance our understanding of how environmental policies affect efforts to prevent water pollution, find ways to conserve water, enhance water and hygienic practices, and supply communities with high-quality water. In addition to helping formulate policy, the study is crucial for community engagement, monitoring and evaluating the impact of water pollution prevention efforts, and government commitment to policy execution in pollution prevention.

The Lungalunga slums of Nairobi County, a high-potential area was the site of the investigation. Therefore, its conclusions might not be applicable to counties in geographically diverse areas. The study was restricted to the Ngong River, one of numerous riparian areas along the river, which flows through the Mutongwe, Katoto, Kingstone, and Sinai sections of the Lungalunga slum. The venue was picked since it was convenient for the researcher and offered a range of sizes. The ideal study environment was one that was pertinent to the researcher's interests, easily accessible, and allowed for the quick development of rapport for the reasons mentioned above.

## **Statement of the Problem**

Social amenities are needed to provide clean water, dispose of and treat human sewage, and eliminate domestic trash for the population living in urban informal settlements worldwide (UN-SDG, 2021). Uncontrolled garbage dumping and chemical pollution of nearby urban waterways are made possible by poor drainage as well as disadvantageous placements close to river floodplains (UN-Habitat, 2003).

The waters of the Ngong River were pure, clear, and potable at source in the early 20th century. due to poor maintenance of the municipal sewage treatment and disposal system, urbanization, industrial growth, and significant informal settlements along the river. On the banks of the Nairobi River are the majority of Nairobi's so-called slums, including Jamaica, Kingstone, Lunga Lunga Centre, Milimani, Paradise A, B, and C, Katoto Riverside, Sinai, Tetrapak, and Uchumi (Thorn, 2015). Due to a lack of adequate restroom facilities, people immediately discharge sewage, rubbish, and other solid wastes into rivers (Webb, 2019). Water quality and wastewater emissions from businesses and sewage systems are not adequately controlled or enforced, and institutional capacity is limited. The effects of pollution are generally not understood, and other water users' demands and rights are frequently disregarded (Hearne, 2016).

### **Objectives of the study**

- i. To assess impact of community participation on environmental policy implementation effects on river water pollution prevention.
- ii. To evaluate impact of financial appropriation for compliance of environmental policy implementation on river water pollution prevention.

## **LITERATURE REVIEW**

The section is arranged in terms of theoretical review which summarizes the theories guiding the study, empirical literature and the conceptual framework.

### **Theoretical Overview**

Many obstacles must be overcome for policies or interventions to be put into action, especially when they are meant to aid the most vulnerable members of society. The context in which policies are developed, including the content of the policy, the type of the policy, and the individuals participating in the formulation and implementation process, all have an impact on the policies that result (Althaus, Bridgman, & Davis, 2012). Impact of Policy Implementation will use a literature review to describe and analyze the essential components of policy design and implementation in order to comprehend the theoretical underpinnings of policy implementation and the performance-influencing variables. Policymakers must take into account a variety of implementation-related elements in order for the process to be successful. This article explores the various aspects of policy implementation in the literature on general policy and explains the significance of each aspect to policy implementation. The article concludes with the claim that support for environmental policy can be seen as one of the fundamentals of successful policy development and implementation. Three separate research methodologies were apparent as the study went

on. The first approach expresses a superior view of the implementation of the law, focusing on the difference between the goals of the legislators and the effectiveness and results of the law. The second approach refers to the underlying theory which suggests that the best way to learn how to use it is to start at the lowest level of activity and gradually work your way up to see which is more or less effective (Birkland, 2015). The process of understanding who, how and why policies are implemented can be described as an implementation theory concept, which means that many tests of change are not possible because "theories of change (i.e. what causes change) and change (i.e. what causes change) they have no correlation other than how to change" ". affects these reasons). Therefore, it is particularly important for researchers to highlight policy changes and policy implementation. Administration refers to the implementation of key decisions in laws and important decisions or judicial decisions (Sabatier, 1979).

## **Theory of Change**

Prerequisites of a theory of change are conditions or resources that your team believes are necessary for your initiative to be successful, and that you believe already exist and would be okay to control. Assumptions and prerequisites are necessary conditions for a business to be successful. Theory of change is a results-oriented collaboration that uses critical thinking to design, implement and evaluate initiatives such as policies, strategies and programmes, combined with visioning, planning and analysis and using the concept of logical structure. or plan designed to promote an event, prediction, or change (Reeler 2007) It clearly describes and explains how and why the desired change occurs in specific contexts. It focuses specifically on planning or "recording" without any middle ground what the program or change (activities or interventions) is and how the program or change will begin to achieve the desired goals. It works by first identifying the desired long-term goals and then, starting with the goals, identifying all the conditions (results) necessary to achieve the goals (and how these factors interact and influence each other). These are listed in the event summary (Clark & Taplin, 2012).

A planning, cooperation, and assessment technique called a "theory of change" is used to encourage change in the financial assistance industry, charitable groups, and the general public. A theory of change illustrates a mix of initiatives that can result in short-, medium-, and long-term effects in order to define the process of change. When Weiss' (1995) theory evolved the assessment process, particularly when assessing challenging tasks became challenging owing to a lack of focus on the cognitive process of planning and problem solving, the theory of change emerged in the United States in the 1990s. For example, when is it there? problem. It is based on feedback and control. Transition to assessment theory emphasizes the complexity of mainstream learning in society (Stame, 2014).

In this study, research to evaluate construction planning will guide the theory of change; who is involved; and how to measure impact. At various degrees of involvement with explanations that may be examined throughout time, researchers are interested in learning how ideas and outcomes relate to one another. The difficulty with this notion, though, is that there isn't a single yardstick by which societal development should be judged. Subjectivism is still possible because different people have different perspectives on the same reality. According to the transitive theory, a purpose communicates truth with reference to a result. It emphasizes the end result over the process, the certainty of the outcome over the element of risk, and learning above accountability.

## **Empirical Review**

The term "environmental policy implementation" refers to the use of mechanisms, resources, and coordination of all stakeholders in applying environmental policies to program actions. This includes both technical and relational specification of the institutions responsible for implementation as well as assurance that the institutions have the capacity for implementation and that the relationships among institutions are conducive to collaboration (Kimathi, 2017).

It is vital to understand the policy-making process since, based on global experience, policies are not always executed as intended and do not always yield the desired results once they are put into effect. Corruption, a lack of consistency in governmental policy, and insufficient people and material resources are just a few of the implementation issues the study discovered. The gap between stated policy aims and their actualization is growing, and it is clear that most of the time, policies implemented frequently in developing countries do not result in the expected outcomes (Bardach, 1977).

## **Prevention of Environmental Pollution**

Pollution significantly affects water. Water is a common solvent and can dissolve more substances than any other liquid on Earth. It readily dissolves and combines with the hazardous substances that companies, cities, and farms release into the water, polluting it (Hafeez, 2023).

Any human-caused contamination of a river that lessens its value to humans and other natural organisms is referred to as water pollution. Herbicides, pesticides, fertilizers, and dangerous substances can contaminate the water in our rivers. If our water is polluted, it will endanger human, animal and plant health unless it is treated expensively. Pollutants may originate from a single source, such as a manufacturing pipe that empties waste water or other materials into a river. Remains of fertilizer and pesticides can wash or run off into rivers, contaminating groundwater. Materials like oil, trash, fertilizer, and salt can find their way into storm drains that are situated on streets when it rains or when snow is melting. This contaminated water is sometimes sent to a water treatment facility through storm drains. Our drinking water sources are contaminated and the water's beauty is diminished as a result of the storm drain carrying this dirty water to a nearby river (Hossain, 2022).

In addition, the author examines the factors avoiding water contamination using concepts and theories recommended by management professionals. Prevention is the endeavor to ensure that everything proceeds as planned, per established orders and rules, and that the object's functions are carried out in line with the objectives (Robbins & Coulter, 2010). Controlling water contamination involves three key factors: preventive, countermeasures and promotional events

## **Preventive action**

In development operations, prevention entails containing or removing toxins. Tools for studying the environment, scientific advancements, and contemporary technology make up the indicator. Environmental impact assessment is a type of research that assesses the viability of development projects in terms of their effects on the environment, both positive and negative, primary and secondary.

## **Countermeasures**

Treatment activity refers to an effort made as part of the waste management process to solve the issue with the use of technology. This is done to suppress, decrease, or prevent toxins from getting into the river's aquatic ecosystem. Permits for waste management, monitoring and surveillance, and law enforcement make up the indication. To reduce the impact, a number of laws and regulations must be followed.

## **Promotional events**

The community or initiator learns about the environment through coaching. The indication includes an environmental seminar as well as socialization, instruction, and training. Where there are industrial operations, the community should be involved in the development of the industry. Asking the community for feedback on their attitudes and ideas towards the sector is one way to engage the community. While implementing environmental development, they need to be given an enlightening justification. Controlling water pollution requires the establishment of three key components, namely prevention, restoration/treatment, and coaching/restoration of the environment to achieve the established quality requirements.

## **Environmental policy of Kenya in the prevention of river water pollution**

*National Environmental Policy, 2013*

The increasing expenses of water treatment, food imports, and health services are all direct results of environmental deterioration in Kenya, which also directly adds to the effects of climate change. These not only worsen health insecurity and human vulnerability, but they also deplete the nation's economic resources. One of the main causes of land degradation in the nation is the extension of human activity into peripheral areas, which results in the destruction of natural habitats like forests and wetlands. The ongoing depletion of biological resources is mirrored in the reduction of economic potential and commercial development opportunities. The justification for this environmental policy is provided by this background. It offers a framework to direct the nation's efforts to meet the growing environmental issues and difficulties, including:

**Environmental governance:** There are several environmental policies that are not consistent with the constitution and lack harmony. The management of natural resources using an integrated ecosystem approach has failed to adequately address environmental issues. In Kenya's environment sector, poor policy enforcement and implementation continue to be a big issue.

**Biodiversity Loss:** Kenya continues to lose biodiversity as a result of, among other things, habitat degradation, over grazing, deforestation, and pollution. When it comes to shared resources where national policies are not synchronized, the problem of coping with biodiversity loss becomes more complex.

**Rehabilitation and restoration of environmentally degraded areas:** Kenya has a number of degraded regions that need restoration and rehabilitation. This includes riverbanks and wetlands.

## **Community Participation On Environmental Policy Implementation**

Community involvement entails educating people, which increases their openness to and capacity to respond to development programs, as well as their motivation to take initiative locally (Oakley, 1991). No matter their socioeconomic status or level of literacy, villagers can increasingly assume responsibility for planning, managing, and accessing collective action, including improving their own capital for the



sustainability and further development of necessary services, through the community participation process (Newig, 2014).

Through community participation strategy and framework on community participation resources are mobilized, initiated and responsibility undertaken for development activities and shares decision making for implementation of all other programmes for overall improvement status. Community participation promotes relevance accountabilities, improves community infrastructure, level of intrasectoral collaboration. It also promotes ownership of policy, acceptance, compliance and sustainability of Programme (Reich, 1990).

The National Development Plan, 2002-2008 states that in order to have the greatest impact and deliver their results on schedule, policies, programs, and projects must be implemented and assessed closely. Communities are urged to create community action plans in order to actively participate in the monitoring and assessment of projects at the community level through community project committees in order to put this into practice. In each sector, Kenya Vision 2030 has identified a number of flagship projects that will be carried out throughout the course of the five years of the vision in order to facilitate the required growth and on a sustainable basis. Environmental sustainability growth has been attributed in large part to pollution management and environmental preservation.

Instead of being a method to design and support health programs to sustain these outcomes, community engagement has most frequently been considered as an intervention to improve environmental policy outcomes. New frameworks are required to comprehend the connection between community involvement and enhanced outcomes. Therefore, it is essential to look at community engagement as a process and address crucial concerns including empowerment, ownership, cost-effects, and sustainability of development (Rifkin, 2014).

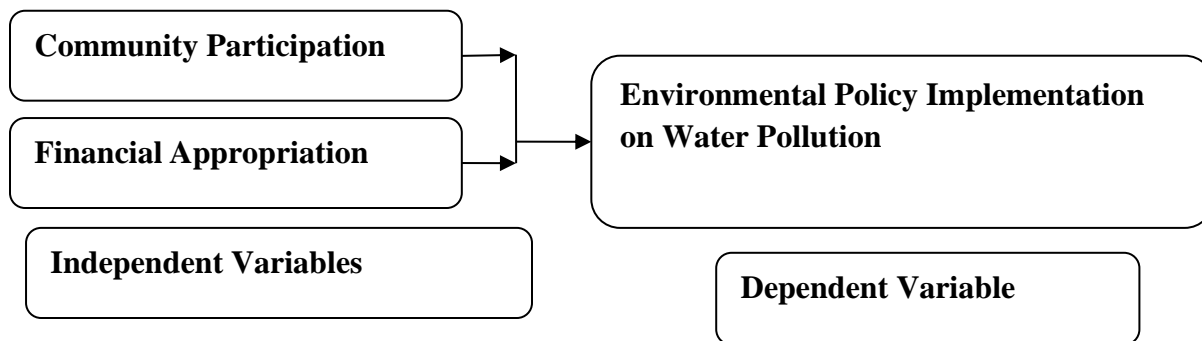
Financial appropriation to ensure compliance with the implementation of environmental policy  
Public resource allocation policies and regulations are the major lever to ensure sustainable growth. Global commitments to regional and international Sustainable Development Goals (SDGs), such as the Paris Agreement on Climate Change and the SDGs, have influenced national policy responses throughout the past few decades. The OECD invests in innovative planning and budgeting techniques, encourages openness and citizen participation, and supports monitoring and assessment procedures that might help governments fulfill their obligations under national and international agreements. The Paris Cooperation on Green Budgets (OECD, 2019) is one of the projects that works closely with countries to align government revenue and expenditure procedures with environmental and climate goals.

Effective implementation occurs when important success factors are identified, performance measures and reporting are in line, and the organization's resources and actions are linked to stated goals that are achieved. Some claim that technology makes life straightforward and easy. This concept has something to do with how a strategy is put into action. A corporation with a strong, contemporary technical system frequently has an edge over a company with out-of-date technology, both in terms of competitiveness and overall management process. An organization may simply adopt, monitor, and assess the strategic process it has undertaken with the help of good technology (Hitt et al., 2013).

Effective implementation is a very expensive process that necessitates financial resources to carry out the plan. For many years, environmental preservation has been hampered by insufficient funding allocation. This halted a number of projects, including the installation of sewage infrastructure, rubbish disposal, and better remuneration. The primary impediment to the implementation of the strategic plan for environmental preservation and sustainability is a lack of money at the national level. According to the Ministry of the Environment, the state finances for 2021-2022 were 1.23 billion less than the budget forecast. Finance is required for the acquisition of services, equipment, and facilities required for organizational plan implementation (Mascarenhas, 2013). Keriako Tobiko (2021) observed that the conservation of the environment, water, and natural resources is actually hampered by the wrong allocation of funds for the protection of forests and water towers, as well as a lack of finances for river building and restoration. It was noted that deploying an implementing agency regardless of its competence, skills and security does not help to achieve the strategic plan.

Although there are many similarities, the nation examples demonstrate some distinctions in the people who are engaged in deciding the regulator's budget. An internal analysis of future budget requirements is typically the first step in determining the budget composition. In every situation, the Ministry of the Environment (or a comparable state administrative authority) then reviews, amends, and possibly approves it. This happens either when the regulator is an independent body reporting to the ministry or when it is a member of a ministry. The entire ministerial budget is then comprised of the regulatory budget, which must be approved by the government, the parliament, and the ministry of finance. The Ministry of Finance's role is not always clearly defined, but some nations claim that it can play a substantial influence in discussions regarding determining the regulators' budget.

### Conceptual Framework



### RESEARCH METHODOLOGY

A case study approach was utilized in this study. Kelinger (1978) makes the case for the use of case studies in socioeconomic fact seeking since they offer a wealth of correct information. The goal of case study research, according to Patton (2002), is to gather data at a particular period and utilize it to define the nature of actual conditions. Additionally, it enables thorough and focused exploration that offers insightful information on problem-solving, assessment, and strategy (Cooper, 2003).

The National Environmental Management Authority (NEMA), environmental police officers, and municipal council departments are the study's target populations. Top management, middle management, and individuals

who are directly involved in environmental management's day-to-day operations will make up the study population. The effects of environmental policy implementation on the control and prevention of river water pollution. The target population should have visible features that allows the researcher to generalize the study's findings.

<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
NEMA	40	20%
Local habitant	70	35%
City county inspectorate	40	20%
Police officers	50	25%
<b>Total</b>	<b>200</b>	<b>100</b>

Using a stratified random sampling technique, the National Environmental Management Agency (NEMA), Environmental Police and City Council Department will each provide a sample size of 100 respondents for the study. Because the researcher used stratified random sampling, which permits generalization to a larger population with an error that can be determined statistically, the sample size was 50% of the target population (Mugenda, 2003). Data collection for the study was done through questionnaires. Open and closed ended questions were adopted in the questionnaire. Content analysis was employed in analyzing qualitative data. Data analysis was mostly done through the use of percentage calculations. Charts, tables, and pie charts was used in the data presentation. They were applied to present the results in a logical order in order to demonstrate the relationships between the variables.

## **RESULTS AND FINDINGS**

The researcher dispatched 100 questionnaires to the chosen participants. However, 90 completed questionnaires were received back. This led to a response rate of 90%, which is thought to be adequate for the survey. The population as a whole was accurately represented by this response rate. A response rate of 50% is deemed adequate for analysis by Kothari (2007); a response rate of over 50% is considered good; and a response rate of over 70% is considered very good.

On demographic information, 54 (60%) of the respondents were male while 36 (40%) were female. However, both genders were well represented to carry out the study. The inclusion of gender data was important because it helped to reflect the way respondents contributed ideas to the study. Findings on age distribution revealed that large number of the participants were aged between 36 and 50 years as presented by 41.1%, followed by those falling between 18 and 35 years presented by 31.1%. Additionally, 27.8% of the respondents were aged above 50 years. Findings on level of education showed that 48.9% of the participants had attained bachelor's degree, 37.8% had attained diploma, while 13.3% had attained certificate. This shows that a higher number of the respondents had bachelor's degree as their educational level. This indicates that all the participants had the essential knowledge to respond to the questionnaires independently. Findings on the number of years living in area indicated that that 40.0% of the participants have lived in the Ngong area for more than 10 years, 33.3% have lived between 7 and 10 years, 20% have lived between 4 and 6 years and 6.7 % had lived less than 4 years. Individuals who have lived in an area for an extended period may have a deeper understanding of local ecosystems, water sources, and historical changes.

## **Community participation**

The objective one of the study was to assess impact of community participation on environmental policy implementation effects on river water pollution prevention. From the qualitative data gathered, the study established that community participation enhanced local knowledge about the Ngong' River ecosystem, pollution sources, and potential solutions. Increased awareness empowers community members to actively contribute to policy discussions and implementation. Involving the community in decision-making processes ensures that diverse perspectives, needs, and concerns are considered. Stakeholder engagement can lead to more comprehensive and locally relevant environmental policies.

Community members play a crucial role in monitoring water quality and reporting pollution incidents. Their active involvement helps in early detection of issues and facilitates a rapid response to prevent further contamination. Engaging the community in environmental policies encourages the adoption of sustainable practices. This may include proper waste disposal, agricultural best practices, and reduced use of harmful substances that contribute to water pollution. Community-driven initiatives, such as clean-up campaigns and awareness programs, can complement formal policies. These grassroots efforts contribute to a sense of ownership and responsibility for the river's well-being.

Effective community participation fosters collaboration between residents and relevant authorities, such as local government agencies and environmental organizations. This collaboration enhances the efficiency of policy implementation and enforcement. Community participation provides opportunities for education and capacity building. Workshops, training programs, and outreach efforts can empower community members with the knowledge and skills needed to actively contribute to pollution prevention.

An engaged community exert social pressure on polluters and policymakers, holding them accountable for their actions. This collective accountability can lead to a more responsive and responsible approach to pollution prevention. Community participation fosters a sense of long-term commitment to environmental conservation. Residents who actively contribute to policy implementation are more likely to sustain their efforts over time, contributing to the river's ongoing health. Community participation ensures that environmental policies are culturally sensitive and respect local traditions. This enhances the likelihood of successful implementation as policies align with the values and practices of the community.

## **Financial appropriation**

The objective two of the study was to evaluate impact of financial appropriation for compliance of environmental policy implementation on river water pollution prevention. The study gathered qualitative data from open-ended questions. Financial appropriation for the compliance of environmental policy implementation have a significant impact on river water pollution prevention, specifically in the case of Ngong River in Nairobi City County. The findings show that adequate financial support can enable the construction and maintenance of wastewater treatment plants along Ngong River. These plants are crucial for treating industrial and domestic wastewater before it is released into the river, reducing pollution levels.

Adequate funding support the development and implementation of strict environmental laws and regulations related to Ngong River. This includes penalties for non-compliance, thereby acting as a deterrent to pollution. Financial resources are directed towards the protection and restoration of riparian zones along Ngong River. This includes planting native vegetation that act as natural filters, preventing pollutants from reaching the water. Adequate funding facilitate collaboration with international organizations and neighboring regions. This lead to the exchange of knowledge, technology, and financial resources for more effective river water pollution prevention.

Moreover, the financial appropriation enables the implementation of proactive measures for pollution prevention. This may involve investing in advanced wastewater treatment technologies, promoting sustainable agricultural practices, and conducting public awareness campaigns to educate the local community about responsible waste disposal. By addressing pollution at its source, these measures contribute significantly to the long-term health of Ngong River.

Additionally, the funding is directed towards research initiatives to identify emerging pollutants and their impact on the river ecosystem. This knowledge is instrumental in adapting and updating environmental policies to effectively address evolving challenges. The financial commitment supports the continuous improvement of strategies aimed at preventing river water pollution, making Ngong River more resilient to the changing environmental landscape.

Furthermore, the financial support facilitates collaborative efforts among government agencies, local communities, and businesses. Establishing partnerships and fostering a sense of shared responsibility can enhance the overall effectiveness of pollution prevention initiatives. The funds can be utilized to create forums for stakeholder engagement, encouraging open communication and cooperation in the pursuit of a cleaner Ngong River.

## **Conclusion**

The study concludes that the impact of community participation on environmental policy implementation for the prevention of river water pollution in Ngong River is significant. By actively involving residents in decision-making, leveraging local knowledge, raising awareness, and supporting grassroots initiatives, community participation becomes a driving force for positive change. This collaborative approach not only enhances the success of pollution prevention measures but also promotes a sense of shared responsibility for the well-being of Ngong River within the local community. Further, the impact of financial appropriation for compliance with environmental policies on preventing river water pollution in Ngong River is substantial. The allocation of funds not only signifies a commitment to environmental stewardship but also provides the means to implement robust strategies that safeguard the river ecosystem. Through a combination of regulatory enforcement, proactive measures, research initiatives, and collaborative efforts, the financial support contributes to the sustainable preservation of Ngong River for current and future generations. The government holds a central and multifaceted role in the prevention of river water pollution, particularly in the context of Ngong River in Nairobi City County. From policy formulation and enforcement to monitoring, public

engagement, and adaptive management, the government's responsibilities are integral to fostering a sustainable balance between development and environmental conservation along the riverbanks.

## **Recommendations**

The research recommends that;

The government should engage the community in protection of ecosystem. Community engagement and education empower local residents to actively participate in preserving the Ngong River, fostering a sense of responsibility and ownership.

Public-private partnerships for infrastructure development are instrumental in achieving tangible results. By facilitating collaborations between the public and private sectors, investments can be attracted to develop infrastructure projects that support pollution prevention and control measures.

The county government of Nairobi should identify and control of pollution sources which is the imperative steps in the mitigation process. Conducting thorough assessments to pinpoint and prioritize pollution sources along the Ngong River allows for targeted interventions. Rigorous controls on industrial effluents, agricultural runoff, and domestic waste are necessary to arrest pollution at its source.

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