Chapter 20
Sacred Mangrove Forests: Who Bears the Pride?

Mwita M. Mangora and Mwanahija S. Shalli

Abstract While mangroves have since been regarded as natural wastelands, the need for their conservation is strongly felt today as their invaluable services and functions are being unveiled primarily due to increasing demand for their products and the forest land. Appraising various models of management institutions to enhance conservation and sustainability of these valuable resources has thus been advocated over the recent past. Social taboos exist in most cultures, and they demonstrate forms of informal institutions, where traditional norms, rather than state institutions (laws, regulations), determine human behavior toward exploitation of natural resources. Despite the ill-recognition of these traditional management practices by the state organs, traditional communities have for centuries maintained these practices to ensure the survival of the forests on grounds of spiritual and ecological values. In this chapter we reviewed the state of knowledge of the functional conservation values of sacred mangrove forests in Tanzania and how they are being conceived as models for the promotion of community based conservation (CBC). The discussion is based on the perspectives of forest dependency, traditional access and use rights, traditional ecological knowledge, socio-ecological integration of culture and forest, and the traditional power relations. We argue that traditional people, who have maintained strong ties to their cultural norms and kept the sacred groves outshining the contemporary models of conservation, should bear the pride and honor in the renaissance of conservation tenets.

Keywords Conservation • Local Communities • Mangrove Forests • Traditional Knowledge

20.1 Introduction

Mangroves are tidally influenced wetland ecosystems within tropical and subtropical latitudes. They can also occur in areas without a tidal regime e.g. in some choked coastal lagoons and in the supralittoral zone (Spalding et al. 2010). Among the many functions, mangroves offer shelter, food and breeding grounds for a large variety of

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fish, shrimps and oysters for at least part of their life-cycle. Mangroves also stabilize the coastline—protecting it from erosion, act as sinks which concentrate pollutants such as sewage, toxic minerals, pesticide, herbicides and trap sediments. In recent years, the rate and variety of human influences on the mangrove forests in Tanzania have increased to the extent that they are threatened in many places. One of the most pressing issues facing mangrove forests is the loss of mangrove areas due to conversion for other land uses such as rice farms, salt pans; aquaculture ponds; and clearance for urban and industrial development (Semesi 1998). Other threats include over-exploitation of resources, mainly through clearing of mangroves for firewood and construction purposes (Banyikwa and Semesi 1986; Masalu et al. 2010).

While in many places mangroves are legally protected, current rules to manage coastal resources especially in developing countries are weakly enforced due to limited financial and human capacity (Peres and Terborgh 1995; Walsh et al. 2003). Appropriate state agencies responsible for monitoring and enforcement in developing countries are often distant, understaffed and under-funded to be effective and are based solely on scientific approaches (Johannes 1981; Berkes et al. 2000). Due to this management incapacity, there are emerging suggestions to consider traditional management approaches in natural resource conservation (Ruddle 1998; Johannes 2002; McClanahan et al. 2006; Shalli 2011). This increased recognition on the role of traditional knowledge in the management of natural resources has come on the realization that such knowledge has allowed people to live in their specific surroundings throughout history (Veitayaki 2004).

Coastal communities in Tanzania as elsewhere in many parts of the world have traditionally reserved forests for a range of reasons including religious, sacred, customary or traditional reasons (MNRT 2006; Shalli 2011). For instance, it is common to find certain tree species being protected and managed for traditional reasons. Likewise, small patches of forests are commonly retained by various tribes and are used as venues for traditional rituals, such as initiation, prayers and fortune telling. Despite the ill-recognition of these traditional management practices by the state organs, traditional communities have for centuries maintained these practices to ensure the survival of the forests on grounds of spiritual and ecological values. Nonetheless, the concern remains as to what has happened with the state led institutions and conservation models that promote participation, and now that, efforts are turned to sacred groves that once were functionally considered as just relics of forests that were to be relinquished.

In this chapter we reviewed the state of knowledge of the functional conservation values of sacred mangrove forests in Tanzania and how they are being conceived as models for the promotion of community based conservation (CBC). To deliver on this, first we conceptualize the idea of sacred forests. Second, an overview of the mangrove forests of Tanzania is briefly described. Thirdly, the perspective of managing sacredness in mangrove forests in terms of traditional access and use rights, traditional ecological knowledge, socio-ecological integration of culture and forest, and the traditional power relations is discussed. From this discussion, the conclusions on why sacred mangrove forests should be considered as models for the promotion of CBC and who should bear the pride of conservation are drawn.

20.2 The Concept and Ideology of Sacred Forests

Since time immemorial, conservation of natural resource has been an integral part of diverse cultures in different ways. The traditional worship practices show the symbiotic relation of human beings and nature. Traditional communities all over the world lived in harmony with the nature and through traditional practices, they conserved natural resources. A good example of such traditional practices is the conservation and protection of small forest patches by dedicating them to the local deities. Such forest patches are "sacred forests". Different scholars have defined sacred forests including sacred mangrove forests variably. According to Saikia (2004) sacred mangrove forests are forests that vary in size from a few hectares to a few square kilometers protected by local communities as being the sacred residences of local deities and sites for religious and cultural rituals. The designation of a forest as sacred is a widespread traditional practice in Africa. They provide the inextricable link between present society to the past in terms of biodiversity, culture, religious and ethnic heritage. While sacred forests were not created for biodiversity conservation, their complex social-spiritual association with deities and spirits of dead ancestors has contributed to the protection of some ecosystems (UNESCO 1998). Some scholars make close link between the sacred and biodiversity conservation and argue that the sacred value attached to the forests is a way to allow their successful conservation (Wadley and Colfer 2004; Wild and McLeod 2008) and may fulfill similar functions as legal protected forests.

Local level control has been instrumental to the protection of sacred forests. In this regard taboos, rituals and beliefs supplemented with spiritual folk tales associated with the forests have been the prime reason in preserving the sacred mangrove forests in pristine condition. The concept of sacred forests that revolves around the spiritual beliefs has brought some significance in conservation. The traditional rules established by the local communities with respect to sacred forests have paved a way for conservation of biodiversity since the past time. For instance, people have the belief that any damage to the sacred forest or felling a tree from the sacred forest may bring the anger of local deity, which may cause hazard or misfortune to the surrounding community (Masalu et al. 2010). As a result, forests that are managed using traditional knowledge and practices are accorded high respect by concerned communities and are thus relatively not subject to human impacts. It is therefore the purpose of this chapter to express why local communities should be respected and recognized as stewards of sacred mangrove forest ecosystem goods and services and bears the pride of conservation.

20.3 Mangrove Forests of Tanzania

20.3.1 Distribution

Mangroves occur almost along the entire coastline of Tanzania which span for over 1,000 km from the border with Kenya in the north to the border with Mozambique in the south (Fig. 20.1). In the mainland Tanzania, Semesi (1992) reported that the

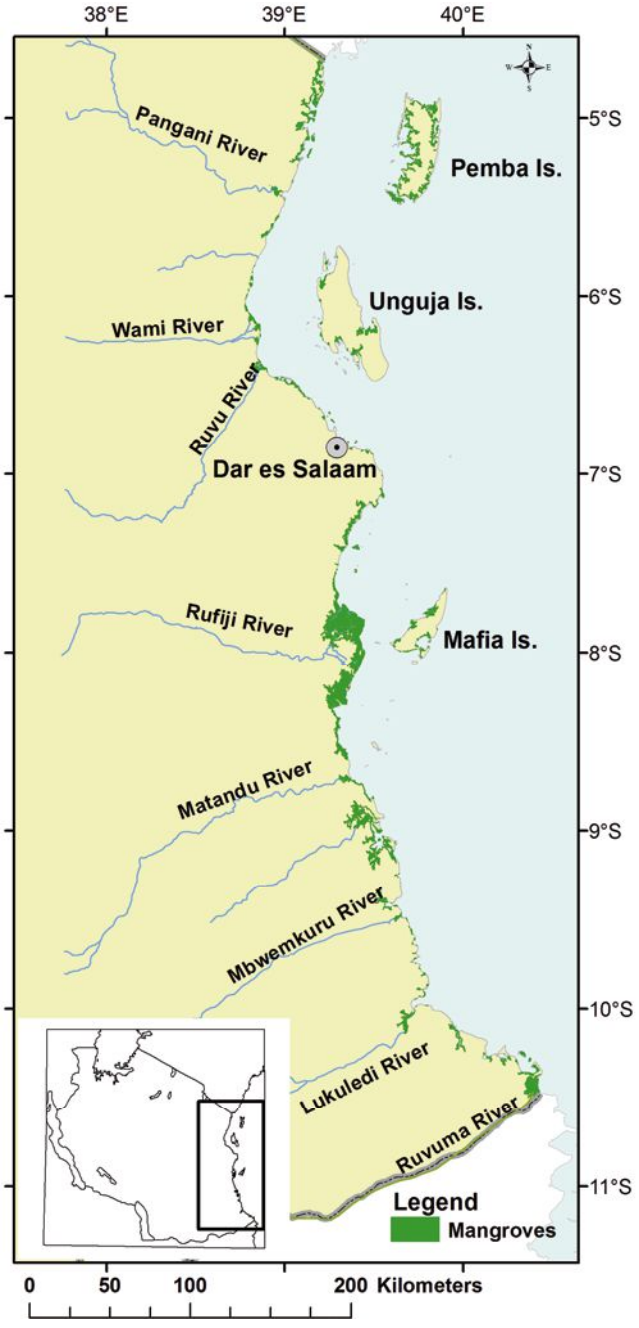


Fig. 20.1 Map of Tanzania coastline showing important mangrove areas

Table 20.1 Mangrove forest area coverage along the coast of mainland Tanzania as designated in the national mangrove management plans

District/Region (Block)	Area of mangroves found in 1989 forest inventory (ha) (Semesi 1992)	Area of mangroves found in 2000 from analysis of remote sense images (ha) (Wang et al. 2003)
1.Mkinga and Tanga	9,403.3	9,313
2. Pangani	1,755.6	3,879
3. Bagamoyo	5,635.8	5,051
4. Dar es Salaam	2,168.2	2,516
5. Mkuranga	3,858.3	4,092
6. Rufiji	53,254.8	48,030
7. Mafia	3,472.9	Not assessed
8. Kilwa	22,438.7	21,755
9. Lindi	4,546.5	4,044
10. Mtwara	8,941.5	9,458
Total	115,475.6	108,138

Table 20.2 Proportional distribution of forest area (hectares in thousands) by type in Tanzania. (Source URT 1998; Wang et al. 2003)

Forest type	Area (ha)	Proportion (%)
Forests (other than mangroves)	1,141	3.4
Mangrove forests	112	0.3
Woodlands	32,299	96.3
Total	33,552	100.0

total area covered by mangroves was about 115,475 ha including those of the island of Mafia (Table 20.1). This account for only 0.3% of the total forested land in Tanzania (Table 20.2). However, shortly over a decade later Wang et al. (2003) reported a reduced area coverage of mangroves of about 108,138 ha (excluding Mafia island). In the two islands of Zanzibar (Unguja and Pemba), mangroves are estimated to cover about 19,750 ha (Leskinen et al. 1997). About 50% of the mangrove area in Tanzania is confined in the Rufiji River Delta which is the largest single mangrove forest in the eastern Africa region. Other important mangrove areas include the river estuaries and sheltered lagoons of Tanga, Pangani, Wami and Ruvu and Ruvuma (Mtwara) (Fig. 20.1). There are ten species of mangrove trees that occur in Tanzania. The most common species are *Rhizophora mucronata*, *Avicennia marina* and *Sonneratia alba*. Others are *Bruguiera gymnorrhiza, Ceriops tagal, Heritiera littoralis, Lumnitzera racemosa, Xylocarpus granatum, X. moluccensis* and *Pemphis acidula* are the rarest species.

20.3.2 Mangrove Forest Dependency: Goods and Services

Many coastal communities in the tropics are characterized by relative geographic isolation, chronic poverty and significant dependence on the harvest of marine and coastal resources for their livelihood (Kunstadter et al. 1986). The majority of people living in or near mangrove areas derive their principal income from fishing

and related activities. The direct harvest of mangrove wood and plants is rarely a full-time occupation for them, but a great many rely on these products to meet subsistence needs for fuel and construction materials, and for others the harvest and sale of mangrove forest products is an important income supplement (Lacerda et al. 1993; Glaser 2003; Walters 2005; Lopez-Hoffman et al. 2006; Spalding et al. 2010).

Principally, coastal communities of Tanzania have been using mangrove species of mainly Rhizophora, Ceriops, and Bruguiera as poles in constructing houses. Mangrove wood can produce excellent charcoal of high calorific value. Coastal city areas of Tanzania such as Tanga, Dar es Salaam, and Zanzibar provide major markets for charcoal (Mainoya et al. 1986). People in coastal villages also use mangrove wood for firewood in their homes. At the same time, mangrove wood is used as fuel for the production of burnt bricks, salt making and in lime burning where alternative sources of fuel wood are not available. Grant (1938) identified the best mangrove timber to come from Heritiera species, which is the only species commonly found in large dimensions. The other uses of mangrove products by the coastal people include fences for livestock pens and fish traps. In addition, the Tanzania coastal people use Avicennia foliage as fodder for goats and cattle and Rihizophora leaf extract as a medicine for hernias (Mainoya et al. 1986). Tannin is also for a long time extracted from mangrove bark and used locally by the leather-processing industries and it is reported to be a source of revenue for local communities and nation in general (ibid).

Ecologically, mangroves habitat provides suitable breeding and nursery grounds for a variety of marine living organisms such as fish, crabs and molluscs. They also support a variety of insects and birds. For instance, in the Rufiji Delta villagers use mangrove trees for bee-keeping (Semesi 1989). Furthermore, the presence of mangroves has been demonstrated to provide an efficient buffer for coastal protection: their complex structure attenuates wave action and control soil erosion. Mangrove ecosystems have also been shown to be effective as nutrient traps and 'reactors', thereby mitigating or decreasing coastal pollution. The feasibility of using (constructed rather than natural) mangrove wetlands for sewage or shrimp pond effluents has recently been demonstrated (Wu et al. 2008) and could offer a low-cost, feasible option for wastewater treatment in tropical coastal settings.

Due to the many uses of mangroves by the coastal communities, degradation of these important resources especially in developing countries has been accelerating year after year. Further efforts with regard to community empowerment on mangrove forest management need to be done to halt the intensive use and negative impacts on the mangrove forest and the surrounding, marine environment in the near future.

20.4 Managing Sacredness in Mangrove Forests

20.4.1 Traditional Access and Use Rights

Culturally, sacred forests symbolize the links between the spiritual world of ancestors and people. Rituals and ceremonies which draw on forest symbols often serve to link people with their cultural heritage, as well as their ancestral past (FAO 1990).



Fig. 20.2 Kwamdoe sacred mangrove forest, Pemba

In Tanzania, law does not recognize sacred forests (Akida and Blomley 2008). They are thought of as either communal or private forest reserves that have not undergone any official establishment process. There are no written rules or guardian to regulate sacred forests use and management (Falconer 1992). In this respect, access and use of sacred forests are often governed by traditional powers through a combination of taboos, prohibitions, beliefs and restrictions. People willing to access and use sacred forests had to fulfill a certain number of conditions.

Worship, spiritual consultation and sacrifice are the most common non-consumptive uses of sacred forests. The level of extractive use varies; in some sacred forests no extraction of forest products is permitted while others provide people with a great variety of products such as hunting for wild animals, collection of wild plant foods, medicinal plants and water (Gombya-Ssembajjwe 2000). The rules and regulations regarding access and use of each sacred forest vary between communities (Falconer 1992). For instance, restrictions in the Kwamdoe sacred mangrove forest of Kojani, Pemba (Plate 1) include total ban on cutting or collecting mangrove cuts/woods. In addition, pregnant women are prohibited to cross-by this area, and if they do so could amount to miscarriage (Shalli 2011). Rules and regulations in Kitoipi and Kwakibibi sacred mangrove forests of Kipumbwi, Pangani include getting consent of the three elders responsible for the forests to enter the sacred area and exploit or do other activities (Nurse and Kabamba 1999).

Spiritual sanctions, in combination with material fines and penalties, enforce the norms and rules related to the use of sacred mangrove forests in Tanzania. Community members are taught the do's and don't's relating to the scared forests. Elders constantly remind the community of the dangers that await those who abuse the sacred forests. Generally, when disobeying to the traditional rules the dangers include misfortune, sickness and even death to the violator. For instance, when disobey the rules in Kwamdoe sacred mangrove forest the violator is beaten with sticks by unseen

spirits while still in the forests or the criminal may cry throughout until the illegally harvested produce is returned to the forest (Shalli 2011). In Kitoipi and Kwakibibi sacred mangrove forests when people come to worship and succeed with their prayers, they have to leave a small offering at the sites (Nurse and Kabamba 1999).

In this regard, traditional access and use through cultural norms and rules helps to build the social capital that is necessary to prevent overexploitation of forest resources and ensure the conservation of biodiversity (Gombya-Ssembajjwe 1997). Coastal communities living around the sacred mangrove forests therefore have an important role to play in the conservation of mangrove forests through traditional prohibitions.

20.4.2 Traditional Ecological Knowledge

Traditional Ecological Knowledge (TEK) is a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission. It concerns the relationship of living beings (including human) with one another and with their environment (Berkes et al. 2000). Traditional knowledge and practices have sustained the livelihoods, cultures and forest resources of local communities for centuries. Interest in TEK has been growing in recent years, partly due to a recognition that such knowledge can contribute to the conservation of biodiversity (Gadgil et al. 1993), rare species (Colding 1998) protected areas (Johannes 1998), ecological processes (Alcorn 1989), and to sustainable resource use in general (Berkes 1999).

The use of TEK in the form of customary ecological management practices has been recognized as a potentially powerful conservation mechanism, particularly in countries where indigenous cultures are still largely extant (Harkes and Novaczek 2002; Hickey and Johannes 2002). Community support for conservation plans consistently emerges as one of the most important factors in maintaining the plans' long-term efficacy, and programs that incorporate customary ecological management practices in their design, draw more support from local people (Aswani and Hamilton 2004). Results of studies in areas of the Pacific (Johannes 2002) suggest that local-based management can have beneficial impacts for the marine environment and that, in comparison, community-based management plans tend to work better than top-down approaches (Cox 2000).

However, sacred forests and related traditional knowledge do not exist and function in isolation, they are thus increasingly challenged by external factors that stress and often lead to its failure in achieving its functions. The increase of socio-economic pressures such as rapid population growth, changing land use pattern, priorities and commoditization has contributed to a depletion of sacred forests. For instance, the rise in the price of land has tempted some local people to sell their sacred areas (Shalli 2011). In this respect, although sacred forests undoubtedly contribute to the conservation of biodiversity, it is uncertain whether the traditions that have created and maintained these areas can be operationalized as a model for further conserva-

tion efforts. Kay and Alder (1999) viewed traditional knowledge as only applicable in the past due to low population densities, and are now inefficient to effect resource conservation. It is however advised to integrate traditional and modern knowledge to counteract the challenges (Johannes 1989; Shalli 2011).

It is then logical that people who live around sacred mangrove areas and who are dependent on mangrove forests for their livelihood and other cultural needs should be central actors in forestry conservation. It is also obvious that biodiversity conservation cannot be achieved only through the current formal approaches such as provisioning for national parks and reserves. Biodiversity occurring in a variety of cultural landscapes such as sacred forests equally contributes to the conservation (Saleh 2000). Because of their knowledge and traditional practices, local communities have a vital role in environmental management and development. State and other conservation agencies should recognize and duly support their identity, culture and interests and enable their effective participation in the achievement of sustainable development.

20.4.3 Socio-ecological Integration of Culture and Forest

Culture is an expression of the interaction between communities and their natural, historical and social environments over time (Bélair et al. 2010). From this point of view, traditional knowledge is embedded in complex cultural environments (Berkes et al. 2000). These environments not only satisfy people's material needs, but also provide the bases for ethical values, concepts of sacred spaces, aesthetic experiences, and personal or group identities derived from the local surroundings (Kassam 2009). Social, ethical and spiritual relationships thus have an ecological foundation; and the practical manifestation of cultural values can have consequences for the ecological system (ibid.). Failure to recognize this interaction means ignoring the role that cultural practices play in the shaping of landscapes and the maintenance of biodiversity and ecosystem services.

Most of the world's biodiversity is not in protected areas but on lands used by people (Poudel 2010) employing a variety of subsistence strategies to sustain their livelihoods. Some of these strategies are compatible with conservation aims. In this respect, biodiversity conservation requires an understanding of social systems and their interactions with ecological systems. People have been maintaining and protecting some areas as untouched on different conservation structures and management strategy. For instance, indigenous communities have been conserving sacred forest areas under the strong religious, cultural and spiritual belief. This is because faiths can have a major impact on the way people view the protection of nature. These protected areas contain neither any written conservation rule nor any formal governing structure. However, they are harboring the valuable flora and fauna. The conservation of protected areas in the future will depend on our ability to understand, harness and support those practices that are beneficial to the maintenance of the diversity and resilience of natural ecosystems.

Despite of socio-cultural, religious and ecological significance, sacred forest areas are nowadays at the risk of disappearance due to high human pressure and the breakdown of cultural values. People's activities in a changed context have reshaped their conservation belief on traditionally managed sites. The spiritual taboos are now taken as superstitious due to rational education system. In the changing social system, we cannot at the moment depend only in social taboos to protect the disappearing sacred forests. There is incompatibility in faith system between the people who believe in traditional, religious and spiritual taboos and those who do not. The fear of the elder generation for example, is that the rituals may be renounced when ecological consciousness is promoted because many people may discard traditional activities as superstitious (ibid). Integrated approach is necessary that those who do not believe on existing faith of taboos should be aware of ecological value of those sacred forest areas, and those elders who fear about renouncing of rituals should be convinced by the conservation effort as it doesn't mean keeping away from the traditions. This integration of traditional belief and ecological rationale brings all people in the same cornerstone of conservation. All people have vital interest in the preservation of the ecosystems, though many are not aware of it at present. It is essential that every effort should be made to make people conscious of the need for the conservation of our bio-resources (ibid) albeit which institutional model is pursued.

20.4.4 Traditional Power Relations

During the pre-colonial era in Tanzania, there were no formal national policies to control and coordinate natural resource management. Communities had their own traditional systems based on their customs and practices (Torell 2002). These customs were enforced by elders, clan leaders (and in some areas kings) who performed both civic and spiritual duties. The community determined the powers exercised by the clan elders. These powers included keeping peace, settling disputes (involving marriage, divorce, the marital status of women, the rights of children, inheritance, election of customary heirs and land), performance of rituals, protection of Gods and shrines and guarding against drought, famine and other disasters. There are examples of villages that initiated strategies to protect wildlife, forests and fishing stocks. In some villages, a strong group of elders would play a significant role, while in others cultural practices and myths played an important role in the protection of natural resources. These belief systems were passed down from generation to generation.

Throughout Tanzania, traditional leaders gained power through heredity and/or consensus. Mokgoro (1994) iterated that African traditional leadership has always been hereditary and therefore not subjected to the electoral process that characterizes modern governance. Political power was centralized to varying degrees, from lineage and ward elders responsible for local affairs to representative councils and hereditary kings responsible for village or town affairs at large. Natural resource arrangements during pre-colonial times were thus in the form of top-down arrangements whereby a few individuals, i.e. the chiefs and appointed elders of clans, families, and tribes, enforced beliefs and traditional institutions while others in these communities were required to comply with the institutions (Kirk 1999).

20.5 Synthesis and Conclusions

Community-based approaches, which capitalize on traditional knowledge and management systems, and catalyze stakeholder support for requisite conservation measures, are suitable in some regions (Ormsby and Bhagwat 2010). Stakeholders will be more likely to comply with restrictions on their traditional resource use activities if they understand and support the rules which can be accomplished through direct community participation in monitoring, planning, and management decision-making. The rural conditions, including relatively small population size, high dependence of local communities on coastal and marine resources, social cohesion, customary tenure and traditional use of coastal and marine areas and resources, existence of strong and intact traditional authority, and low conventional government management capacity of some sites make local community-based management through collaboration between local government and the local community (e.g. clans or individual villages) appropriate (White et al. 1994; Whyte 2001). However, in more urban areas, the larger and more heterogeneous the local community, more complicated and numerous the multiple resource uses and users are, more numerous external threats to the coastal and marine environment, less recognition of customary tenure and traditional governance, and generally the more complex the site is, there will be a larger need for central government management, where community-based management would be less effective (Huber and McGregor 2001). The optimal approach to manage adaptation to mangrove responses to climate change effects will depend on the local context. As such, recognizing the environmental concerns of rural communities and supporting their efforts to protect threatened forests and regenerate degraded ones may be the most important, least costly strategy available to national governments and donors alike.

On the premise of the present review, we conclude that sacred mangrove forests may be considered as a better model for the creation of CBC on the notion that local communities who live around the sacred areas benefits with economic, cultural and ecological uses of the forests yet at the same time applies cultural and traditional beliefs to conserve the forests. People living around sacred areas see themselves as owners of the resources. Therefore, further efforts with regards to community empowerment on sacred mangrove forest management need to be enhanced to avoid the intensive use and negative impacts on the mangrove forest and the surrounding marine environment in the near future. For instance, in an effort to promote conservation of sacred forests, cultural tourism should be promoted in sacred areas as a way of compensating traditional communities and enhance their moral and cultural conduct to traditionally manage their resources.

The current failure of modern science (especially in developing world) to deal effectively with environmental issues of increasing magnitude and complexity such as the onset of climate change phenomenon, has opened the door for incorporating other sources of knowledge. Local communities and scientists ought to mutually collaborate in the assessment and monitoring of forest resources. The modern society can learn a great deal from the traditional skills in sustainably managing complex ecological systems. Traditional access and use through cultural norms and rules helps to build the social capital that is necessary to prevent overexploitation of

forest resources and ensure the conservation of biodiversity. States and other conservation agencies should recognize and accordingly support traditional knowledge and their practices and enable local community participation in the achievement of sustainable development. In this regard, it is necessary to strengthen traditional rules and customs by aligning them with state laws and regulations so as to complement contemporary management measures at least at the local level.

Given the socio-economic changes worldwide, social-ecological integration approach is necessary for the protection of sacred mangrove forests. Existing faith of taboos and the strong community beliefs and cultural norms had formed the bases for effective resource management. We therefore argue that traditional people, who have maintained strong ties to their cultural norms and kept the sacred groves outshining the official models of conservation, should bear the pride and honor in the revival of conservation tenets. To strengthen this, support for the continued practice of the tradition of sacred mangrove forest protection is needed in order to provide a culturally sensitive model for community-based natural resource management. Traditional leaders who are the key instrument in the survival of traditional knowledge should be recognized and respected; this is because traditional decisions made by traditional authorities have a higher likelihood of success. We however, conclude that the adoption of these kinds of traditional management systems should not be construed as a panacea rather a complement for mitigating the emerging conservation problems related to the inefficiency of the current state strategies.

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