

Akan cosmovision, knowledge, worldview and beliefs about livelihood resources: A case of two coastal communities in the Central Region, Ghana

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Abstract

For some time, the use of Indigenous Knowledge (IK) to sustain coastal resources has been a major concern, as governments and other stakeholders have tried to offer various solutions without much success. This paper examines the worldview, beliefs, and practices of the people in the Apam and Moree communities in the Central Region of Ghana regarding the coastal livelihood resources at their disposal. Theoretically, Herbert Blumer's strand of symbolic interactionism, which emphasised that human-environmental interaction is influenced by the meanings attached to it, served as a guide. The implication was that individuals in coastal communities assigned varied meanings to the resources, such as the sea, lagoons, rocks, sandy beaches, and trees they carve canoes from), which influenced how they interacted with them. The study focused on the Akan Cosmovision of the people of Apam and Moree about the natural

environment and how it shapes their interactions with it. The people of Apam and Moree are part of the Akan ethnic group, which considers the universe to be made up of three worlds, which include the human (social), the natural, and the spiritual, with interactive relationships. The study was conducted using a total of 36 participants were selected from Apam and Moree, through convenience and purposive sampling techniques. The instruments used to collect the data included interviews, focused group discussions (FGDs), and non-participant observation guides, for qualitative analysis. The findings of the study showed how livelihood resources are viewed and valued based on the communities' worldviews and belief systems. Also, the study revealed that the people of Moree and Apam saw coastal resources as homes for deities, who could be destructive or helpful depending on how the people interacted with them. It further revealed the channels and processes through which such worldviews are transferred from one generation to another, as well as the changes in belief systems that have affected the participant's interactions with the resources in contemporary times. It recommended that Ghana's Fisheries Commission should engage the chiefs in the coastal communities and chief fishermen in planning and implementation of the closed-fishing policy to enhance compliance.

Key words: Indigenous knowledge, Coastal Livelihood Resources, Akan Worldview, Cosmovision

Introduction

Integration of indigenous knowledge (IK) in the protection of natural resources has been an age-old issue and is still relevant, given the state of degradation of our coastal environment. A report by USAID (2014), cited in the World Bank (2017), has estimated that about two million persons live in Ghana's coastal zone of which the figure is expected to increase to more than 3 million by the year 2050. This upsurge of population in recent decades has resulted in high demands for coastal resources such as fisheries, lagoons, sand/gravels, land for human settlements and subsistence agriculture. This has led to the phenomena of overfishing, sand/gravel mining, coastal erosion, pollution and general degradation of the coastal environment (Qiang, Khattak, & Ahmad, 2020; World Bank, 2017; Boateng, 2012).

Indigenous knowledge of a people is seen to be intertwined with the cosmovision of society through cultural beliefs (Mapara, 2009). Indigenous knowledge such norms, beliefs, values, folklores, rituals is used by community members as the basis for decisions about food security, human and animal health, education, natural resource management, and other vital activities (Awua-Nyamekye, 2009). Indigenous knowledge involves local people's cultural traditions, values, beliefs, and worldviews (Brook & McLachlan, 2008), and it has been termed folk knowledge, local knowledge, informal knowledge, and traditional knowledge by various scholars (G'Nece, 2012, cited in Adom, 2016).

Indigenous Knowledge (IK) has been recognised by Mohan & Majhi (2024), for fostering a sense of community identity and playing a vital role in sustainable development since it is rooted in the lived experiences of local populations, adheres to local laws, and supports their daily activities. It is significant for societal continuity, addresses community needs, and empowers individuals to engage in decision-making processes that have an impact on their livelihoods, particularly in the realm of environmental conservation (Bahta, 2017; Awua-Nyamekye, 2009). For example, the people in Apam and Moree have mental map of fishing areas and seabed, fishing locations, breeding periods, seasons for the appearance of sand and gravels, and this largely influence their exploitation of the resources.

IK has also been considered a very important traditional wisdom that serves as a source of environmental ethical inspiration, and it is based on the belief that humans and nature are in a form of symbiotic connection, with mutual rights and obligations towards each other (Callicott, 1994). Such knowledge serves as a valuable resource that helps to improve the efficiency, effectiveness, and long-term sustainability of environmental conservation in rural communities, especially in developing countries. Among the Akan in the forest areas in Ghana, for example, hunters are obliged to perform purification rituals after killing an elephant or a buffalo. This is based on their

belief that, such animals possess evil spirit (*sasa*), which hurt people hunt them without appropriate rituals (Awuah-Nyamekye, 2009). Also, the coastal dwellers in the country, traditionally obtain permission from the sea and river spirits or deities before embarking fishing expeditions (Agyarko, 2013), and these beliefs and practices are to help to regulate exploitation of the resources.

It is for these crucial roles that, local people's knowledge plays in sustaining the environment that, both the UN at its Conference on Environment and Development (UNCED) in Rio de Janeiro in June, 1992 and the World Conference on Science in Budapest in 1999's highlighted an urgent need for governments to develop mechanisms to protect the earth's biological diversity through local knowledge and the creation of links between culture, environment, and development (Domfeh, 2007). This required the need to involve traditional authorities and local opinion leaders in planning for programmes necessary for sustainable utilisation of the environment (Ayaa & Waswa, 2016); as this wisdom can foster more culturally appropriate and effective solutions for environmental sustainability challenges in Ghana.

Also, the need for the protection of IK, is based on argument that in recent times, the relevance of indigenous knowledge to human-environmental resource interactions has been on the verge of extinction (Ayaa & Waswa, 2016; Shilabukha, 2015). African countries have allowed Western religion and education to run Africa's IK down. The emergence of these institutions has influenced the belief systems of many Africans and therefore, decreasing the adherence to local taboos and beliefs, and eventually, altering the community's relationship with the environment (Bomett, Nyamwaka, Okeche, & Onyambu (2024). This in effect has undermined the norms that historically protected against hunting specific animals, deforesting certain trees, and harvesting certain fishing practices in this regard.

In response to the call by the UN on the use of IK to protect biodiversity, South Africa, through the University of the North West, has set the tone for the introduction of a program for IK in the country to unearth, promote, and protect the African heritage through teaching, learning, research, and community engagement curriculum (Kaya & Seleti, 2013). To give it legal backing, the Portfolio Committee of Parliament on Higher Education and Training in 2000, instructed the Department of Arts, Culture, Science, and Technology to begin drafting a draft policy and bill on the recognition, promotion, and protection of indigenous knowledge systems in South Africa. The authors argue that, using local language in teaching and research would provide holistic and community-based education that could bridge the gap between theory and practice.

The situation in Ghana is different, various governments have largely relied on government officials to solve environmental challenges to the neglect of IK (Adom, Kquofi, & Asante, 2016). Meanwhile, the local people have been using the concept of evil forests, lakes, plants and animals, to conserve sacred and community forests, and this has contributed immensely to biodiversity conservation. Even so, those in the forested areas fare better, as both local and national decision-makers tried to use the 'Evil Forest' concept and Forest Reserve policies, respectively, to protect the forested environment (Domfeh, 2007). For example, the Ministry of Environment, Science, Technology and Innovation's National Environmental Policy (2012), has recognized that Ghana's marine and coastal areas of Ghana are under considerable pressure as a result of human settlements, intensive agricultural activities, industrial development, salt production, mining and quarrying.

The situation in the coastal environment is worse, as the most complex and tragic challenge affecting mankind in recent times is coastal environmental degradation (Munshi, 2000). Ghana's coastal environment has not been spared by this tragedy, as it has been bedevilled with a plethora of challenges that have not been appropriately

addressed. They range from coastal erosion resulting from sand mining, improper waste disposal, overfishing, and inappropriate fishing activities (Pitchaiah, 2017; Jonah & Adu-Boahen, 2016; Tilman & Lehman, 2001).

In an attempt to rescue the coastal environment from its current situation, the government of Ghana has implemented various programmes and projects, yet the rate of resource deterioration in the country is still disturbing, because IK has not been adequately factored into the policies. For example, the Fisheries Act (625) of 2002, the Environmental Protection Agency (Act 490), District Assembly Bye-Laws, and the Closed-Fishing Season policy by the Fisheries Commission have all failed to reduce the rate of deterioration of coastal resources in the country. The irony is that the framers of these policies and programmes have not adequately incorporated indigenous knowledge such as norms, breeding periods of various species, beliefs in deities, bumper and lean seasons. The Fisheries Commission, for example, which has been tasked with partnering with various stakeholders to regulate fisheries, has ignored the coastal traditional authorities in Ghana, such as traditional chiefs, priests, and chief fishermen and fish mongers, as one of its stakeholders in that regard (Akutse and Samey, 2015), and this has the potential to thwart efforts to solve the problem of illegal and inappropriate fishing in coastal communities in the country.

This study is underpinned by Herbert Blumer's symbolic interactionism, which focuses on how human-environmental interactions are influenced by meanings, labels, and definitions learnt through contacts. This perspective views human knowledge (symbols, gestures, and experiences, language) as socially created, and meanings generated out of interactions (Haralambos & Holborn, 2004). In the same way, Barth (2002), claimed that knowledge provides people with materials for reflection and premises for action. However, the actions of people, events and social relationships within a cultural context define the knowledge of a people, in this case, IK.

The author also argues that people construct their own world by their knowledge and live by it, hence there is the need to understand how this knowledge are produced, represented, transmitted and applied; and like Blumer's the meaning people construct about the world, its transmission and the application in our daily social transactions are symbolic and take place within a social setting. However, social settings are regulated by values, norms and beliefs within society, which build up the core of the social system and assures the sustainability among human society and the ecology Das Gupta (2011).

These meanings generated through social interactions, are also part of the indigenous knowledge among the people of Apam and Moree, who are part of the Akan ethnic group. The Akan believe that the universe is made up of human (social), the natural, and the spiritual dimensions, with interactive relationships and systems of thought. Hence, the symbolic representation of the coastal resources influences how the individuals in the communities exploit them.

Cosmovision as Indigenous Knowledge

Cosmovision has been defined by Mashingaidze (2016) as the worldview of a society that is deeply embedded in the way in which that society is organised and evolves. It is used to help society understand and explain its position within the universe, which is beyond its control. Thus, the fear of the unknown is sufficient to prevent members of society from tampering with sacred woods, water resources, and other animal species (Wutete, 2014). Tatira (2000), for example, claims that taboos have been utilised to safeguard human values and respect for other species, particularly vulnerable, small, and helpless organisms that proliferate in our water bodies.

In Africa, the Shona people of Zimbabwe believe that killing a python will cause the rain to stop (Chemhuru & Masaka, 2010). Similarly, abiding by water-related taboos, coastal resources have been kept clean and preserved (Chemhuru & Masaka, 2010).

Domfeh (2007) also reports that there is community-protected land in La Côte d'Ivoire that covers an area of 454,000 hectares and is the largest remnant of the original humid tropical forest, which contains an extraordinary specific wealth of numerous endemic species in the village of Zapobly. According to the author, most of the remnants in the forest have survived because they are considered sacred and venerated, and as such, reserved for the community's cultural expression.

Similarly, Yahaya (2012) reported that traditionally, the Naaha people in the Upper West Region of Ghana have used IK to create and protect the Yuoboli Forest through indigenous practices such as communal labour, prohibitions, and annual libations. Hunting, farming, bush burning, felling of trees, and grazing [during the farming season are prohibited, except after harvesting in the dry season. Any breach of these rules attracts a penalty of monetary fines, the provision of a 3-year-old ram, two chickens, and a bottle of local gin to be paid to the traditional leaders. As these acts of paying for the above items has both economic and spiritual implications, members are likely to comply with such traditional rules.

Akan worldviews about livelihood resources

Coastal livelihood resources form a resource base for many communities around the world. These include mangroves, lagoons, fisheries, beach sand/gravels and salt. One of such important resources is the mangrove forests. Human societies living in coastal locations benefit from mangroves in a variety of ways (Clough, 2012; Shilabukha, 2000). Fishing, for example, have been the principal livelihood activities among coastal dwellers, due to the availability of the sea and its associated resources. The beach sand is an important resource at coastal areas. Anim, Nkrumah and David (2013) claimed that, sand mining is a kind of open-cast mining that provides material in Ghana for the construction industry. Sand is considered as a mineral which is often mined for personal or commercial reasons. Sand winning occurs in both inland and along the coast, which affects the natural environment (Anim, Nkrumah & David, 2013). The

marine coral reef is another essential part of coastal resources that can be utilised. The coral reef is the most diverse and complicated marine ecosystem on the planet. Humans benefit from it in a variety of ways, including food from reef fish, tourist recreation, coastal protection and lime for the construction industry (Rysgaard, Christensen, Sørensen, Funch & Berg, 2000).

The Akan ethnic group, which considers the universe to be made up of three worlds, which include the human (social), the natural, and the spiritual, with interactive relationships. These three realms are intertwined, resulting in the formation of a cosmovision in which humans play a major role (Suprina, 2021). The Akan are among the Kwa-speaking people found in Ghana and Cote d'Ivoire. Some of the Akan in Ghana include Asante, Akwapem, Akyem, Fante, Wassa, Denkira, Sefwi, and Bono, and those found in Cote d'Ivoire are the Abron, Anyi, Sanwi, and Baule (Asante, Ebeheakey, Opoku-Bonsu, & Cornah, 2019). They are generally matrilineal in terms of their lineages. The individual's bloodline is the *abusua* (lineage), which they hail and inherit from their mother line; hence, their conception of family is about those from the mother side. The only exceptions are the patrilineal Akwapim of Larteh and Mampong, who inherit through their paternal line (Pobee, 1979, cited in Awuah-Nyamekye, 2009).

The Akan believe that the supernatural varies according to the degree of their powers, and respect them according to the hierarchical positions they occupy (Essel, 2018; Frimpong, 2011; Awuah-Nyamekye, 2018; and Awuah-Nyamekye, 2009). They consider the Supreme Being (*Onyankopon*) to be the first among equals. He is an intelligent, eternal, and all-powerful being, and he is credited with the formation of the universe and its ruling principle (Agyarko, 2013).

In addition to *Onyankopon*, the Akan also believe in mother earth, deities, ancestral and other spirits, and material objects. All of these spirits, as well as other material

objects, are said to have been created and sustained by the Supreme Being (*Onyankopon*). The land (*Asaase*) is seen as a source of life, a gift from the creator that nourishes, nurtures, and teaches them. The Asante and some other Akans reserve Thursdays as her rest day, and she is known as *Asaase Yaa*. Among the Fante, she is known as *Asaase Efua*, and Friday is her rest day (Frimpong, 2011).

In addition, ancestors are revered and venerated in the Akan cosmovision. An ancestor is an ideal, immortal, dignified, and revered person for the Akan who is seen to mediate between spiritual beings and lineage members. They are thought to be the guardians of the land, laws, and traditions and have the power to punish or reward to maintain order in communities (Nukunya, 2010).

The Akan also believe in the existence of deities (*abosom*), created by God to serve specific duties. They are thought to present themselves in a variety of physical forms, including water, rocks, and caves. They are believed to be responsible for wars, fertility, plagues, agriculture, fishing, and a variety of other human endeavours (Agyarko, 2013; Frimpong, 2011). These deities are treated with tremendous veneration, regardless of where they live (Awuah-Nyamekye, 2014). Thus, the reverence of these deities has made it forbidden to excrete near a water body, especially lagoons, or for a menstruating woman to cross or collect water from a river, and the Akan coastal fishermen have dedicated Tuesday to the spiritual domain of the sea (Adjei & Sika-Bright, 2019; Botchwey & Sarpong, 2015).

Furthermore, the Akan acknowledge the sacredness of certain trees. This is linked to the Akan belief that trees such as Odum (*Chlorophora excelsa*), *tweneboa* (*Entandrophragma*), and *onyina* (*Ceiba pentandra*) possess spirits known as *Sasa*. Anyone who wishes to use these trees for any purpose must perform some rituals (Awuah-Nyamekye, 2009). As such, only a selected group of recognised community members (priests/priestesses, chiefs, family leaders, etc.) can access the trees because they carry

out the required ceremonies to avert any unexpected ends (Frimpong, 2011). These beliefs serve as a mediation factor between the Akan and their worldview of the environment in which they find themselves. The Akan conceive the environment (nature) as possessing both spiritual and physical properties. They believe that the spiritual and physical are inextricably linked (Essel, 2020). This worldview informs and defines the moral foundation for their interaction with nature and govern how people should interact with livelihood resources such as land, water bodies, plants, and animals (Botchway & Sarpong, 2015; Awuah-Nyamekye, 2009). For instance, before embarking on fishing, those in coastal areas must first obtain permission from the sea and river spirits or deities. Also, in order to gain their forgiveness, libation is performed before particular trees are felled and carved into canoes (Agyarko, 2013).

For IK to maintain its significance in society, people's ability to transfer it from one generation to another becomes essential. As knowledge does not come by itself, indigenous knowledge is socially transmitted from the older to the younger generations through storytelling, proverbs, songs, and other symbolic gestures from the parents and other significant others in the communities, which aims to ensuring optimal resource utilisation (Shilabukha, 2000). It could also be in the form of observation, and personal experience, and passing on of such knowledge and skills that enable society to sustain itself (Mpofu and Miruka, 2009).

Despite the fact that change is an unavoidable reality, most of these indigenous worldviews, which served as a means of protecting the land, vegetation, and coastal livelihood resources such as fisheries, lagoons, rocks, mangroves, beach sand/gravels, forests, are losing their relevance in recent times, leading to land degradation and the wanton destruction (Koranteng-Green, 2018).

Various explanations have been offered as to why the knowledge base of these important locals has been disregarded despite its value. Literature in that regard has

discussed issues including population expansion, social change, Christianity, western education (that have diluted the significance and respect accorded indigenous education and cultural beliefs), and livelihood challenges (Ezeanya-Esiobu, 2019; Adjei & Sika-Bright, 2019; Ayaa & Waswa, 2016; Risiro et al., 2013; Esia-Donkoh, 2011; Awuah-Nyamekye, 2009; Atte, 1992).

The study setting

Both Moree with population of 7,997 and Apam, 26,466 are communities in Ghana's Central Region. Moree is under the Abura-Asebu-Kwaman-Kese District, Apam, on the other hand, is in the Gomaa West District. Their main source of livelihood is fishing, which is supplemented by subsistence farming, sand mining, and salt mining in the case of Apam. A few members also work in other informal jobs such as handicraft, petty trade, vehicle maintenance, commercial driving, and vulcanizing. The women engage in fish trading and other retail trade, tailoring, and hairdressing, which are key economic activities in both Moree and Apam (Marquette, Koranteng, Overå, & Bortei-Doku, 2016).

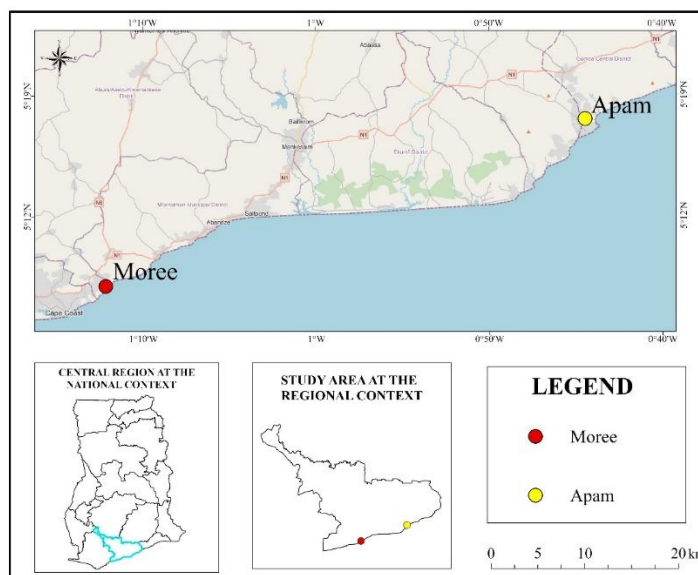


Figure 1: A Map showing the Study Area

Methodology

The study adopted a qualitative research approach to track and analyse how participants' indigenous knowledge has influenced their interaction with livelihood resources in the communities. The exploratory research design, using the ethnography-case study method, was employed to understand the indigenous knowledge practices of the two communities. This was based on regular interactions with the selected members of the communities, which enabled the researchers to observe and interview participants for detail information on their lived experiences in relation to the coastal environment. The chief fishermen in the communities were first contacted, and they introduced the researchers to the rest of the participants for further familiarisation and interactions. This was based on the understanding that ethnographic-case study design is an important source of data, either on its own or as a supplement to other kinds of data; in this case unstructured interviews (Cohen, Manion, & Morrison, 2011).

The data were collected from October, 2019 to February, 2020, and September, 2020 to December, 2020. The processes lasted for nine months spanning from October, 2019, paused in March 2020, due to COVID-19 closed down by the Government of Ghana. The process, however resumed in September, 2020 and completed in December, the same year.

The study population was made up of fishers, traditional priests and priestesses, fish mongers, salt and sand miners, and officers from the Fisheries Commission and Environmental Health Units of the District Assemblies. For the study, a total of 36 participants were purposively and conveniently sampled. The chief fishermen, fetish priestesses, fisheries, and government officials were purposively sampled, while others, such as fishers, fishmongers, and salt and sand miners, were conveniently sampled.

The primary data for this study was gathered from participants at their various places of work and homes. In-depth interview guides, focus group discussion guides (FGDs), and nonparticipant observation guides were used to gather data for the analysis. The interview and FGD guides were used to collect data from participants. They were structured in three parts and generated discussions along the following themes: worldviews about livelihood resources; sources of indigenous knowledge; and changes in the beliefs and practices in contemporary times. A total of 36 participants were selected for the study, with 29 for in-depth interviews and seven for a FGD. The media of communication were the Fante and English languages. Participants, who could not express themselves in English language were allowed to speak Fante. With the permission from the participants, both the interviews and the FGD were recorded and later transcribed for the thematic analysis.

The non-participant observation technique was also employed in addition to the in-depth interviews and the focus group discussions. Shrines, lagoons, performed rituals, and other off-fishing activities were included in the observation guide. The purpose of these observations was to uncover additional information to supplement what participants had provided. To supplement the primary data, the study gathered information from secondary sources, including articles, journals, government documents on coastal resource management, and literature on indigenous knowledge, resource utilisation, and sustainability. The data were organised into relevant themes to identify patterns and inter-relationships for the analysis. The information gathered was transcribed and coded in order to find themes and trends. The themes include worldviews about livelihood resources, sources of indigenous knowledge, and contemporary changes in the beliefs and practices.

Results

Result 1: Coastal resources as the Creation of Supreme Being

The dominant thinking among the community members about the environmental resources has been that they were created by the Supreme Being (God), and they, as humans, have the prime responsibility to protect such valuable creations. The sea, sea sand, salt, and land (trees, stones, and rocks) were considered important resources created by the Supreme Being to support humans. They were highly convinced that God made rules for the sea that guided their operations, including fishing. For instance, they believe that the Supreme Being (*Onyankopon*) has periods for major and minor fishing seasons, which they had to comply with to conserve these resources for the next generation. This belief impinges on the people's need to protect and preserve the resources at their disposal. For example, a participant had this to say:

I believe that the sea is God's creation, and He gave it to us for our benefit. The sea is guided by rules, and we will be blessed with more fish if we abide by them. I believe that God has appointed times and seasons for the appearance and disappearance of different kinds of fish in the sea, and as fishermen, we must follow these laws to get more fish (FGDs-male community elder, Apam).

It also came out that the land supplied the people with mangrove forests, space for habitats, minerals, and agriculture. The land referred to as 'Asaase Efua' (Mother Earth) was created and controlled by God and exercised enormous authority over everything, including the earth's resources. This belief is shown in the quote below:

The land is also God's creation. We believe that God blessed us with the land because the sea would not give us everything all year round. The land has a spiritual property called 'Asaase Efua' that governs the residents' activities. We believe that the Supreme Being created the land and instilled authority in the hands of the earth goddess (Asaase Efua) to control and direct the affairs of the community's residents (A 41-year-old fisherman, Moree).

Their belief in the resources as God's creation was also evident in the daily and sporadic rituals performed by the people and leaders of the community during festivities.

God used principles to create the land and the sea is one of them. So, God made rules about the sea as to when we can get fish from it. So, we go for fishing according to god's plan. There are times that the fishes go beneath the water and at another, they appear from their hideout. So we go for fishing based on these rules. There are periods that God brings bad water in such a way that, we cannot get fish unless we perform rituals to avert it (FGD-male community elder, Apam).

Result 2: Coastal Resources as an abode of Deities or Spirits

In their cosmovision, Moree and Apam saw coastal resources as homes for deities who could be destructive or helpful depending on how the people interacted with them. That is, they tended to be helpful when the people followed the taboos, customary laws, norms, and values and performed the periodic rituals, but destructive when they deviated. It is imperative to say that the most prominent among the spirits is the conception of a marine spirit (*Mammy Water*). It is described by the participants as a female human-like fish that is believed to be the sea goddess. The spirit, according to the participants, often appears in different forms and is encountered by the fishermen during their fishing expeditions.

There are other spirits with unique local names, to which a lot of significance is attached. There were specific mentions of deities such as *efa* and *epa* at Moree and *apaa*, *basaa*, and *eku* at Apam. The *epa* deity at Moree, participants claimed, is responsible for regulating the daily activities of the people regarding the use of the lagoon and its adjacent resources. The *efa* deity, on the other hand, is seen as the one that protects the beach and reveals itself to people when they are unhappy about the communities' activities. But the most popular deity in Moree is *Nana Mfam*, who was recognised by the participants as the deity that protect the members of the community, even from curses, as presented by a female key informant from Moree below:

The lagoon is home to the community's most powerful god. It is called Nana Mfam. Nana Mfam is the deity that protects the members of this community. Nana Mfam often protects people from curses, even those who are cursed from outside the town. He will protect you once you are in his territory. It does not allow other deities to enter the community to harm you (A female key informant, Moree).

Similarly, the Apam community was named after the great deity that resided in a rock near the shore, *Nana Apaa*, and was responsible for the welfare of the people, and punished them when offended. With such beliefs in the resources as abodes of deities, the resources were, in effect, used cautiously as exhibited below:

Some of the rocky areas around the community serve as the abode of several deities and the sea spirit. Nana Apaa, for example, lives on a rock near the seashore. There is another rocky area close to Fort Patience that hosts Nana Basa, so I go there to perform rituals for it. There are several deities in this area, including Nana Apaa, Egya Eku, and Onyina Kwabena (A female key informant, Apam).

The participants' attributions to the natural resources, as the host of deities, were not made in a vacuum but based on personal and social experiences, the acts of the deities when offended, and the rituals they performed towards the deities. Participants shared both positive and unpleasant experiences that made them believe in the existence of the deities. The sea goddess (*Mammy Water*) was conceived to appear in different forms and was often seen during fishing expeditions.

Another reason attributed to the beliefs of the deities was due to the acts of the supernatural beings, especially when taboos and other social norms were violated. Violators of such taboos were often said to experience spiritual attacks, including drowning, which the participants claimed they were witnesses to. Since some of these deities serve as community deities, the residents revere them.

It was also evident from the study that the coastal people attached meanings to their resources based on others' reactions towards the object. For instance, it came out that the performance of rituals to the deities yielded a great catch of fish, which consequently deepened their beliefs in that practice in the past. The belief is that some plants and animal species possess bad spirits (*sasa*), and that one must perform certain rituals before harvesting and processing them. As part of Akan belief systems, the cutting down of special trees, like "*odoom*," and the manufacturing of boats and canoes out of them demand the performance of rituals with the ultimate aim of protecting the chainsaw operators, carvers, and owners of canoes or boats made out of such logs (Frimpong, 2011, & Awuah-Nyamekye, 2009). At the community level, it is the responsibility of the chief fisherman and his council of elders to provide money to purchase the items needed to perform periodic rituals for the deities on behalf of the people, and ignoring those rituals would lead to avoidable problems, including a low harvest. The voice below typifies the beliefs of the people in the spirits:

The "Odoom" tree is filled with spirits. When a man goes to the tree, he has to strip naked. Birds are unable to hover over the "Odoom" tree. Women are unable to approach the tree. Before a male can approach the "Odoom" tree, he must search for a spirited seed (Di Abanu). The chainsaw operators who cut the tree are protected by spirits. Before they can cut down the tree, they must pacify the gods. Fishermen who fail to perform the necessary sacrifices and rituals before using a boat made out of Odoom wood often hear strange cries from the wood, and that affects their fish catch (A male key informant, Moree).

Result 3: Transmission of indigenous knowledge to the younger generations

To ensure the continuous existence of IK on coastal livelihood resources, communities developed means of transmitting it to younger generations. In most cases, the young learned from the elderly how to step into their positions in their absence. Community members gained knowledge through socialization, long-term engagement with resources, the spoken language of traditional authorities, and folk songs. Predecessors socialised the young ones about the deities, ancestors, rituals, taboos, and their

functions with regards to the sustainability of coastal livelihood resources. These are done through apprenticeship, songs, the performance of rituals before fishing expeditions, and on special occasions. The Tuesday, 'non-fishing day' for instance, was handed down to the coastal communities as a legacy to protect the sea against overexploitation. To support this view, some of the responses of the participants have been presented below:

I got the knowledge from my departed elders. Most of those elders are dead, and we have taken over. We are now the ones helping the young ones acquire the skills and knowledge about fishing (A 45-year-old Fisherman, Moree).

Another presented it this way:

In my early years, I used to help my mother smoke fish. I learnt it by observing how she bought fish from the fishermen through bargaining on the prices. It became easier when I married a fisherman, since there was a need for me to become a fishmonger so I could sell his catch (A 32-year-old fishmonger, Moree).

Aside from the family, traditional authorities such as chiefs and fetish priests, are also instrumental in knowledge transfer in local communities. These local leaders teach the people more about the traditions and customs surrounding coastal resources.

The community members see singing as something that cannot be separated from their daily economic and socio-cultural activities. When they are at sea and on shore, the fishermen sing songs, pulling nets or pushing canoes, offloading fish, and mending their canoes and nets. This act of singing while working helps them work effectively, thereby serving as an emotional booster. The younger generation learned about the songs and their implications for the resources. Thus, one could not utilise the resources without acknowledging such deities. The following stanza is a sample of such songs that portray the role of the sea deity:

With songs of the resources, there is one I recall that says, 'The sea deity created the sun and all that is in the sea. Do respond when your children call upon you, for you are a caring mother (A 41-year-old fisherman, Apam).

Also, the participants' engagements with the resources gave them enough experiences and exposure, which ultimately deepened their beliefs in the coastal resources. This was common in the study area, as some participants indicated that their interaction with the resources while on the job gave them the opportunity to learn more about them. They had spent enough time with the resources to gather the required knowledge. They also relied on celestial bodies (stars and moons) to regulate and direct mainstream fishing activities to protect resources. The participants learned about the fish's spawning periods, the movements of the winds and other celestial bodies, and their implications. A participant had this to say:

The immense knowledge I have acquired about these coastal resources is due to the number of years I have worked as a fisherman. For me, our engagement and interaction with the resource in our day-to-day activities have been the keys to the knowledge I have gathered (A 54-year-old fisherman, Apam).

Result 4: Changes in the beliefs and practices associated with coastal livelihood resources

As society evolves, change becomes inevitable, and in this situation, traditional apparatuses give way to modernity. The study area has witnessed changes in belief systems, including a decline in traditional ritual performance, encroachment on sacred places, and, most importantly, non-observance of sacred fishing days. Participants were convinced by their experiences and perceptions that beliefs in the deities and rituals associated with them are changing. As a result, some of the community members now disregard the taboos surrounding the deities and are unwilling to participate in some of the rituals performed to honour the spirits. They attributed this phenomenon to a variety of factors that have eroded indigenous

knowledge systems in fishing communities, including Christianity, weak leadership, formal education, modernization, migration, and population growth.

Among all the factors identified, the advent of Christianity emerged as the strongest force influencing the way of life of the communities concerned. According to the argument, the arrival of Christianity and its doctrines in Ghana has pushed beliefs, taboos, customs, and traditions to the margins. Christianity has caused so much hatred and a lack of respect and fear for the deities. In extreme cases, people did things detested by the deities or performed actions to scorn their place of abode, leading to the migration of some deities from the communities. This is attributed to increasing encroachment on the sacred grooves, flouting the taboos of the deities, and refusal to perform the needed rituals to honour them. Many of the participants, including the community leaders, have also converted to the Christian religion and have replaced the traditional Tuesday, regarded as a rest day for fishing, with Sunday. The following quote exemplifies these arguments:

Now the churches are everywhere, and many of us are Christians. So the members of such religious groups are criticised and suspended from the churches by the pastors for participating in traditional rites, and for that matter, many of us have stopped partaking in traditional rites and rituals. Because of the churches, we cannot perform those rituals anymore for the deities in the community. The churches are destroying our traditions because they see them as idol worship. (FGDs- fish monger, Moree)

The participants also blamed community leadership for the changes in their belief systems that had occurred over the years. Participants claimed that there were customary laws and taboos that had been passed down from generations and chiefs, elders, and chief fishermen were the custodians of those laws and taboos. However, the leaders have not been able to preserve and protect these customs. It was found that the leaders had neglected certain rituals that facilitated their belief in coastal resources and livelihood activities. They specifically raised concerns about the relaxation of the observance of the sacred fishing days rule, a situation that has paved

the way for many fishers to fish on Tuesdays and violated one of the customary laws that controlled fishing.

Apart from relaxing some customary rules, participants claimed leaders do not strictly apply the existing ones, thereby undermining the free and fair application of that non-fishing day and the laws governing fishing activities. It is suggested that some violators of customary laws escape punishment because of their relationships and patronage with some of the leaders. For example, a participant had this to say:

The chief fisherman and his council of elders have become accomplices of the parties in national politics. The uncle of the District Chief Executive is also the chief fisherman, who could not hide his loyalty and started wearing the ruling party's T-shirts. This has affected his relationship with the fishermen, as some give political meaning to his decisions and actions. So, as I am speaking, the people see him as championing the bid of a political party, but not the fishers. (A male key informant, Apam).

Another significant phenomenon is the fact that many of the young people who have access to Western education have developed different attitudes towards indigenous beliefs and practices. Children now listen to what their teachers say in school more than their parents, and that influences their beliefs. The understanding of the participants was that the teaching of science and other subjects in schools is gradually changing the way the youth think about the rituals, taboos, belief systems, and traditions in the communities. The argument by a participant about being a major cause of the changes in beliefs and practices is represented in the quote below:

The young generation does not want to accept our taboos because of modern education. Our children go to school, and the teachers teach them things that influence their beliefs. They teach them science and other subjects that dispute our traditional beliefs. The schools organise church services and teach them Christian doctrines but not our traditions and culture, and these have created hatred and disregard for our taboos. Now they do not want to take part in the rituals and other belief systems. (FGD-community elder, Apam).

Again, migrant fishers present in the communities with different beliefs had no reason to obey some of the taboos and myths in the communities. As the coastal areas become attractive due to the resources, migrant fishermen from different parts of the country migrate into the fishing communities, with their different belief systems, and thus find it difficult to understand the rationale behind some of the indigenous practices. The study revealed that some of the fishers had migrated from other ethnic groups, such as the Nzema, Ewe, and Ga, to the study area, making it heterogeneous with different socializations concerning the supernatural. This has made it difficult for such immigrants to get accustomed to the local taboos and rituals, forcing them to blend traditional culture, which results in either competing with or complementing custom in their own destinations. For example, a participant presented the situation in this way:

Our population has increased due to migration. Many people of different backgrounds have come to live with us. Some of these migrants have different beliefs, and in this modern society, one cannot compel them to obey our customary rules and taboos. (A 55-year-old fisherman, Moree

Discussions of findings

Coastal resources as the Creation of Supreme Being

The study revealed that the sea and its aquatic life, sea sand, salt, and land (trees, stones, and rocks) were all created by the Supreme Being or God (Onyankopon,). For this reason, the people of Apam and Moree make reference to the Supreme Being whenever they interact with any the resources at their disposal. This belief in God, as a creator, was evident in the daily and sporadic rituals performed by the people and leaders of the community during festivities. They fear of the invisible Being, and this serves as a check to prevent members of society from tampering with the resources, as corroborated by Wutete (2014), and any deviant activity directed towards the resources attracts punishment in their present lives or the next. This is based on the Akan belief that environment revolves around humans (social), the natural, and the

spiritual aspect which have interactive relationships, and it is also supported by Suprina (2021), who claimed that cosmovision positions humans (social environment) to interact with the physical (coastal resources) mediated by the belief systems.

Coastal Resources as an abode of Deities

Aside the Supreme Being (*Onyankopon*), there is also the belief in the existence of marine spirits and other deities dwelling in the coastal resources, who are believed to serve as the deities of the communities. Like Agyarko (2013), and Sarfo-Mensah and Oduro, (2007), postulated, the participants demonstrated respect and affection for these resources, which is why, before going to fish, permission is generally obtained from the sea and river deities. The findings from the study shows that, reverence to the deities, manifested in the set aside of Tuesdays, as non-fishing days for the deities as Dosu (2017) and Adjei and Sika-Bright (2019) also, found the same in their studies. These acts of the people show the meanings they attached to the sea, sand, and land resources and these meanings affected how they utilised the resources as postulated by Blumer's (1986) symbolic interactionism.

Transmission of indigenous knowledge

The transfer of knowledge came from diverse sources such as personal encounters with the deities and ancestors, parents, and elders of the communities. The deities, including Mammy water (*the sea goddess*), often reveal themselves to people who engage in fishing activities during non-fishing days (Tuesdays) and when people violated the customary laws or norms in the community. Those who violate social and religious taboos experienced spiritual attacks, which can only be relieved by a purifying ceremony. These acts of the deities were enough to serve as lessons to the people. However, this also implies that the people have a dilemma in determining the causes of accidents and other unexpected occurrences. So, to solve that puzzle, for example, a person who gets drowned in the sea and the cadaver found and eventually

buried are not attributed to the deities and vice versa. However, this belief system does not account for the possibility of the activities of predators in the oceans.

Also, as Barre, et al (2009) and Risiro, Tshuma, & Basikiti, 2013), talk about the relevance of beliefs and taboos, this study revealed how indigenous education is passed down to the generations through folk stories and songs, which were often performed late at night in the courtyard and were based on their culture, taboos, totems, and respect for ancestral spirits (Young ones were socialised through the interactions with their parents, guardians, and elders of the communities; as such, learn more about the coastal resources and environment. In effect, people's interaction with the coastal resources and environment was derived and regulated through social interactions (Das Gupta (2011; Haralambos & Holborn, 2004).

Another area of importance is that, the older generation transfer indigenous knowledge to the younger ones through myths, taboos, storytelling, songs, and method of fishing that ensured proper utilisation of the coastal livelihood resource. The family, in this sense, remained a key agent in the transfer of indigenous knowledge of the coastal resources as well as fishing activities, similar to the findings of Anokye, et al (2015) and Esia-Donkoh (2011). As the youth followed their parents and other experienced members in the communities, they acquired knowledge through observation, imitation, and learning by doing were the means of knowledge acquisition and transfer. However, there is gender-based socialization, in which the men in both communities learnt the art of fishing from their fathers and elders, while women learnt fish preservation and marketing from their mothers. The younger generation learned those songs and their implications on the uses of the resources (Anokye, Abane, & Ekumah, 2015).

Changes in the beliefs and practices associated with coastal livelihood resources

As society's survival and development are based on both social stability and social change, the belief system of the study area was believed to have experienced the same.

There had been changes in the belief systems including the observance of sacred fishing days. The changes were attributed to the lack of fear of the supernatural, formal education, and Christianity. This is corroborated Adjei and Sika-Bright (2019), Dosu, (2017) and Esia-Donkoh, (2011). These social factors had eroded indigenous knowledge systems in the fishing communities. This has been partly blamed on the local authorities act of performing rituals to allow Tuesday fishing in certain circumstances. Similar to what Ansah, Oduro, and Wilson (2022) have alluded to, this has paved the way for sustained violation of the customs, as community perceptions surrounding the custom transformed when there were no immediate repercussions for their activities.

However, this study found the advent of new religion (Christianity), as the force that had had the greatest influence on the way of life of the participants, probably because about 70% of the Ghanaian population is Christianised. The argument has been that the arrival of Christianity, Islam, civilisation, and the technology that accompanied it in Ghana have pushed beliefs, taboos, customs, and traditions to the margins (Awuah-Nyamekye, 2009)). This decline of IK has led to overfishing and the degradation of coastal livelihood resources, as recognised by Koranteng-Green (2018), as the perceived metaphysical consequences have been neutralised.

Against the observations by Ezeanya-Esiobu (2019), Adjei and Sika-Bright (2019), Dosu (2017), and Awuah-Nyamekye (2009), about the rate at which traditional societies are changing, with respect to beliefs and rituals, some of the participants still managed to abide by the 'no fishing day' on Tuesday traditional practices to conserve the coastal resources. Despite being Christians, such people still manage to abide by traditional taboos and rituals aimed at preserving resources. The taboos and the rituals were seen as good enough for them not to tamper with marine resources, sacred forests, and other sacred animal species. This collaborates with the argument by Risiro et al. (2013) that some indigenous people still respect and fear the unknown.

Conclusions

Despite the relevance of the use of the cosmovision and belief systems to interact with the coastal environmental resources, they had been interrupted by certain modern exogenous factors, leading to a damaging relationship between the social systems and the coastal ecological system in the study areas. The intrusion of these extraneous factors has created division among the locals, as some still believe in their metaphysical properties and abide by them, while others see them as mere natural objects for their exploitation. As it is now, the Tuesday non-fishing day rule has been relaxed in many of the fishing communities in the country, promoting unfairness in the system for those who comply with the rule.

Given the declining rate of indigenous knowledge identified, leading to unsustainable exploitations of the coastal resources, there is the need for the district assemblies in the study area to incorporate the views of community stakeholders into the by-laws to protect coastal resources from over-exploitation. Enforcement of such by-laws should not be linked to the performance of rituals.

The traditional religious leaders should be supported by the local landing beaches to perform relevant traditional rituals to satisfy the religious and psychological needs of the people. Fishing communities should be educated on the consequences of over-exploitation of coastal resources using community public address systems in their local language, and by local opinion leaders and personnel from fisheries Commission.

For policy implication, the government of Ghana, through its Fisheries Commission and Environmental Protection Agency, should collaborate with the local fishermen and traditional chiefs in the implementation of the closed-fishing season and the ban on beach sand/gravel mining policies to ensure general acceptability to promote sustainable utilisation of coastal resources. This is premised on the understanding

that; the local chiefs and chief fishermen are key players in terms of the use of indigenous knowledge and serve as intermediaries between the local inhabitants and government and its agencies. Such collaborations would enhance public education on the need to preserve the coastal resources, as they exploit them for their livelihoods. There is also the need for international aid agencies and the UN to earmark portion of their funding towards environmental sustainability to public education on the role indigenous knowledge can play in that regard.

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