

# Exploring the African Traditional Belief Systems in Natural Resource Conservation and Management in Ghana

by

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## Abstract

The aim of this paper was to discover how taboos and totems as belief systems have been used successfully to promote natural resource conservation and management in the Sankana and Tongo-Tengzuk communities in northern Ghana. Using primary and secondary data sources, it was observed that the communities have served as classic examples of successful traditional natural resource conservation and management through totems and taboos. Therefore, the authors recommend for a holistic approach involving the government through the Ghana Tourism Authority and civil society organisations, as well as religious leaders to encourage people to apply by-laws and other traditional belief mediums that link human existence to the natural environment.

**Keywords:** Beliefs, taboos/totems, natural resources, conservation, management, Ghana.

## Introduction

The current increasing rate of natural resource loss is a major threat to both human and animal survival. The loss of each species comes with the loss of potential economic benefits, as well as loss of ecosystem balance (Attuquayefio & Fobil, 2005). As such, there has been much increased interest in issues relating to the environment all over the world. Especially, the international community has taken the leading steps in ensuring proper conservation of the natural resources through formal and professional standards.

Meanwhile, before the introduction of modern forms of natural resource conservation and management, indigenous African communities often developed elaborate resource management systems, so had other local communities throughout the world (Ostrom, 1990). Local groups of people managed the land on which they lived and the natural resources they were surrounded by for millennia (Roe, Nelson & Sandbrook, 2009). There existed locally well-informed traditional beliefs that helped in conserving the available natural resources. Attuquayefio and Gyampoh (2010) argue that before the advent of modern natural resource conservation methods, traditional societies operated a complex religious and cultural belief systems via norms, myths, taboos, totems and closed seasons to preserve, conserve and manage certain natural resources. The use of these belief systems was geared toward protecting and promoting communal wellbeing, rather than individual interests.

Despite the potency and the role of traditional African belief systems in natural resource management and conservation, little attention is given to this informal institution (Kankpeyeng, 2000). Although efforts to integrate rural people into the conservation of natural resource programmes and projects have been in place for quite some time (Hulme & Murphree 1999), the integration has been slow. This could be because of the increasing non-adherence to long-held traditional beliefs, due to the advent of western technology, the growing influence of foreign religion and beliefs, lack of modern regulations to enforce the traditional rules, and problems of migration, urbanisation and resettlement (Ntiamoa-Baidu, 1995). Following the above assertion, this article seeks to explore more on how traditional belief systems, especially taboos and totems have contributed to the natural resources conservation and management in Ghana. The article also seeks to offer pragmatic recommendations on the need to integrate modern laws, traditional customs and norms on natural resources conservation and management for the benefit of the generation yet unborn.

## **Methodology and Approach**

Data for this article was obtained through anthropological studies to explore how traditional belief systems contribute in natural resource conservation and management in Sankana and Tongo-Tengzuk in the Upper West and Upper East regions respectively. A case study approach was adopted since it is appropriate for the study of the interaction between social actors and social phenomenon (Yin, 2003). The authors chose this study area because aside their contribution to natural resource conservation and management, very little has been done in terms of research. In addition, data was drawn from primary and secondary sources. These include journals, articles, books, District Assembly documents, internet publications, focus group discussion and personal interviews. The research was conducted from September 2014 to March 2015.

## Conservation

Conservation and management are among the most important elements of sustainable development. It is the management of valuable natural resources such as timber, fish, topsoil, and minerals, forests, wildlife, parkland, and wilderness and watershed areas (Rim-Rukeh, Ierhievwie, Agbozu, 2013). There is no single definition of conservation; however, several definitions have been coined for the concept with some scholars stressing the structural roots of anthropological interests, while others departing from the point of view of economic reasons.

Hence, Usher (2000) defined conservation as the maintenance of genetic species, and ecosystem diversity in the natural abundance in which they occur. Thomas (2003) also thinks conservation is the sacrificing of immediate rewards in return for delayed ones. Meanwhile, Smith and Wishnie (2000) see conservation as actions that prevent or mitigate biodiversity loss and designed for such purpose. Essentially, we define conservation as the maintenance, the protection and the management of the ecosphere; water bodies, fisheries, habitats and biodiversity. Therefore, conservation of the natural resources is thus, the wise use of the earth's resources for the survival of all living things, by all humanity especially and significantly for the benefit of the future generation.

## Totems and Taboos

The term 'totem' comes from a North American Indian language, which refers to vegetables or animals that are revered by individuals, particularly group of people as holy sacred. Totems are considered as an emblem consisting of an object such as an animal or plant that serves as the symbol of a family or clan. Taboo on the other hand, is derived from the Polynesian term *Tabu*, which means 'forbidden' (Adu-Gyamfi, 2011). Taboos are the inhibition or banning resulting from social custom or emotional aversion, which are declared as sacred and forbidden by people. Taboos represent unwritten social rules that regulate human behaviour. Totems and taboos are used by different groups of people for different reasons. Whatever the reason(s) for such constraints or regulations, totems and taboos at least locally, play a major role in the conservation of natural resources, species and ecosystem (Johannes 1978, 1982, 1984 *a, b*, Chapman 1985, 1987, Gadgil 1987, Gadgil et al. 1993 cited in Johan and Carl, 1997). For this reason, Freud (2004) and Alun (2005) mentioned, people who believe themselves to be of one blood, descendants of a common ancestor, and are bound together by common obligations to each other by a common faith reverence that totem. Totem animals are used to maintain two useful prohibitions; against killing the totemic animal (patricide) and against having sexual relations between members of the same totem or clan (incest).

The traditional belief in the spiritual properties and uses of natural resources has effects on the protection and improvement of the natural environment in many rural communities in Ghana. This means indigenous traditional belief systems have significant roles in natural resource conservation and management.

A totem can be an animal, a plant or any other natural object believed to be ancestrally related to an ethnic group, clan, or family as a tutelary spirit, which they attach deep feelings to. Members of these ethnic groups, clans, or family do not eat, kill or trap such totemic animals; birds, or fish. When a totemic object dies or sold, members of the group it represents would show respect by, for example, mourning and burying it as in the case of a human being (Lumor, 2009). This is because they believe to be ancestrally related to them as a tutelary spirit. Totems have been used basically, to preserve humanity, in that it has in many ways culminated in the conservation of other life forms bequeathed to humankind on whom one is dependent.

## **Traditional Belief Systems**

Since time immemorial, local people have developed a variety of resources management practices and approaches that continue to exist in tropical Africa, Asia, South America and other parts of the world (Appiah-Opoku, 2007). The contributions of indigenous and local belief systems towards a better understanding of natural resources and its sustainable use and management has been documented in the scientific and grey literature in many domains: biodiversity conservation and wildlife management, customary marine resource management, rural development and agroforestry, traditional medicine and health, impact assessment; and natural disaster preparedness and response (IPBES, 2013). It is therefore evident that the role of traditional belief systems in the conservation of a large number of elements of local biodiversity regardless of their use value dates back to creation (Shastri, Bhat, Nagaraja, Murali & Ravindranath, 2002).

One of such numerous approaches to natural resource conservation and management is the use of indigenous belief systems of taboos and totems. These traditional belief systems are capable of protecting biodiversity species in particular and the environment in general as long as the local communities have an interest in them. Traditional African societies also observe environmental ethics that help in regulating their interactions with the natural environment (Shastri et al., 2002). African Traditional Religion (ATR) and cultural practices in most parts of African communities are environmentally friendly and sustainable, contributing so much to natural resource sustainability and conservation (International Institute for Environment and Development (IIED), 1992). In Africa, the traditional belief systems hold the ascription of supernatural powers to objects called *gods* and *goddesses*. Rim-Rukeh et al (2013) reiterate that African traditional religion and belief systems lie in the abode of the gods and goddesses located in rocks, streams, ponds, trees, land or anywhere within the community and respected by the people it governs.

In Ghana, indigenous belief systems including taboos, rituals and totems have played significant roles in the conservation and management of natural resources. In his work *Traditional and Indigenous Methods of Conserving Biodiversity*, Ntiamoa-Baidu (1991) identified taboos and totems as the key indigenous methods for conserving biodiversity in Ghana.

He further indicated that, social taboos exist in invariably all cultures in the country, and represent a class of informal institutions, where traditional, religiously governed norms or taboo systems define human behaviour. Totems and taboos have been important objects within human societies serving as a commemorative object of ancestry and have promoted natural resources conservation and management over time.

It is also evident from a biblical point of view that, God used a tree to signify life, hence, the tree of life. “Then the Lord God placed man in the Garden of Eden to cultivate and guard it” (Gen 2:15). The tree of life served as a symbol, in other words, as God’s totem or a seal of covenant between Him and the mortal man. Having placed people (Adam and Eve) and the said tree in the Garden of Eden, God declared the tree as sacred, tabooing them from touching or eating of it. God thus said, “... you may not eat from the tree that gives knowledge of what is good and bad” (Gen 2:16-17).

However, human desire to explore led to a break in this covenant and God pronounced a curse, and finally banished them from the Garden. This is an indication that prohibitions (i.e. totems and taboos) are important and have been part of human life since creation.

In many rural communities in Ghana, traditional belief systems remain the prime factor guiding people’s conduct towards the exploitation of the natural resources (Rim-Rukeh et al, 2013). In a similar vein, they have promoted traditional belief systems in tourism development, generating revenue for community development especially, in areas where certain animals and other elements have been sacred. It is obvious that African traditional belief systems has latently been discovered to be one of the informal institutions geared towards the preservation of forest and other natural resources (Eneji, Ntamu, Unwanade, Godwin, Bassey, Willaims, Ignatius, 2012).

However, in spite of the role(s) played by the traditional belief systems in the conservation of biodiversity and the environment, they are not given the needed recognition in both theory and practise. Christianity and modernisation for instance, have worn away the significant role(s) played by these traditional beliefs in natural resource conservation, management and community development. Traditional religious belief systems are being eroded via acculturation and enculturation of most African communities, especially the introduction of Christianity (Eneji, et al, 2012). On top of that, Appiah-Opoku (2007) adds that, modernisation sees ATR belief systems, worship and practises as rather inimical to the growth, unity, peace and cohesion of communities.

## **Western vs. African Beliefs Debates in Natural Resource Conservation and Management**

Since the pre-colonial era, Indigenous Knowledge Systems (IKS) or ATR in natural resource management has been part of Africa’s heritage, developed in order to address various survival challenges. IKS are locally oriented and have survived the test of time. However, European settlers who colonised the continent sought to destroy, denigrate or marginalise them and replace them with Western views and approaches, which were in line with their selfish goals of imperialism (Mapira & Mazambara, 2013).

Before enslavement and the introduction of colonialism, the indigenous people of Africa were much concerned about their natural environment. They conserved and managed their natural settings for so many years. No one could mismanage his/her natural environment and go free without the anger of the gods. The anger and punishment that were arranged for persons who mismanaged their natural resources were severe, thus, community members were mindful in utilising the available resources. Therefore, certain areas such as woodlands, water points, mountains and certain animals, among others, were considered sacred and were not to be abused.

Above all, certain natural resources could only be used after the fetishes performed rituals. These practises helped to conserve the natural resources, and other living things, including fishes, wild animals, trees, forests and water bodies. Paula (2004) observed that the exploitation of the natural resources was systematic and done through the inspiration of spirit mediums and through the guidance of traditional institutions.

Various indigenous beliefs and practises have contributed to indigenous natural resource management. Traditional institutions have played key roles in ensuring that those who broke natural resource management rules and norms were punished. These collective actions in natural resource management were expressed through religious beliefs and moral sanctions, and a range of sacred and cultural practises. The resilience of these beliefs and practises stood the test of time in natural resource management using taboos, totems, traditional protected areas, moral sanctions and rules and regulations (Millar, 2004).

On the contrary, Westernisation proponents would argue that the reason why Africans did not interfere with the natural environment for economic growth and development was the fact that they were living in primitive societies and lacked innovative thinking, technology and the ability to advance. Whether or not Africans lived in ignorance, at least they must be giving the needed applause for leaving their environment undestroyed for posterity. Colonisation and Westernisation through formal education and Christianity have a lot to blame for causing distractions to certain rich traditional systems relevant for natural resource management. Formal education and Christianity have somewhat eroded the rich cultural values and religious diversities of African people in Africa and have also changed their beliefs and worship systems (Smith & Wishnie, 2000). For instance, Hyma (1999) and Appiah-Opoku (2007) reckon that prior to colonisation; indigenous African rulers occupied a unique position in the management of natural resources. They were, thus accepted by their people as the custodians of religious, political and spiritual embodiments of their communities, with the responsibility of managing and holding in trust of both natural and community resources for the dead and the living.

According to Belhag and El-Kabir (1986 pp. 251), early missionaries in Africa “condemned African customs and institutions and taught social norms of nineteenth-century Europe as though they crystallised a moral code of universal validity” Colonisation is hence, a major cause of Africa’s departure in their mode of natural resources management (Fairhead & Leach, 2004). Fairhead and Leach (2004) reiterated that, decades of colonisation in Africa have alienated its people from their traditional ways of managing and utilising their natural resources.

In Ghana for instance, the missionaries separated their converts from their local communities to distant places called Salem or quarters. In the name of formal education, these converts were, taught to frown upon their cultural beliefs and practises, including the observance of sacred days and adherence to their taboos relevant in natural resource management (Adu-Gyamfi, 2011). The consequences have been that, through and through Christianity, Islam and civilisation beliefs, taboos, customs and traditions in Ghana have been relegated to the background and are regarded by many, especially early Christians, as fetishes and useless, demonic and satanic, though they play a key role in environmental protection.

## **Taboos and Totems in Natural Resource Management and Conservation**

Studies have shown that in Ghana, people protect their natural resources using taboos and totems (Abayie-Boaten, 1998). For example, Millar (2004) argues that the spiritual world in Ghana is the major driving force that regulates the performance of all traditional institutions in their quest to manage natural resources. Wildlife species regarded as totems in many part of Ghana have their historical or socio-cultural significance as well as their symbolic quality of clans that adhere to it. Quarcoopome (1987) supports the above discussion by adding that animals are chosen as totems because they are said to have qualities, which people would want to emulate therefore people identify themselves with such animals. Almost all the ethnic groups in Ghana have similar totemic animal symbols, but different meanings that they ascribe. However, this article limits its scope to include the Sankana and Tongo-Tenzuk areas.

### **Sankana Community**

Sankana is located in the Upper West Region of Ghana. It is approximately 14km from Wa the regional capital and it covers about 322 hectares of the total land area of the district (Issifu, Antwi, Kwofie, Quarshie, Mustapha, 2013). Dagaabas and Sisaales are the two major tribes in Sankana. The Dagaabas constitutes 94% of the total population and the Sisaales represents 4% of the population. However, other ethnic groups such as *Frafras*, *Walas*, and *Akans* constitute 2% of the total population (Issifu et al, 2013). The community has taboos and totems which guides the behaviour and the conduct of the people. These taboos include but not limited to whistling in the night, killing and eating of frog and python. For whistling, it is believed to invite evil spirits. The focus of this paper is on the forbidding of inhabitants from killing and eating of pythons and frogs.

According to oral tradition, a python is believed to have turned into a log and helped the ancestors/forefathers of the community to cross a river during an attack by their enemies (TTFPP, 2011). During the enslavement era, slave raiders, including Babatu and Samori most often attacked and captured the indigence of Sankana for the enslavement ordeal and other economic activities (TTFPP, 2011). The people used several strategies to prevent these slave raiders from attacking them but to no avail. Their population started diminishing because of the frequent attacks and the capturing of the energetic men and women.

The people through their traditional leaders finally decided to migrate to a safer place to help shun the slave raiders. At a point in their journey, it became difficult for them to go any further, because there was the need to cross a river. In the periods of lamentation and wondering, they found a log on the river that helped them to cross over the river. After they had all crossed the river, it became known that the log that aided them to cross the river was not an ordinary log but a python.

Since then the ancestors vowed not to kill and/or eat pythons, because they considered the python a saviour and a helper, hence, their totemic animal. It is also believed that, should anyone from the tribe kill or eat a python they will transfigure into a python and probably die, simply because of the link they have with them. This confirms Quarcoopome (1987) earlier assertion that totems are the link or dealings between a person or group of persons and animal objects or group of persons and an animal, object or a group of animal objects.

For this reason, there are many pythons found in and around caves in some sections of the community. Tourists, and sometimes community members most often visit these pythons during festivals. The caves in Sankana also served as place of refuge for their ancestors to hide from their enemies in the times of war. The caves again served as bankers for the militant to fight the slave raiders and offered them protection against wild animals. As Kawano (1999) stated the people of Sankana would run into large caves to hide and mobilised ideas to fight off the slave raiders and seek an impenetrable shelter. Gunshots and hunting is prohibited at the cave sites because such acts are believed to invite the wrath of the cave gods who prohibits noise making, hence such prohibition in and around the cave sites has become a prospect for wildlife conservation.

In a related story, it was revealed in an interview that a frog once led their ancestors to a source of water during difficult times in their migratory times. “Our ancestors did not have enough water to drink and to continue their journey, while wondering about how to survive in the coming days, a frog from nowhere jumped to where our ancestors seated and jumped back to its initial base. The elders among the group decided to trace the origin of the frog and to their surprise found a water source” (Respondent, 2014). Henceforth, they have tabooed the killing and eating of frog and have considered it their totem. In effect, water bodies where frogs are located are not misused. The proper utilisation of the water bodies does not only prevent water pollution, but also, it provides an enabling environment for fishes to survive and multiply. Hence promoting natural resource management and conservation.

**Totemic Frog**



**Ancient Cave**



**Totemic Python**



## Tongo-Tenzuk Community

Tongo-Tenzuk is located in the Talensi district of the Upper East region of Ghana. The Tongo Hills and Tenzuk Shrine are sited in Tenzuk village, 15 km southeast of Bolgatanga, the regional capital. It is bordered to the north by the Bolgatanga municipality, to the south by the West and East Mamprusi districts (both in the Northern Region), to the west by Kassena-Nankana district, and to the east by the Bawku West and Nabdam districts (Ghana Statistical Service, 2014). The oral traditions of Tongo-Tenzuk claim that their ancestors have always been there, or alternately, sprouted from the ground or descended from heaven over several decades ago (Gabrilopoulos, 1995).

More so, the Tongo-Tenzuk communities hold the belief that crocodiles are human beings among them. It is therefore a taboo for any Talensi to kill or injure a sacred crocodile. Every Talensi for that matter knows that the crocodiles are the incarnation of their important ancestors. To kill a crocodile is tantamount to killing a human being from within them. According to a respondent (2015), “it is considered a murder, one of the most heinous kind and it would bring disaster to your clan if anyone from your family kills a sacred crocodile”. For this reason, people are strictly careful as far as these sacred crocodiles in special pools are concerned. The presence of crocodiles in many water bodies make it mindful for the people to manage their water sources so that the crocodiles are not found wanting. Due to that, harmful chemicals are not use for fishing in and around the water bodies in the community.

In addition, rocks and hills are conserved and people (even the local folks) are prevented from using them for domestic and commercial uses. This stems from the belief that the rocks are the dwelling homes for most of their lesser gods. The conservation of the Tongo-Tenzuk cultural landscape site is therefore, tied up with this worldview. The rock sites in the community contain sacred shrines, including earth shrines *tengban* and ancestral shrines *ba'ar*. The Talensi people worship the Supreme Being through the lesser gods who are believed to be inside the rocks, cliffs, and caves, and constructed ancestral shrines. Paramount among the earth shrines is the *Tonna'ab* nestled in the cliffs to the west of the settlement at the section called *Kpatari*, which has provided the area with enormous sacred power for both the Talensi's and other ethnic groups in Ghana. It has been viewed historically by the *Akans* in southern Ghana as a site of potential ritual power for wealth and as such, Rattray (1932) observed the presence of wealthy *Asante* businesspersons in the area. *Tonna'ab* is a benevolent, protective, and curative shrine or god that abhors evil. It has been the unifying factor for the Talensi and continues to flourish up till today.

At *Kpatari*, a suburb community, there are two sacred groves, *Bonab* and *Nnoo* that greatly influence the culture of the Talensi. *Bonab* performs the same ritual functions as *Tonna'ab*. The *Nnoo* shrine serves as the home of the *Golib* god. The *Golib* god has a lot of influence on the agricultural affairs of the community by ensuring the maintenance of several cultural practises in the area. The *Gologo* festival is celebrated to reinforce the community's belief in the *Nnoo* shrine or *Golib* god.

The historical establishment of and the adherence to many taboos and norms in respect to the needs of the *Golib* god has helped to evolve and maintain a number of traditional conservation practises which over the years have preserved this unique cultural landscape. These taboos, norms and penalties instituted have strengthened the relationship between the Talensi and their god or shrine.

The numerous trees in and around the shrines are not cut for firewood or charcoal (a major source of biofuel) but are left in their natural state because of the belief that lesser gods are found in and around the area. Joffroy (2009) has affirmed that, tradition in the area prohibits the cutting of the trees, shrubs and grasses around the three shrines. Because, there are prescribed walkways to each shrine.

In addition, the rocks of the hills are exempt from quarrying because of the presence of smaller gods in them. The presence of the lesser gods in the rocks found on the Tongo hills and the trees found in and around Tengzuk Shrine have all helped to preserve the natural environments from mismanagement. Hence, taboos and totems among the indigenes of Tongo-Tengzuk community have contributed immensely as far as natural resources conservation and management is concerned.

### **The Tongo Hills**



## Tenzuk Shrine



## Totemic Crocodile



## **Lessons from Taboos and Totems**

### **Wildlife Conservation**

Patches of forests in the communities are protected because they support sacred totemic animals believed to have special spiritual or cultural values and associations. For instance, the prohibition of killing and eating of pythons and frogs and crocodiles among the people of Sankana and Tongo-Tenzuk respectively has helped to conserve and maintain some form of wildlife in the community albeit not a well-structured wildlife zone. It has also helped the animals to survive and multiply in their numbers over time. Aside the few tourists who go to observe some of the pythons and the caves located in some sections of the community, the location and historical backgrounds, are also useful for academic purposes.

### **Sacred Watercourses and Biodiversity Conservation**

Tongo-Tenzuk is a masterpiece of a cultural landscape, one that the Talensi community have attempted over the years to preserve for posterity, despite increasing threats from modernity. Many rivers and streams that provide sources of drinking water for Talensi's specifically, and Tongo is considered sacred because of the presence of crocodiles. The surrounding forestlands are protected on the basis that the lesser gods and other living spirits reside in the trees found in and around the Tenzuk shrines. As the crocodiles, are intended to protect water bodies from being mismanaged, plants and animals including fishes living in the water bodies are not cultivated indiscriminately. No matter the reason for such practises, one certain thing is that a biological diversity (flora and fauna) is conserved.

### **Conclusion and Recommendation**

The focus of this article was to explore the significance of indigenous African belief systems: taboos and totems in natural resource conservation and management in Ghana with special reference to Sankana and Tongo-Tenzuk in the upper west and upper east regions of Ghana respectively. Taboos and totems have helped to promote not only the natural environment, but also traditional belief systems as well as the generation of revenue for the community development through tourism activities. Indigenous African belief systems in the study area, including taboos and totems have contributed immensely and effectively to the reduction in the incidence of wildlife and biodiversity loss. Examples are the prohibition of killing and eating of frogs, crocodiles and pythons that are totems by both Sankana and Tongo-Tenzuk communities. More so, harmful chemicals such as dichlorodiphenyltrichloroethane (DDT) is not used for fishing because of their potential danger to the lives of the totemic animals living in the water bodies and which could cause the wrath of the gods living in them if used.

Cutting down of forest trees for charcoal and the quarrying of rocks in these areas have also been prevented. Because of the belief that lesser gods and other spirit beings reside in them. These among other things are believed to have helped in the promotion of natural resource conservation and management for a very long time.

Albeit the significant roles of indigenous/traditional African belief systems play in natural resource conservation and management, modernisation, Christianity and formal education have all become the greatest opposition to traditional belief systems. Therefore, religious leaders, including pastors, priests, imams, traditional authorities, etc. are encouraged to preach more about the sections of the Bible and the other belief mediums that see human existence as closely tied to its natural environment, and thus, the provision of other environmental services which people need for survival on earth.

More so, government through the Ghana Tourism Authority, District Assemblies, and the Ghana Museums and Monuments Board should embrace a conscious effort to integrate modern laws and traditional norms and beliefs in natural resource conservation and management into a single policy framework enforceable by law. In addition, by doing so, rural communities within areas where these resources are located will willingly and voluntarily participate in the management and conservation of the natural resources for the benefit of the living and the yet unborn.

**Research:** There is an increasingly sophisticated understanding of the benefits of African belief systems, while a deeper understanding of how and under what conditions local communities adopt these systems in a response to environmental degradation and natural resource conservation is essential, along with the root challenges involved. Hence, more research should be done to document the socio-economic benefits of the historic sites via tourism, and in other avenues of concern.

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