

## RESEARCH

# Implications of traditional beliefs and practices on natural resource conservation and management: evidence from some selected urban rivers in Ghana

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The article presents an assessment of the implications of the use of traditional practices and belief systems on natural resource conservation, using a case of selected communities in Ghana (Fomena, Tepa, Tanoso, and Ejisu). The study adopted both qualitative and quantitative research approach to achieve the formulated objectives. A total of 208 (52 each) respondents were selected mainly by convenient and snowballing sampling techniques. Data were collected using both unstructured interview guides and questionnaires. The study revealed that taboos, totems, and customary practices are the major instruments used in the conservation and management of rivers in the study areas. However, it was realized that the traditional measures are challenged by the influence of western religion, education and modernity, increasing immigration resulting in a high number of foreigners, civilization and sometimes ignorance. The study recommends the traditional authorities, families as well as clergymen for people to appreciate the differences in African traditions and African religion should undertake that massive sensitization. Also, government or agencies (like the Environmental Protection Agency and the local assembly unit) responsible for taking care of the environment and its resources should incorporate the traditional measures in their policies and action plans toward natural or environmental resource conservation and management like water bodies.

**Keywords:** customary practice, conservation, natural resources, traditional beliefs, totems

## 1. Introduction

Traditional ecological knowledge (TEK), also known as customary behaviors and beliefs, has become a key factor in determining the effectiveness of conservation programs (1). Studies conducted worldwide have demonstrated the importance of traditional methods in resource management and conservation (2). For instance, the Baima Tibetans in China have started to rebuild their destroyed culture, which includes traditions and rituals that were disregarded by powerful modern scientific knowledge. Because the goals and beliefs of the local people were upheld in the management of these protected areas, these management techniques were essential for biodiversity conservation and the preservation of natural resources that supported livelihoods (3).

Water bodies are not an exception when it comes to the application of cultural practice to the preservation and management of other natural resources. It is evident that local people in Asia, South America and tropical Africa have developed a number of coherent resource protection and management strategies for water bodies and resources therein (4). Through a number of cultural practices, rituals and taboos, in the early 20th century, Amerindians on the West Coast of North America maintained their salmon fishery and a variety of other marine resources (5). In their work titled “the influence of traditional practices on natural resources conservation” conducted in Uli in Nigeria, according to Anoliefo et al. (6), it is not permitted to do domestic cleaning, feces collection, or urination in the area of the stream designated for drinking. Killing a python in the Uli

town was abhorrent. Because of these taboos, streams (like the Atammiri River) are incredibly pure and a great supply of water for drinking and other household purposes.

In Ghana, particularly among the Akan people, traditional knowledge has been massively employed in conservation and management natural resource. Indigenous populations in some societies, like the Ashanti in Ghana, used cultural methods to maintain forests and were mainly successful in doing so before the industrial revolution and urbanization (7). Cobbinah (2011) had also mentioned how cultural practices were passed down from one generation to the next, ensuring the preservation of the forest's biodiversity and the livelihoods of its inhabitants. Because they were affordable and needed less time and energy to implement, these outdated conservation approaches were successful (8).

Amidst centralized and modern conservation and management approaches, traditional ecological knowledge has provided a great deal to the management of water bodies and species therein. Deep scientific or rational explanations with important implications for biodiversity lie behind the well-known personal and mystical explanation for taboos (9). Boamah (9) asserts that water bodies are revered because animals with ethereal connections live there. In terms of water, its use, and conservation, riparian societies have sophisticated traditional knowledge and practices. The communities made sure that essential water supplies are secured and conserved by upholding the spirit of nature and protecting forests (WRC of Ghana, 2012).

The Akan make reference to using the idea of nsuo abosom (river/water deities). This is the idea that there are gods who live in the waters. These spirits have control over the lakes, rivers, lagoons, and ocean. Due to this belief, the Akan's worship the gods of the sea, lake, river, and lagoon under the guise of offering adoration to Onyankopon (the Supreme Being) through them (10). People must approach sacred water bodies with caution and adhere to taboos because entities live in water bodies (9). The Akans use taboos as a line of defense against hazardous human activities that damage water resources. Acheampong (2010) highlighted that in addition to basic laws, there are specific prohibitions and taboos that prohibit using metal objects in lakes and rivers, limit fishing during specified seasons, and forbid doing laundry on certain days [see (9)].

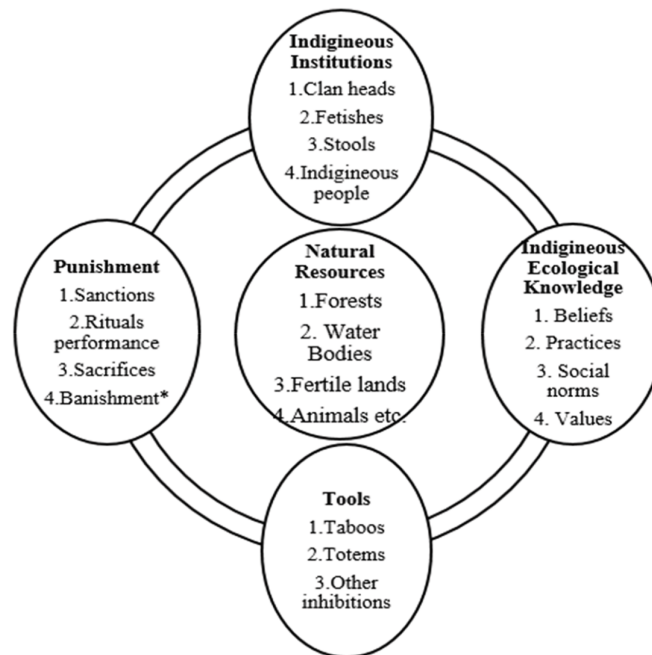
Fishing is completely prohibited in the Tano and Koraa rivers in the Brong-Ahafo area of Ghana because fish are thought to be the children of the spirit that lives there (11). Similar to this, the Akyem people consider the Birim River to be the source of their intellectual and spiritual well-being. People in the region revere the river, and the Ohum festival is devoted to protecting the environment of the Birim Basin. On Tuesdays, swimming and fishing in the river are prohibited. The use of motorized boats on Lake Bosomtwe is prohibited because communities along its shores feel that the lake's "children" detest loud noise. As a result, transportation and fishing are both done on wooden planks in the Lake.

Women are occasionally prohibited from using the lagoon's resources at the Muni-Pomadze wetland in Winneba in order to maintain the lagoon's water quality and stop contaminants or impurities from being dumped there (12).

Despite the strength and function of traditional ecological knowledge and belief system in the management and protection of natural resources, this informal institution receives little attention [(Kankpeyeng, 2000) cited in (13)]. And hence has led to the eminent and devastating impacts of human activities on water bodies in some areas in Ghana. The country in recent times has witnessed a great challenge with regards to sustainable management and conservation of natural resources (particularly rivers). Current development indicates that anthropogenic activities such as improper waste disposal and particularly illegal mining operation have left most of these streams/rivers in a bad state both in urban and rural communities. Most shows signs of recurrent bioaccumulation. This suggests that the communities lose their water supply. In fact, the use of contaminated water may develop a number of water-borne diseases such the Buruli ulcer, bilharzias, and other incapacitating conditions (Ghana web, 2018).

Despite being aware of the stringent customs governing the Tano River as discussed before, Mohammed Nurudeen of Joy News nonetheless claimed that illegal mining activities in the Brong Ahafo region had silted the Tano River, causing it to dry up for the first time in 40 years. Charles Brobby, Regional Chief Manager of the GWC, who stated that the corporation had shut down the treatment facility due to the river drying up, also corroborated this (14). Illegal gold mining has been reported to constitute a threat to the Oda River Forest Reserve. Numerous animal species call the Reserve, particularly the river, home, and as it is attacked, those animals are in danger of losing either their habitat or lives (15). This is, however, an evidence that there is more to be done when it comes to the sustainable management of water bodies in the country. Literature reveals much works being done on the use of traditional practices in the management of natural resources (9, 10, ? , 12, 16). Upon review, only few focused on its use in the conservation and management of water bodies and more specifically examined their effectiveness and challenges. Meanwhile, Veldman (2004) as reviewed in the work of Adu-Gyamfi (17) explains that changing social norms and culture is undermining many local practices as well as traditional beliefs that have survived for hundreds of years. For example, the erosion of traditional valued, especially among the youth, has rendered the Kaya sacred forests in Kenya vulnerable to encroachment, overexploitation, and desecration. Likewise, in Ghana, young people are often disinterested in following the old tradition. This attracted the attention of the researcher to look further into management and conservation of water bodies as far traditional beliefs and practices are concerned.

This article therefore seeks to assess the application of traditional beliefs and customary practices in the



**FIGURE 1** | Indigenous module to Natural Resource Conservation. Source: Compiled from reviewed literature (6, 7, 16, 18, Asante, 2011, 19).

protection and management of rivers in four selected semi-urban communities in Ghana. Specifically, the study sought to identify traditional beliefs and practices used in the protection and management of rivers in the various communities; examine the effectiveness of the use of traditional beliefs and practices in the management of the rivers; and investigate challenges in adherence to traditional beliefs and practices used to conserve and manage rivers in the respective communities. This paper answers the following questions:

1. What are the traditional beliefs and practices used in the protection and management of rivers in the selected communities?
2. How effective is the application of traditional beliefs and practices toward management of rivers in the selected communities?
3. What are the challenges of adherence to the traditional beliefs and practices used in the protection and management of rivers in the communities?

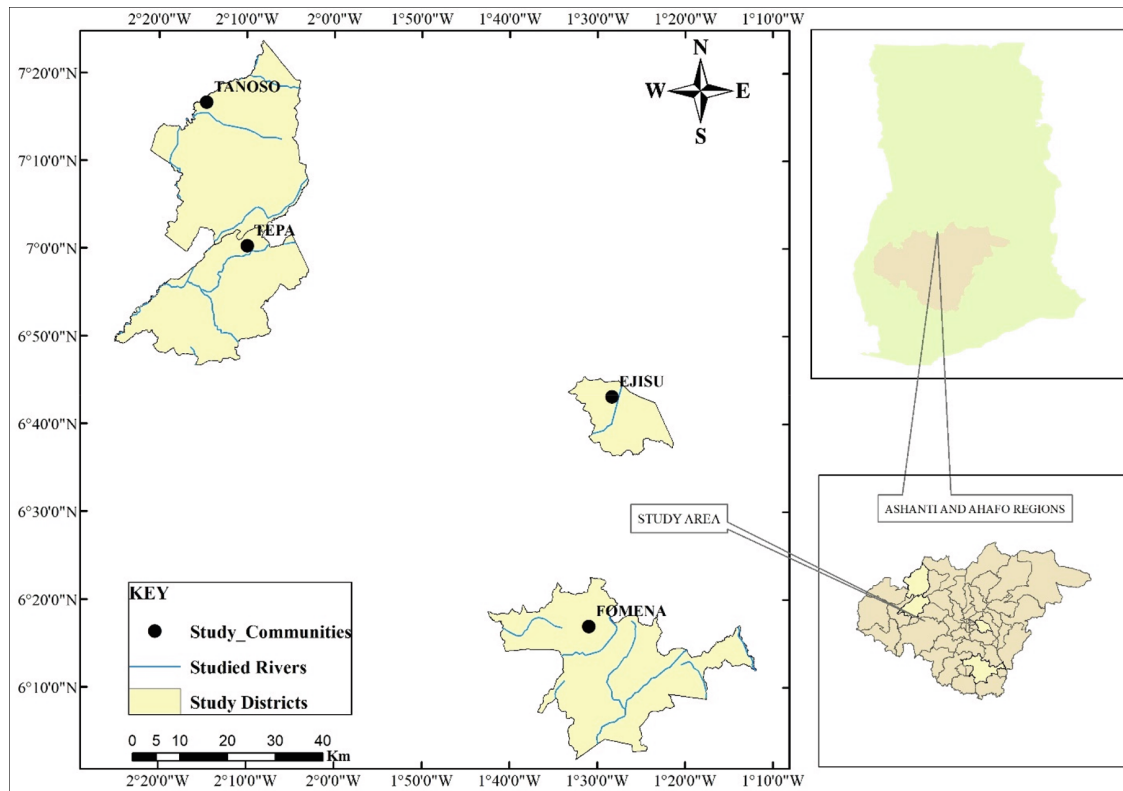
This article will provide bodies and policymakers like the Environmental Protection Agency (EPA) and Water management authorities in planning and strategizing specific policy formulation measures to solve problems of natural resource conservation and management. Also, it will serve as a blueprint to learners, lectures, non-governmental agencies and concerned stakeholders in strategic management and decision making. It shall intensify the campaign on biodiversity conservation and sensitization programs in Ghana. Additionally, it will provide the

foundation of stimulating further research on empirical studies concerning the phenomenon.

## 1.1. Conceptual framework

This section of the article talks about the conceptual and theoretical issues that underlines the article. These include the Community Base Natural Resource Management approach, cultural theory and traditional module to natural resource conservation. The framework conceptualizes that, conservation and management of natural resources locally is surrounded by cultural institutions and traditional practices which ensures judicious use of bio resources especially those that takes years to rejuvenate (e.g., water bodies). See **Figure 1** below showing the linkages.

The **Figure 1** is a module that depict how cultural practice and indigenous people manage and conserve their available resources. It explains that traditional institutions (like, Clan heads, priests, kings etc.) establishes rules to guard natural elements such as forests, water bodies, mineral resources, etc., hence, sort to protect them. These are made possible through the use of traditionally embedded knowledge in the form of beliefs, customary practices, moral values, and social norms (7, 18). Notwithstanding that, humans and environment interactions have always been unfavorable. This is because humans' actions toward the environment and its resources when not controlled threatens its resilience. As such, indigenous institutions use instruments like taboos, totems and other inhibitions that are observed by people to show respect to deities and ancestors. These deities (gods) are believed to live in the water bodies, trees (forest), animals,



**FIGURE 2 |** Map of study areas in National and Regional Context. Source: Fieldwork, (2021).

etc., in their communities as their place of abode (? ). This champion the idea of the use of taboos and totems in other to safeguard the abodes of the gods and hence preserve natural resources (environmental resources). The measures by the traditional institutions are strong to the extent that, individuals or indigenes who go contrary to them are punished (16). These include sanctions, rituals, and sacrifices (6). History has indicated that, in the olden days, instances were that individuals who fall short were banished or sacrifice (killed). This was done in other to please the gods and ancestors to swerve their anger on the entire community. Clan heads, fetishes, stools, and indigenous people overseas, checks and advise each other of their actions that could potentially result in committing an abomination [(Lebbie, 2008) cited in (19)]. Knowledge of this framework identifies various structures in cultural institutions that aids in the conservation and management course.

Theoretically, the module is supported and highly informed by the community-based natural resources management and Human-Environment Relations Theory. CBNRM strategy aims to facilitate improved environmental management outcomes through the full engagement of populations and resource consumers in decision-making efforts and the inclusion of local organizations, customary procedures and information structures into management, regulatory and compliance processes (20). The Human-Environment Relations Theory gives similar explanation that human beings are related to the environment and this

unique relationship is hinged on the cultural system of the people (21).

## 2. Materials and methods

### 2.1. Description of study area

The study was performed in four communities in both the Ashanti and Bono regions of Ghana.

The communities include; Fomena in the Adansi North District, Ejisu in the Ejisu District, Tepa in the Ahafo-Ano North District, and Tanoso in the Tano north District. Fomena, Ejisu, and Tepa are in the Ashanti Region whiles Tanoso is in the Ahafo Region of Ghana. The Ashanti region is indeed the middle zone between 6.15 W and 2.25 W longitudes and 5.50 N and 7.46 N latitudes [(22); **Figure 2**]. The region shares borders with Ahafo, Bono East and Bono Region in the North, Eastern Region in the East, Central Region in the South and Western Region in the South West. Akan is the predominant ethnic group, accounting for 94.2% of the population by origin in the region. The Ahafo region is also bordered in the north by the Bono region, in the east by the Ashanti region, in the west by the Bono region and in the south by the western-north region. This area lies in Ghana's mountain belt (23). The communities are located in the Ghanaian semi-deciduous forest zone, where the mean monthly temperature

is approximately 27°C and the relative humidity varies from 95 to 71.6% during the wet season to 42.5% during the dry. They are distinguished by a double rainfall maxima regime, with the major rainy season lasting from March to July and the minor rainy season lasting from September to November. The average yearly rainfall varies from 855 to 1,500 mm. With an elevation of 210–300 m above sea level, the topography is undulating.

Rivers in the various communities in the region were the main natural resources considered for the purpose of the study. They include, Ankafo and Benin rivers in Fomena, Baffoe and Oda rivers in Ejisu, Abu and Kwasu rivers in Tepa, and the Tano River in Tanoso community. These rivers were chosen because they bore characteristics of the subject in question. These rivers belong to the Pra (23,200km<sup>2</sup>) and the Tano Basins (15,000km<sup>2</sup>), respectively. The Pra Basin occupies a larger area than the Tano and hence more rivers were selected from the basin.

## 2.2. Profile of the rivers

### 2.2.1. Bemín, ankafo, oda and baffoe river

The Ankafo and Bemín stream have their source from the Kusa scarp. Both streams are perennial, thus they flow throughout the year and depict typical dendritic pattern. The Ankafo flows through Fomena, Dompouse, Kyeaboso, Ahinsan, etc., while the Bemín from Fomena flows through Ayaase, Old Edubiase and joins the Oda River near Jacobu. One of the main tributaries of the Pra basin is the Oda and Baffoe River. It originates in the Kwahu Plateau's highlands in the Eastern Region and flows for about 240 kilometers before reaching the Gulf of Guinea close to Shama in the Western Region. Its roughly 23,200 km<sup>2</sup> basin area spans over 55% of Ashanti, 23% of Eastern, 15% of Central, and 7% of Western Regions. The basin's climate is characterized as wet and semi-arid, with bi-modal rainfall that peaks in May/June and October. The basin receives between 1,500 and 2,000 mm of rainfall each year. With an average annual value of 1,650 mm, potential evapotranspiration (PET) outweighs rainfall for the majority of the months of the year. There are about 75 species of fish in the Pra basin and among them are *Aethiomastacembelus nigromarginatus*, *Barbus trispilos*, *Chiloglanis occidentalis*, *Epiplatys bifasciatus*, *Tilapia busumana*, and *Parachanna obscura* (ishbase.org, 2003). The vegetation around the rivers is semi deciduous forest in nature. The native vegetation cover has been converted into secondary forest due to the environmentally unfriendly farming methods, stone quarrying activities, and illegal chain saw operations in the area. The basin's water supplies are being negatively affected by anthropogenic activity (WRC, 2012).

**TABLE 1** | Distribution of the rivers and their respective basins.

River	Basin	Total size
Tano	Tano	15,000 Km <sup>2</sup>
Abu	Tano	
Kwasu	Tano	
Oda	Pra	23,200 km <sup>2</sup>
Baffoe	Pra	
Bemín	Pra	
Ankafo	Pra	

Source: Fieldwork, (2021).

### 2.2.2. Tano, abu and kwasu

The Tano Basin contains these rivers. Between Latitudes 50 N and 70 40' N and Longitudes 20 00' W and 30 15' W, the Tano Basin is situated in Ghana's southwest (Table 1). Between Ghana and Cote d'Ivoire, the Tano River System's entire catchment area is around 15,000 km<sup>2</sup>. The main Tano River rises in the mountains at Techiman in the Brong-Ahafo Region at an elevation of 518 meters above sea level as its source, and it travels for 400 km until emptying into the Aby Lagoon in Côte d'Ivoire. *Hemichromis fasciatus*, *Schilbe intermedius*, *Hepsetus Odoo*, *Rai Senegalensis*, *Sarotherodon Tila-pia zillii*, *Galilaeus Brycinus nurse*, *Heterobranchus spp.*, *Chrysichthys nigrodigitatus*, and *Chrysichthys nigrodigitatus* species are some of the species that can be found in the Tano. The Basin establishes a significant source of groundwater and surface water for domestic use. The Tano Basin's climate can be classified as partially wet semi-equatorial and partly southern equatorial in Ghana. Except at Sefwi-Wiawso, where the value is less than 50% and thus indicates poor quality, the basin's surface water quality falls into the class II category, which denotes reasonably clean water. Low dissolved oxygen levels are one cause of the poor quality, as they make it difficult for any type of aquatic life to survive in the bodies of water. Largely agricultural lands, forests, and grassland/human settlements characterize the land use and land cover in the Tano basin.

## 2.3. Research design and methods

The study employed the "mix" method approach using the convergent parallel and embedded mixed method design to determine the traditional methods used in the management and conservation of rivers in the selected communities. A convergent parallel design involves the researcher simultaneously conducting the quantitative and qualitative portions during the same stage of the research process, giving equal weight to each approach, analyzing the two parts separately, and combining the results (Creswell and Pablo-Clark, 2011). The embedded mixed method design had a significant impact on the study as well. The underlying assumptions of this design are that a single data set is

insufficient, that many questions must be addressed, and that several data kinds are needed for various question types. Additionally, one piece of data plays a supporting, supporting role in a study that is based primarily on the other type of data (24). According to Creswell (2009), both quantitative and qualitative evidence combined offer a clearer view of the study issue than any form alone. This was necessary to obtain adequate data since the study explores people's cultural ideologies, beliefs and practices. For emphasis, the researcher wanted to hear from insiders of traditional knowledge systems who are familiar with the fundamental traditional customs and beliefs used in the management and protection of the various rivers, so the study's fulcrum was grounded in the phenomenological approach (25).

## 2.4. Sample and sampling procedures

The four towns that have rivers that have been effectively conserved through indigenous cultural traditions were chosen using a purposive sampling technique. Purposive sampling works best when research locations are chosen within a cultural domain that have the particular qualities being investigated (26). It was also employed due to its efficiency in terms of both time and money. Additionally, Cinner and Aswani (2007) and Shahabuddin and Rao (2010) presented evidence that communities close to natural resources are in a position to ensure sustainable use of their resources, which was used in the selection of communities. Additionally, as with the rivers, based on their proximity and degree of interest. A total sample of 208 were engaged in the study. Due to the lack of data on the number of people closer to and engaging with the rivers in the cities, 5% (0.05) of each community's population was selected and distributed among the different categories of respondents. However, the application of this approach to the population of the various communities would have made the sample too large hence 50 members from each community who live closer to the rivers and 2 traditional authorities each from all the study areas were selected. The reason for choosing the sample was to ensure easy data management and since the size of the large sample tends to destroy the quality of the information obtained as noted by (27). Also, very large samples often appear to transform minor variations into statistically meaningful differences, even though they are clinically irrelevant (28). Other specific inclusion criteria were community members who were 25 years and above and have self-reportage knowledge regarding the use of indigenous beliefs and practices in the conservation and management of rivers in the respective communities.

The study sample were enlisted through non-random subjective sampling procedure. Both purposive and snow balling approaches were employed to select respondents who

lived closer to the rivers and prospective participants who were recommended by others (29). While the purposive sampling was used to select the community members who responded to the questionnaires, snow balling was used to identify opinion leaders who had comprehensive knowledge in matters of beliefs and practices governing rivers in their respective communities. Snowballing helped to resolve the problem of finding main players who are the custodians of the rivers (30).

## 2.5. Data collection and procedure

Both interview guides (unstructured) and questionnaires (Close-ended) were used to solicit information from participants and respondents. Chiefs and elders of the community and the ordinary community members provided the primary data for the study. Secondary data were also extracted from already existing literature on the subject. For an in-depth interview, two (2) primary informants were asked to participate. Other group members' views and opinions were often asked by the use of the questionnaires. The interviews helped the researchers to obtain detailed descriptions and data (31). Some questions about the practices used in river management, the effectiveness of these practices and the challenges of adherence to those cultural practices used in river conservation and management are discussed. Interview schedules were made for the various identified authorities (Chiefs and community elders) in other not to obstruct their daily planned activities. Interviewees were not given names, and no information allowing for personal identity was written down. Interviews were held in both their native tongue and a language that both parties could understand. Issues that were of focused includes practices used in the management of rivers, the effectiveness of these practices and challenges of their use in the management of rivers in their communities. Apart from taking of field notes, participants were provided with an informed consent for recording. This allowed for getting information in the interviewees' own words. Audio records were transcribed in English for critical examination of what really transpired in the discussion. The questionnaires were self-administered by the researcher. The questions were interpreted into the local language of those who could not understand English language. The researcher waited for them to finish answering and receives them. The rest who could read was given the questionnaires and taken later. This was necessary as all the administered questions were answered and received by the researcher. Both data generation approach was useful to obtain in-depth information on the subject matter and to integrate the feedback received for the analysis by using the two data sets.

## 2.6. Data analysis

The data was processed and analyzed in both qualitative and quantitative form. The audio-recorded in-depth interviews with traditional authorities and elderly people were analyzed using the interpretive phenomenological analysis (32). In order to establish a holistic understanding of the interviewees' words and phrases and to be able to accurately convey their voices through quoting them, the researchers paid close attention to the interviews. Thematic content analysis was done to assess the qualitative information from the interview, which involves reading transcripts and spotting themes within the text (33). Member checking with key participants was carried out after the data were transcribed to ensure the validity and accuracy of garnered data (25). This aided in organizing the various responses from the interviewees under the questions specific to the objectives of the study. Although, mixed method was employed for the study, the majority of the discussion were skewed to qualitative analysis following the embedded mixed method approach. Meanwhile discussions and analysis were done with the various literature reviewed. Quantitatively, the data that was acquired from the questionnaires were coded into the IBM SPSS software version 20 and analyzed using descriptive statistics. Cross tabulation was run to obtain responses for each of the communities. Multiple regression analysis was done to establish association between respondents' background variables and others. Means, percentages and frequencies were calculated and the data presented in table form. Where necessary, information was directly quoted to support the qualitative analysis.

## 2.7. Ethics

Issues of ethics were very much considered in this study. Information on the purpose of the study was made known to respondents and participant first. Individuals were assured of confidentiality and anonymity. In order to protect the integrity of the respondents, appropriate protocols were observed, especially in the case of chiefs and other traditional authorities that were involved in the study. Customs were respected as required by the communities' cultural practices. Also, the sacred days regarding the visitation of the rivers as in the case of some of the communities were respected. Voices that were recorded during interviews were played back to the hearing of the respondents at the end of the interviews. Interviews as well as questionnaires were undertaken and administered at the respondent's most convenient time. Hence, helpful for the individual to provide correct and reasonable information at their comfort. The researcher declares that all information was duly acknowledged.

## 3. Results and discussion

### 3.1. Background characteristics of respondents

Age, gender, religion and educational levels of respondents were the background data considered for the study (Table 2). Respondents were samples from all the four communities to answer the questionnaire for the study. Details of distribution of respondents are presented in the table below.

Majority of the respondents (66.5%) are male in all the community except Tapa where the ratio of men was equal with women who responded. On the average respondents from the various communities were between 25 to 35 years of age. A total (82%) of the overall respondents are Christians followed by (9.5%) who are Muslims and others belonging to the traditional religion. It is clear that the various communities are of the Christian setting. Also, it is an indication that, western religion is prevalent in the communities which may inform the study. More so, (81%) of the respondents were Akans, while (4.0%) are Ewes. The other includes the people of Frafra, Kussasi, Kokombas, and Bassare tribe. Almost all the respondents are educated or have attained some level of education. However, peculiar to Tapa community most (42%) had no formal education.

### 3.2. Awareness, benefits and instruments used in the conservation and management of rivers in the various communities

The study at this point present information on the benefits obtained from the rivers and traditional mechanism used in the conservation and management of rivers in order to ascertain the awareness of indigenous beliefs and practices governing them. Table 3 presents the results of the data collected on the above-mentioned issues.

Almost all the respondents (87%) were aware of the traditional beliefs and practices that govern the rivers in their respective communities. The respondents have all benefited from the rivers in one way or the other. Means of responses from the various communities were calculated due to the multi-response nature of the questions. Responses on benefits, traditional instruments used and those responsible for the enforcement of the beliefs and practices were calculated as presented in Table 4 below.

With respect to the benefits, means for Fomena and Ejisu (5.5200 and 5.1400) indicates that, majority of the people from the community use water from the rivers (Bemin, Ankafo and Baffoe, and Oda) for domestic and agricultural (irrigational) purposes. That of Tapa and Tanoso (4.1600 and 6.1000), rivers in these communities serves as side attraction, provide water for both domestic and

**TABLE 2 |** Background characteristics of respondents.

Variables	Responses	Fomena	Ejisu	Tepa	Tanoso	Total
Gender	Male	39	34	25	35	133(66)
	Female	11	16	25	15	67(33.5)
Age	25–35	46	50	19	50	165(82)
	36–45	4	0	4	0	8(4.0)
	46–55	0	0	14	0	14(7.0)
	56 +	0	0	13	0	13(6.5)
Religion	Christian	43	46	31	42	162(82)
	Islamic	5	4	7	3	19(9.5)
	Traditionalist	2	0	4	0	6(3.0)
	None	0	0	8	5	13(6.5)
Ethnicity	Akan	49	44	29	40	162(81)
	Ewe	1	3	4	0	8(4.0)
	Others	0	3	17	10	30(15.0)
Education	Tertiary	41	47	13	38	139(69)
	SHS/Secondary/	9	3	6	12	30(15.0)
	Vocational	0	0	10	0	10(5.0)
	Basic	0	0	21	0	21(10.5)
	No Formal Education					
Occupation	Teacher	19	8	14	7	48(24.0)
	Trader	0	0	7	6	13(6.5)
	Farmer	0	1	8	0	9(4.5)
	Student	26	23	7	27	83(41.5)
	Others	5	18	14	10	47(23.5)
Length of stay in the community	10–20yrs	44	47	17	34	142(71)
	20–30yrs	6	3	18	16	43(21.5)
	30–40yrs	0	0	15	0	15(7.5)
	<b>Total</b>	<b>50(100)</b>	<b>50(100)</b>	<b>50(100)</b>	<b>50(100)</b>	<b>200(100)</b>

Source: Field Work (2021).

**TABLE 3 |** Awareness of the traditional beliefs and practices.

Variables	Responses	Fomena	Ejisu	Tepa	Tanoso	Total
Are you aware of traditional beliefs and practices surrounding the river/s in the community?	Yes	48	32	50	44	174(87.0)
	No	2	18	0	6	26(13.0)
	<b>Total</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>200(100.0)</b>

Source: Field Work (2021).

**TABLE 4 |** Benefits and mechanisms uses in the conservation and management of the rivers.

Variables	Mean of responses standard deviation							
	Fomena	Ejisu	Tepa	Tanoso				
How do you benefit from the river in the community?	5.5200	2.41796	5.1400	2.55559	4.1600	2.51818	6.1000	3.51817
Instruments used in the conservation and management of the river/s in the community	3.6600	2.06635	4.0800	2.19312	4.1000	0.61445	3.5000	1.77569
Who enforces the beliefs and practices?	3.0400	1.44222	4.1200	1.92343	3.6600	1.74508	3.4000	1.90595

Source: Field Work (2021).

irrigational purposes as well as source of fish particularly in the Tepa community. From the interview, one queen mother at Fomena (Adansiman Nifahene Obaapanin), recounted from the discussion that, the Ankafo and Bemini stream has been very beneficial to the community. She emphasized

that in some time past, the services that were provided by the streams extended from providing fresh water for both domestic and agricultural use to the provision of food (fish), providing aesthetic values as well promoting tourism activities in the community (Table 4). Like the Baffoe river at



Ejisu, because of the Taboos that are observed by the people, there is abundance of fish in the river which sometimes attracts people to the scene. They throw pieces of bread in the river, which catches the attention of the totemic fishes for view.

*“When I was a young girl, I witness even White men use to come here and have a look at the fishes in the Ankafo. Because we were forbidden to eat the fishes in the stream, they became very big and numerous in the stream and was so beautiful. Some of the fishes even had gold on their head” (Queen Mother, Fomena)*

The aforementioned findings are consistent with Addai Pamfo (34) discussion that rivers in Ghana are crucial for the movement of people and goods, the provision of food and mineral aggregate, domestic and agricultural use, the creation of jobs, tax revenue and foreign exchange earnings, and the production of hydroelectric power.

Average of the responses on what instruments are used for the conservation and management of rivers from all the communities reveal that all of them use instruments such as taboos, totems, customary practices and social norms. Also, the study revealed that, the various traditional instruments are enforced by Chief priest and some designated elders of the various towns as indicated by the statistics in the **Table 4**. The above revelation mimics the idea from the conceptual and theoretical underpinnings of the study, which explains that human beings are related to the environment and this unique relationship is hinged on the cultural system of the people (21). Thus cultural practices such as taboos, totemism, moral values, social norms influences their interactions with the environment (7, 18).

### **3.2.1. Beliefs and practices used in the conservation and management of rivers in the various communities**

According to oral tradition, in the Fomena community, the Ankafo River is personified as a male called Akwasi Ankafo and the Bemini is a female.

*“Some time ago, in the middle of the night, you will see a very fine giant man who crosses the road and heads toward the Bemini. He the Ankafo and Bemini are a couple” (Queen Mother, Fomena)*

Natural resources continue to be the ultimate in sustaining life on earth. As informed by the conceptual and theoretical framework, in order to safeguard nature's resources, our ancestors established mechanisms to foster the conservation and management of environmental resources some of which include water bodies. This, in the form of taboos, totems, customs, and other inhibitions are passed on from generation to generation. The community (Fomena, Tanoso, and Ejisu) observes that it is an abomination to kill and eat any kind of fish in the Ankafo stream. The community

believes that all the inhabitants of the rivers (Ankafo, Tano, and Baffoe), respectively, are children of the deity in the stream who represent all the community's indigenes. So, if anyone kills and eats, then he/she has killed his children and must also face the consequences that come by it. Below are excerpts from the in-depth interview conducted;

*“When I was a young girl, one man killed and ate some of the fishes from the Ankafo. Because of that, he suffered a swollen stomach and eventually died” (Queen Mother, Fomena)*

*“My dad told me during the olden days, one white Christian Priest who came around, said he believed in God so why won't he eat the abundant fishes in the Ankafo stream. So, he sent people to go and catch some for him to eat, where after eating he fell sick and died” (Community Elder, Fomena)*

This is consistent with the findings of Awuah-Nyamekye (11), Anoliefo et al. (6), Issifu and Diawuo (13) in the case of Tano river, the Sankama and Tongo-Tengzuk community. However, fishing was allowed in other rivers in the other communities at some particular periods. In Abu and Kwasi River at Tepa community, fishing is only an abomination during the period between September and February every year. Within this period, the rivers are reserved for the gods to have their peace and also improve smooth rejuvenation of the river for the harvesting period. Similarly, Acheampong (2010) posited from his study that fishing was ban at specific times of the year, laundering of clothes disallowed on certain days [see (9)]. All the communities again observe that women on their menstrual period are forbidden to go to the rivers. The reason is that, they believe spiritually, it is unclean and also can contaminate the rivers physically which will make it unhealthy to use fresh water from them. This particular finding is almost the same for most communities that use taboos for management and conservation of water bodies as reviewed in the works of (12, 16).

In the various communities, some days are sacred and are referred to as “Dabone” where people are forbidden to visit the rivers in the respective communities. It is an abomination to visit the Ankafo River in Fomena on Sundays. They hold the belief that the deity in the river was born on Sunday, hence bears the name Akwasi Ankafo. Another reason is that; they believe it's a sacred day where the deity and its children (mostly fishes) come to enjoy the fresh air and relax at the banks of the stream. As a result of that, Sundays are reserved for the peace of the deity. People of Ejisu also observe Tuesdays as sacred where it is forbidden to visit the Baffoe River. It is an abomination to visit the Tano River on Mondays because of the belief that “She” was born on Monday.

**TABLE 5 |** Individual taboos and practice surrounding rivers in the respective communities.

Tepa (Abu and Kwasu River)	Ejisu (Baffoe and Oda rivers)
<ol style="list-style-type: none"> <li>1. It is forbidden to fetch water in the stream with black pots</li> <li>2. Dogs are not allowed to the stream</li> <li>3. Women on menstruation are forbidden to go to the stream</li> <li>4. Livestock rearing is only allowed half a mile away from the streams</li> <li>5. Customs allow fishing only with specific period in the year from September to February</li> <li>6. Customs also disallows laundering of cloths along the banks of the streams</li> </ol>	<ol style="list-style-type: none"> <li>1. Fishes in the Baffoe is revered as children of the river goddess</li> <li>2. It is an abomination to kill and eat fishes in the Baffoe at all</li> <li>3. Fishing in the Oda river is allowed but not on sacred days</li> <li>4. forbidden to visit the two rivers on Tuesdays and Wednesdays as well as other sacred days respectively</li> </ol>
Tanoso (Tano River)	Fomena (Ankafo & Bemina)
<ol style="list-style-type: none"> <li>1. It is an abomination for a woman to visit the river on her menstrual period</li> <li>2. Killing and eating fishes from the river is abominable</li> <li>3. Fishes in the Tano are revered as children of the river goddess</li> <li>4. For some reasons goats are not reared in the Tanoso community because the river goddess forbids it</li> <li>5. The river is not visited on Mondays.</li> <li>6. It is believing she was born on Monday hence called (Adwoa Tano)</li> <li>7. It is an abomination to cross the river with corps unless rituals are performed</li> <li>8. Goats are not allowed to be reared in Tanoso due to the Tano river</li> </ol>	<ol style="list-style-type: none"> <li>1. Women on their menstrual period are forbidden to go to the stream</li> <li>2. Killing and eating of fishes is an abomination</li> <li>3. It is a taboo to cross the stream with a bunch of palm fruits and bind firewood</li> <li>4. Black objects are not allowed to be used to fetch water in it.</li> <li>5. It is a taboo to visit the stream on Sundays</li> <li>6. It is prohibited to wash or bath in both streams</li> <li>7. Both serve as the abode of gods in the community</li> <li>8. It is a taboo to take cattle into the streams</li> <li>9. It is observed as an abomination to defecate in or around them</li> </ol>

Source: Fieldwork (2021).

*“Every Sunday, a very big alligator comes and lies at the banks of the Ankafo. Because people are afraid it will harm them, they wouldn’t even make any attempt to go there such sacred day” (Community Elder, Fomena)*

The rivers serve as the abode of deities in all the communities. This is similar to the findings of Asante (2011) who found out from his work that Ashanti’s reserved forests as the abode of their gods. More so, it is forbidden to cross the streams with a bunch of palm fruits and bind firewood on both the Tano River and Ankafo at Tanoso and Fomena, respectively. Cattle are also forbidden to be reared or be taken into the rivers. Black objects are also not allowed to be used to fetch water from the rivers. This is similar to the findings of Adom (16) on the Bosomtwe lake as reviewed in the literature. Furthermore, washing of clothes and bathing in or along the streams is prohibited as found in the work of (6) in Uli in Nigeria. Summary of all the taboos and practices observed by the various communities concerning their respective rivers has been outlined in the **Table 5**.

Notwithstanding that, offenders do not go scot-free, punishment, as well as sanctions, are put in place to enforce the adherence of the various inhibitions in other to safeguard the streams. It is believed by the communities that curses are invoked on offenders instantly. For instance, in the case of a menstruating woman who may visit the respective rivers, she shall experience or suffer continuous bleeding and if the required sacrifices are not performed to please the gods, the individual may die. It is done for anyone who falls a victim of eating fishes in communities where it is a taboo to kill and eat fishes. More so, victims, when caught, are sanction to the chief’s palace, such people are

made to pay a fine or buy an animal like sheep, fowl or maybe schnapps.

One participant has this to say;

*“I have heard that anyone who tries to eat fishes (Adwene) from the Baffoe river goes blind so I am always afraid to eat any fish from it, although I always see them playing in the river untouched” (Participant at Ejisu)*

*“My Aunt is a traditional priestess and she recorded a case about someone who went blind from eating fish from the Baffoe. After some rituals were performed, she could see again” (Participant at Ejisu)*

*“the spirit in the Abu river will strike anyone who eats fishes from it. A woman could go completely barren or also lose a child” (Participant at Tepa)*

*“The spirits or deities in the stream are just and quick to act to punish anyone who commits. So, for the fear of engulfing their anger, people are careful about their actions and inactions toward the Ankafo and Bemina stream and hence help in their smooth conservation and management” (Community Elder at Fomena)*

Observably, the researcher had notice from the various beliefs and practices that some of them are common to the various communities. However, there are instances where some practices are peculiar to specific rivers and communities as observed in **Table 5**. It’s interesting to note that Adom (16) noted similarities between Ghanaian ethnic communities’ cultural structures and indigenous knowledge systems. Gyekye (35) added that among the indigenous knowledge systems of Ghana’s other ethnic

**TABLE 6** | Effectiveness of the traditional beliefs and practices.

Variables	Responses	Fomena	Ejisu	Tepa	Tanoso	Total
Beliefs and practices were effective in the conservation and management of rivers in the olden	Agree	42	46	40	44	172(86.0)
	Neutral	7	4	10	6	27(13.5)
	Disagree	1	0	0	0	1(0.5)
Beliefs and practices that protect rivers are still effective	Agree	30	33	15	13	91(45.5)
	Neutral	10	3	14	27	54(27.0)
	Disagree	10	14	21	10	55(27.5)
Continuous adherences of beliefs and practices will help influence or prosper social, economic and cultural activities	Agree	42	40	34	43	159(79.5)
	Neutral	3	6	16	7	32(16.5)
	Disagree	5	4	0	0	9(4.5)
	<b>Total</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>200(100)</b>

Source: Fieldwork (2021).

**TABLE 7** | Respondents level of adherence to the traditional beliefs and practices.

Variables	Responses	Fomena	Ejisu	Tepa	Tanoso	Total
Level of adherence to the beliefs and practices	High	32	29	22	18	101(50.5)
	Average	11	17	15	22	65(32.5)
	Low	7	4	13	10	34(17.5)
	<b>Total</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>200(100.0)</b>

Source: Fieldwork (2021).

cultures, the Asante knowledge systems have the most in common with the other knowledge systems. He continued by saying that Asante indigenous knowledge systems might be used to address problems in other sections of the nation. But it is observed here that among the Asante communities, practices slightly differ. Also, some traditional practices use in conserving and managing one river to another in same communities sometimes differ. This is an issue of concern that conservationist must consider critical. This is because integration of traditional knowledge in conservation practice will require a great deal of careful evaluation of the various cultural practices in other to substantiate their ability to adequately conserve natural resources most especially water bodies. Issues of conformity and differences in traditional practices that different cultures emulate must be addressed. Therefore, according to Gambrill (36), culturally responsive practice necessitates understanding of other groups' values, historical experiences, and potential behavioral influences. As a result, various groups may favor various approaches to tackling issues and hold various perspectives on how to address environmental problems. This will be helpful to ensure successful integration and application of localized policies/practices of natural resource conservation and management. Identifying the various differences will also be of help to conservationist to plan policies specific to particular natural resources and societies, and hence, ensure efficiency and the effectiveness of the use of local knowledge in the management and conservation of water bodies.

### 3.3. Effectiveness of the use of traditional beliefs and practice in managing rivers in the communities

Here the study sought the respondents' knowledge on how effective the beliefs and practices have been in the past and presently and analyzes respondents' adherence level. The information is presented in **Table 6**.

Although majority (82.5%) of the respondents from the various communities were between (25–35°years), most (86%) agreed that the beliefs and practices were effective mechanisms toward the conservation and management of the rivers. According to **Table 7**, only few (0.5%) had no idea and were objective to the statement. This means that, in times past the use of indigenous beliefs and practices in conserving and managing water bodies were successful. More so, high number (45.5%) of them mentions that these practices and beliefs are still effective these days. Meanwhile, the number of people who were neutral and disagreed to this statement considerably increased as observed in the table. This means that, some of the respondents have observed some counter characteristics and behaviors toward the indigenous practices managing the rivers in the communities.

Here the study found that, 50.5% out the total respondents ranked their level of adherence to the traditional beliefs and practices protecting the rivers as high. 65 percent averagely adhere and few (17.5%) indicated their level of adherence to the beliefs and practices regarding the river as low. Specific to some of the communities, it was recorded that majority of respondents in Tanoso were averagely adherent,

this implies that their level of adherence to the beliefs and practices governing the Tano River is gradually loosening. It also means that some of the community members are not conscious of their actions in relations to what beliefs or practices they are obeying or not.

The study sort from the respondents, whether continuous adherence of the beliefs and practices governing the rivers has any social, cultural and economic implications. Almost all the responses were in agreement with this position. One participant has this to say;

*“because we don’t eat fishes in the river, the fishes have become big and it will attract people to the scene”*  
(Community Elder at Tanoso)

*“God has blessed us with a gift (Tano River) with many benefits and for that matter we must enjoy as such. Earthenware production is vehement here which has made Tanoso to be known as “Ayewa Kurom” literally earthenware town, if you come to cause a fight here, you will be beaten with “ayewa” (earthenware)”* (Participant at Tanoso)

The above implies that continuous adherence will promote some commercial activities at Tanoso where water from the Tano River helps in the production of Earthenware bowls. It may also ginger tourism activities because of the attractive nature of the sacred fishes in the river. Culturally, the observance of the beliefs and practices are helpful in sustaining the cultural indigeneity of the various communities. Similar responses were obtained from the other communities as well.

### **3.3.1. Implications of traditional beliefs and practices on conservation of rivers in the communities**

The adherence to the traditional beliefs and customary practice used in the management and conservation of the rivers in the various communities to the researchers implies that living species (aquatic organisms) could be conserved and extensively be used to ensure tourism and recreation development. Again, it will lead to the management of fresh water for whatever purpose appropriate. In essence, the traditional beliefs and practices to the researcher contribute to the sustainability of ecological diversity and water bodies that are great resources or of good services to human life. These agree with the findings of Adu-Boahen et al. (12) on the use of traditional management practices of the Muni Lagoon. Apart from protecting the inhabitants in the rivers, the inhibitions of visiting the stream on the various sacred days is helpful for the rivers to rejuvenate itself after the long period of continuous disturbances from its users during other days. The prohibition of menstruating women, defecation, washing as well as bathing in and along the rivers is also helpful to ensure that, the stream is not contaminated with its

ramifications on both human health and aquatic life. These again coincide with the work of (12, 16). The prohibition of cattle rearing in the rivers is also helpful to maintain sanity of its environment and to swerve pollution.

*“If the taboos were not in place, things would have been very difficult for us when the water cuts, the streams serve as alternative source of fresh water” “The traditional measures have been very beneficial, because it is the only anchor to be confident with, that the streams are hygienic all things being equal”* (Queen Mother at Fomena)

*“If not the adherence to the traditional beliefs and customary practices, the river would have been polluted”*  
(Community Elder, Tanoso)

The above result is close to that of Asante (2011), as he clarified that Ghana can boast of different forest reserves that have been protected by traditional people by socio-cultural beliefs.

## **3.4. Challenges of adherence to the use of traditional beliefs and practices**

This section is about the influence of respondent’s religion on their adherence as well as their views on factors that lead to the neglect of the traditional beliefs and practices governing rivers in the various communities see [Table 8](#) for the results on the issues under discussion.

Research has shown that, religion and for that matter western religion have had some influence on some of the traditional religious endeavors; however, this study revealed that about 80% of the overall respondents mention that their religion does not prevent them from observing the beliefs and practices used in the conservation and management of rivers in their communities. This finding disagrees with the revelation that Christianity and Islamic religions are the causes of neglect for taboos, totems, and customs in the Ghanaian and African traditions as a whole as espoused by ((17), (37)).

*“erm. . .being a Christian does not mean forsake your traditional beliefs, as an adage goes; “if you forget the sound of your King’s trumpet, you get missing at a function”, and as indicated in the holy bible thus, Matthew 22:21 that “they say unto him, Caesar’s. Then saith he unto them, Render therefore unto Caesar the things which are Caesar’s; and unto God the things that are God’s. So as we should do.”* (Queen Mother at Tanoso)

*“if I abide by the traditional measures it doesn’t make me an idol worshipper. It contributes to the protection of nature’s resources of which I benefit from”* (Community Elder at Fomena)

**TABLE 8** | Respondents religion and observance of the beliefs and practices.

Variables	Responses	Fomena	Ejisu	Tepa	Tanoso	Total(%)
Does your religion forbid you from observing traditions and practices used in the conservation and management of rivers?	Yes	8	14	7	12	41(20.5)
	No	42	36	43	38	159(79.5)
	<b>Total</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>200(100)</b>

Source: Fieldwork (2021).

**TABLE 9** | Model summary of demographic characteristics that predicts the adherence level of respondents.

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. Error of the Estimate
1	.189 <sup>a</sup>	.036	.026	.74218

a. Predictors: (Constant), Education, Religion  
Source: Fieldwork (2021).

However, few (about 20%) of the respondents who hold the believe that abiding by beliefs and practices are obstructions to their religious life had this to say;

*“I am a Christian and I know Jesus Christ has sanctified and made everything whole so I am free to eat everything I want without anything holding me back. I don’t believe anything will happen to me if I eat from the Baffoe river” (Community Elder at Ejisu).*

*“Being a Christian, my beliefs are against these traditional beliefs and believe I can fish and consume the fishes in the river, just that I respect the authorities and have not planned to consume the fishes as well” (Church Elder, Tanoso).*

### 3.4.1. Demographic characteristics of respondents and level of adherence to beliefs and practices

Religion and educational level of respondents were considered as against the level of adherence to the beliefs and practices. Multiple regression analysis was run to ascertain the extent to which the considered background information of respondents predicts and explains their adherence to the beliefs and practices, respectively. The information is presented on **Table 9**.

**Table 9** indicate that, the observed background information of respondents used in the regression analysis, thus, religion and educational level of respondents indiscriminately explains 2.6% of the variance in their adherence to the beliefs and practices used in the protection and management of the rivers in the various communities. It is inferred from the statistics above that other factors apart from the religion and educational level of respondents contribute greatly to predicting their adherence to the beliefs and practices used in the conservation and management of the rivers.

Peculiar to the two background characteristics, educational levels of respondents uniquely make significant contribution to the prediction of their adherence to the traditional beliefs and practices as 3.6% of the variance in respondents’ adherence to the beliefs and practices as explained by their educational attainment. Whereas, the contributions of respondents’ religion were less significant to explaining the variance in respondents’ level of adherence to the beliefs and practices used in the management of rivers in the communities at 0.6% as observed from **Table 10**. Conclusively, it can be deduced from the above discussion that, although religion and educational levels of respondents are contributing factors in predicting their adherence to the traditions and customs, they are minimal in influencing the adherence of the respondents. There may be other factors than just their religion and educational background. This discovery is quite distinctive, but somehow contradicts Boamah (9) Anane (7), and Appiah-Opoku (4), who claimed that the advent of monotheistic religions and formal schooling leads to the extinction of indigenous traditions and activities. They may have underestimated the statistically significant levels among the variables

### 3.4.2. Factors influencing neglect of traditional beliefs and customs in conservation and management

Respondents shared their views on whether civilization, western religious beliefs, formal education, and migration contributes to non-adherence of traditional beliefs and practices. Surprisingly, majority of the respondents in the various communities were positive to the various positions as displayed in the **Table 11**.

Majority (76%) of the overall respondent agreed that civilization has contributed to the neglect of traditional beliefs and practices. 20.5% were neutral to the statement while only few (3.5%) disagreed to the statement. It is observed from the table that responses follow a consistent pattern where the number of people who agreed to the various positions outlined are higher. This indicates that majority of the respondents believe that formal education, western religion, civilization and migration are the major reasons why people disregard, traditional practices governing rivers in the various communities. Undoubtedly, the researchers conjure from this that, modernity, urbanization; migration, etc., are gradually killing the African indigenous

**TABLE 10** | Effects of respondents' demographic characteristic on their adherence to the traditional beliefs and practices

Model	Unstandardized coefficients		Standardized coefficients	T	Sig.	Correlations			Collinearity statistics	
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
(Constant)	1.716	0.245		7.008	0.000					
Religion	0.071	0.068	0.078	1.058	0.291	0.013	0.075	0.074	0.892	1.121
Education	0.152	0.056	0.200	2.703	0.007	0.174	0.189	0.189	0.892	1.121

a. Dependent Variable: level of your adherence to the beliefs and practices.

$p < 0.05$  significant.

Source: Fieldwork (2021).

**TABLE 11** | Factors that cause neglect of traditional beliefs and practices.

Variables	Responses	Fomena	Ejisu	Tepa	Tanoso	Total(%)
Civilization has contributed to the neglect of traditions practices and beliefs	Agree	42	49	24	37	152(76)
	Neutral	8	1	19	13	41(20.5)
	Disagree	0	0	7	0	7(3.5)
Formal Education has contributed to the neglect of traditions practices and beliefs	Agree	41	32	19	40	132(66)
	Neutral	9	15	16	5	45(22.5)
	Disagree	0	3	15	5	23(11.5)
Western Religion has contributed to the neglect of traditional practices and beliefs	Agree	30	39	14	43	126(63)
	Neutral	14	7	7	7	35(17.5)
	Disagree	6	4	29	0	39(19.5)
Migration of non-indigenous people or foreigners has contributed to the neglect of traditions practices and beliefs	Agree	38	33	34	41	146(73)
	Neutral	12	17	7	4	40(20)
	Disagree	0	0	9	5	14(7)
Ignorance has contributed to the neglect of traditions practices and beliefs	Agree	29	44	35	45	153(76)
	Neutral	21	6	15	0	42(21.0)
	Disagree	0	0	0	5	5(2.5)
	<b>Total</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>200(100)</b>

Source: Fieldwork (2021).

traditions, which is embedded with much benevolence and environmentally friendly measures. These are true with the findings of Ntiama-Baidu (38). Also, because of education, believe in such things has depreciated or vanished as seen in the work of Appiah-Opoku (4). The Queen mother at Fomena commented that it is not possible to tell when someone is in the menstrual period these days because of civilization. Sanitary pads have taken care of that. She mentioned again that this problem could have been solved easily if puberty rights that used to be performed for young upcoming girls were still effective. Many residents in the community are foreigners, which makes it difficult and very complicated to enforce and to monitor the adherence to traditional practices and beliefs used in the conservation and management of rivers. This finding is similar to the finding of Yoseph (2014) about the Gedeo community. Peculiar to some communities, 58% of respondents in Tepa disagree to the statement that western religion contributes to the neglect of traditional beliefs and practices surrounding rivers. Meanwhile, majority (76%) of the respondents also believe that when people are ignorant about these traditions and practices, they tend to go contrary to them.

### 3.4.3. Respondents' perceptions of traditional values and practices in conservation and management

Truly, the thought or idea perceived by people about a feature or phenomena determines how they react toward the object in question. As long as the traditional values and practices used in the protection of waterways are concerned, people would have their own way of looking at them and therefore affect attitudes toward the object in question.

Although 55% of the overall respondent disagree to beliefs and practices being barbaric. Among respondents in the Fomena community, majority (46%) view beliefs and practices governing their river are barbaric. More so, 37% of the total respondents indicated they trust such beliefs and practices in whatsoever manner has demonic strings or spirits barking them. 32.5% of them were indifferent to the statement whiles 30.5% believe traditional beliefs are mere considerations. See Table 12 showing the views expressed by the respondents. The study again sought to know the views of the respondents whether those who observed traditions and practices are the uneducated. Surprisingly, higher number

**TABLE 12** | Perceptions on traditional beliefs and practices.

Variables	Response	Fomea	Ejiu	Tepa	Tano	Total(%)
Traditional beliefs and practices protecting rivers are barbaric	Agree	23(46)	13	7	15	58(29)
	Neutral	7	9	0	16	32(16)
	Disagree	20	28	43	19	110(55)
Traditional beliefs and practice protecting rivers have demonic strings attached to them	Agree	19	19	23	13	74(37)
	Neutral	13	12	24	16	65(32.5)
	Disagree	18	19	3	21	61(30.5)
Illiterates obey traditional beliefs and practices protecting rivers	Agree	18	15	7	3	43(21.5)
	Neutral	11	16	0	24	51(25.5)
	Disagree	21	19	43	23	106(53)
Beliefs and practices governing rivers are not relevant	Agree	14	7	0	3	24(12)
	Neutral	13	13	7	22	55(27.5)
	Disagree	23	30	43	25	121(60)
Traditional beliefs and practices are unscientific	Agree	28	31	25	24	108(54)
	Neutral	10	11	19	16	56(28)
	Disagree	12	8	6	10	36(18)
	<b>Total</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>200(100)</b>

Source: Fieldwork (2021).

(53%) disagree to that. 25.5% were in between 21.5% think it is so. This revelation disagrees with the finding of Appiah-Opoku (4) that as people become educated, they tend to see traditions as uncivilized. This to the researcher is good news to conservationist in their quest to bringing different people of various background on board in matters of concern to natural resource conservation and management. In addition, 60.5% agree that values and traditions are important when it comes to the protection and maintenance of rivers. This finding is consistent with the earlier revelation from the study that continuous adherence of the traditional beliefs and practices could help prosper social, cultural and economic activities in the various communities. Also, almost all the respondents (54%) think that traditional beliefs and practices that are used in the protection and management of rivers in the various communities have no scientific basis. Others 28% had no idea while 18% perceived that beliefs and practices governing rivers may have scientific underpinnings. Meanwhile, Boamah (9) clarified that there are fundamental empirical or logical theories with vital consequences for biodiversity at the back of the well-known personal and mystical reason for taboos.

## 4. Conclusions

The following conclusions are taken based on the study's results. Almost all the respondents benefited from the rivers and were aware of the traditional beliefs and practices used in their management. Taboos, totems, practices and other inhibition are the major traditional instruments used by the various communities in the conservation and management of the rivers. These indigenous mechanisms are effective and can be very useful tool in managing local natural resources in

other to sustain environmental resources as well as maintain ecological resilience.

Despite the crucial roles played by beliefs and practices in the conservation and management of rivers, their adherence is, however, in one way or the other challenge with formal education, western religion, civilization, immigration, urbanization etc. However, respondents' religion and educational level does not necessarily contribute to neglect of traditional beliefs and practices. More so, as established from the findings, most people possess negative perceptions about the use of traditional beliefs and practices especially when it comes to applying them in conservation and management of natural resources.

The responsible environmental protection institutions, as well as the water resource management unit in the districts and various communities, have not been effective and up to the task. Environmental laws concerning the use of natural resources like the rivers are weakly enforced and implemented and hence demanded to be integrated with indigenous resources management practices.

### 4.1. Policy recommendation

The following recommendations are drawn;

- The traditional authorities should take advantage of durbars organized in their communities and educate most especially the youth on the traditional measures of conservation and the role it plays in protecting nature's resource. And also stress the difference between Traditional African Religion and African Tradition so that issues of contrasting faith will be solved.

- The chiefs and their council of elders should again encourage and enforce community participation as a key component in the conservation and management of water resources. This could be done when the various communities embark on frequent rehabilitation endeavors on their rivers in order to regain their quality and portability.
- The community authorities should strengthen disciplinary measures against perpetrators who break the established traditions and customs by engaging people as taskforce.
- The government should support and provide the necessary resources which will aid the traditional authorities to effectively enforce their taboos concerning the use of the rivers in their respective communities.
- Western religious denominations should implore on their members, moral values that respect traditional measure which protects environmental resources (e.g., Water bodies).
- The government or local governmental agencies (like the Environmental Protection Agency and the local assembly unit) responsible for taking care of the environment and its resources should incorporate the traditional measures in their policies and action plans toward natural or environmental resource conservation and management

## Author contributions

The author contributed in various ways. The KA-B mooted the ideas and the conception of the paper. The KF supported in data collection and analysis. The DM supported in the methodological section. The EO did the proofreading and part of the data collection. It is worthy to note that all the authors were on the field during the data collection and took part in shaping the manuscript.

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## Conflict of interest

We hereby certify that the study described in this publication was not influenced by any known conflicting financial interests or personal connections between us.

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