

Original Article

Local perceptions, opportunities, and challenges of community-based ecotourism in Gazi Bay, Kenya

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Abstract

Community Based Ecotourism (CBET) has the potential to both improve the conservation status of mangrove ecosystems and stimulate local economies. However, these ecotourism initiatives often fail due to a lack of active local participation, poor management and a lack of an appropriate benefit sharing scheme. This paper explores perceptions, opportunities and challenges of community mangrove-based ecotourism in Gazi Bay, Kenya. Data collected from household surveys, key informant interviews and focus group discussions were used to examine local perceptions, challenges and opportunities with respect to their participation in ecotourism as a tool for mangrove conservation. The results obtained indicated that 81.4 % of the Gazi village community was aware of the ecotourism activities being undertaken in the area with 62.8 % acknowledging the socio-economic as well as the environmental impacts of the ecotourism activities. Also, 66.0 % of the local community identified cultural traditions and local skills possessed by the community as having the potential to promote sustainable ecotourism activities in the area. For the design and implementation of any ecotourism venture and the management of mangroves to be sustainable, including that undertaken by the Gazi community, this study recommends prioritising effective local participation and capacity building. In addition, private sector involvement is essential for the mobilisation of resources to further enhance the management and conservation of mangroves in the long-term. The results provide key insights needed not only to improve the design and management of community-led marine conservation initiatives but also for ensuring that optimal conservation benefits are achieved.

Keywords: community-based ecotourism, perception, community participation, mangrove conservation, Gazi Bay, Kenya

Introduction

Ecotourism is embraced as an alternative means to stimulate conservation of natural ecosystems (He *et al.*, 2008; Walter, 2013; Jamaliah and Powell, 2018;

Ma *et al.*, 2019). However, in the general literature there is a lack of clear definition of what specifically constitutes ecotourism. Despite this lack of clarity, ecotourism ventures include those that protect the

environment, create awareness, preserve people's culture and experience, while at the same time generating economic benefits (Cobbinah, 2015, 2017). Bluwstein (2017) defines ecotourism as responsible travel to natural areas with the intention to promote conservation of the environment and enhance the wellbeing of the local people. The ecotourism concept first gained global attention in the 1980s in response to the idea that traditional tourism had damaging impacts to the environment (Wondirad *et al.*, 2020). The first global outlook of a single environment facing similar threats emanated from the Brundtland report of 1987 – 'Our common future', which recognized the fact that humans and the environment are inseparable from one another. It further suggested that the exploitation of resources, direction of investments, orientation of technological development, and institutional change be made consistent with the future as well as present needs (WCED, 1987). Therefore, when ecotourism promotes the wellbeing of the host communities (IES, 2018), Community-Based Eco-Tourism (CBET) is realized, which encompasses both environmental conservation and socio-economic impacts in its execution (Ma *et al.*, 2019). Other forms of tourism including sustainable tourism and nature tourism that captures the components of ecotourism have also been highlighted in literature.

Sustainable tourism encompasses all types of tourism that meet the needs of tourists and host places while accounting for its current and future social, economic and environmental impacts (Hall, 2019). This includes ecotourism, soft tourism, alternative tourism, green tourism, and rural tourism. Nature tourism on the other hand is a form of alternative tourism that focuses on bringing together conservation communities and sustainable development through travel (Andreea *et al.*, 2008). Sustainable tourism is anticipated to result in the management of all resources in a manner that satisfies economic, social and aesthetic requirements while preserving cultural integrity, vital ecological processes, biological diversity and life support systems (UNCTAD, 2011).

Target 8.9 of the 2030 Agenda for Sustainable Development Goals (SDGs), aims to "devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products". The importance of sustainable tourism is also highlighted in SDG target 12.b which aims to "develop and apply tools to assess sustainable development impacts for sustainable tourism that creates jobs and, promotes

local culture and products". Meanwhile, Chapter IV, paragraph 43 of the Johannesburg Plan of Implementation Page (UNCED, 2002), advocated for the promotion of sustainable tourism development, including non-consumptive use of the environment and ecotourism, during the 2002 World Summit on Sustainable Development in Johannesburg in 2002.

Ecotourism activities have generally promoted the conservation of fragile natural ecosystems and endangered species while boosting local economies (Bluwstein, 2017). Specifically, CBET has recorded tremendous benefits towards the conservation of wildlife and natural ecosystems worldwide. The practice promotes conservation of natural resources, management of tourism activities while promoting the protection of the natives' cultural heritage, training of members in the local tourism industry, as well as integration of public and private sector activities, among others (Ma *et al.*, 2019). The CBET approach underscores the importance of local communities and helps in enhancing their contribution to the tourism value chain by providing products and services such as village tours, homestays, gift items and cultural shows (Mondino and Beeny, 2018). These communities can benefit by incorporating their rich culture in ecotourism development to enhance conservation efforts (Bluwstein, 2017; Ma *et al.*, 2019). In response to the rising tourism demand, however, traditional cultural practices may be perverted by choreographing for touristic display and consumption. (Habinc, 2012).

CBET ventures have positively impacted on local perceptions towards the sustainable utilization and management of natural resources among communities (Hunt *et al.*, 2014). In developing countries such as Kenya, ecotourism activities have been implemented not only for the purpose of preserving the environment but also for poverty reduction (Manyara and Jones, 2007). However, most of the coastal-based community-managed ecotourism establishments and activities remain largely undocumented which is exacerbated by the domestic and international promotion of the charismatic "big five" wildlife tourism in national parks and reserves. This lack of documentation has far-reaching implications in terms of how the model of these initiatives can be improved to achieve optimal environmental and local benefits (Ma *et al.*, 2019). To date, striking a balance between economic benefits from ecotourism activities and maintaining ecological sustainability and preserving indigenous socio-cultural practices remains the major challenge in developing countries including

Kenya (Wondirad *et al.*, 2019, 2020). There is still a lack of consensus on whether ecotourism has managed to live up to its expectations or not (Wall, 1997; Gosling, 1999; Cater, 2006; Manyara and Jones, 2007; Bluwstein, 2017; Ma *et al.*, 2019).

The fall and underperformance of some CBET projects is linked to poor governance structures, lack of effective stakeholder involvement and competing interests among stakeholders, weak institutional arrangement, lack of social accountability and lack of local participation (Towner, 2018). Effective local support and participation has been identified as a key pillar for sustaining ecotourism-based conservation ventures (Wondirad *et al.*, 2020). A high level of local participation in CBET implementation is associated with the existence of good governance structures, socio-economic impacts and ecological effectiveness (Bennett *et al.*, 2019). Mostly, these ventures are established within communities that live adjacent to natural resources (e.g., mangrove ecosystems) as applied in this case study of Gazi Bay, on the south coast of Kenya (Kairo *et al.*, 2009). Due to varying perceptions of how these resources are utilized or managed, it is necessary to closely examine the local context and performance of community-led ecotourism initiatives. Several factors, including social norms, demographic demographics, place connection, values, rewards, and governance structures, have been identified as drivers

of local attitudes towards CBET conservation programmes. (Christie, 2005; Bennett *et al.*, 2019).

To generate a better understanding of CBET, this study examines local perceptions as well as challenges and opportunities of mangrove-based ecotourism activities in Gazi Bay, Kenya. Specifically, the study objectives were to (i) identify the perceptions regarding local participation and performance of a mangrove-based ecotourism initiative, (ii) identify perceived challenges impeding its success, and lastly (iii) identify the perceived opportunities in the area that could be tapped to promote the sustainable development of ecotourism.

Case study: Mangrove-based ecotourism initiative in Gazi Bay, Kenya

Mangroves are salt-tolerant intertidal ecosystems that provide various goods and services ranging from climate regulation through carbon sequestration (Donato *et al.*, 2011; Githaiga *et al.*, 2017), to provisional services such as exploitation for firewood and construction materials (Kairo *et al.*, 2001). Similarly, the complex structure of the mangrove root system provides ideal nursery grounds for juvenile fish thus directly supporting local artisanal fisheries (Huxham *et al.*, 2004, 2015). However, the sustenance of these ecosystem goods and services from mangroves in Gazi Bay is threatened mainly by anthropogenic stressors such as poaching



Figure 1. A section of the ~500 m Gazi women boardwalk providing visitors with a beautiful walk in a serene mangrove forest.

and overharvesting, among other related stressors from the surrounding communities (Aboudha and Kairo, 2001; Kirui *et al.*, 2013). The overreliance of the Gazi village population on mangroves for construction materials and fuel wood has left a highly disturbed forest structure (Aboudha and Kairo, 2001; Huxham *et al.*, 2004). It is estimated that mangroves provide approximately 70 % of the local community's wood requirements. (Government of Kenya, 2017). This need for wood and population growth poses a significant threat to the mangroves in Gazi Bay.

Policy documents integrating community participation in forest management (Kenya's Forest Act and Forest Conservation and Management Act 2016), establish a legal framework for Nature-Based Enterprises (NBE) as a sustainable compromise between generating economic incentives and nature conservation. As a result, many strategies have been developed to leverage on the advantages and opportunities presented by the current regulations and policy framework.

The Gazi community's interest in addressing the negative human impacts on mangroves attracted donor support which led to the establishment of the 'Gazi Women Boardwalk Group' in 2006. The project started through the support from the city of Overijse in Belgium and the International Ocean Institute (IOI) through coordination by Kenya Marine and Fisheries Research Institute (KMFRI). The KMFRI-affiliated project partners have a long history of cooperation with the local communities in Gazi Bay, with the Mikoko Pamoja carbon offset project (<https://www.planvivo.org/mikoko-pamoja>) and the Gazi ecotourism project being products of that contact. A team of Belgian scientists presented the mangrove ecotourism boardwalk to the Gazi Community as a reward after their successful mangrove research in Gazi Bay. When asked what they would prefer as a show of appreciation, the residents of Gazi sought assistance in launching an ecotourism venture. The objective of the project was to empower women and establish alternative livelihood activities for the benefit of the entire community as incentives to mangrove conservation.

This venture is run by 28 female members, including a chairperson, treasurer, and secretary who serve as the project's executive members, and a member who acts as a field tour guide. This group that currently serves as the project custodian on behalf of the Gazi community, used the start-up funding from Overijse Municipality of Belgium to construct an initial 300

m long nature boardwalk (which at present stands at ~500 m long; Fig. 1) adjacent to the seaward fringe mangroves. The strategic location of the boardwalk enables visitors to experience the view of all the 9 mangrove species occurring in Kenya, the most dominant in the area being *Rhizophora mucronata* (mkoko) and *Ceriops tagal* (mchu). The other species found along the boardwalk include *Avicennia marina*, *Sonneratia alba*, *Bruguiera gymnorrhiza*, *Xylocarpus granatum*, *Heritiera littoralis*, *Lumnitzera racemosa* and *Xylocarpus moluccensis* (Kairo *et al.*, 2001).

The model of this ecotourism initiative offers field-guided excursions and cultural experiences through learning about the history of the village and enjoying coastal cuisines. Revenue generated from entrance, commodity and service fees is ploughed back to maintain the structural component of the boardwalk from wear and tear, support community development projects and mangrove conservation activities. In 2018, unpredictable revenue streams, poor management, internal conflicts amongst group members and high maintenance costs caused the enterprise to almost collapse. The consequence of this type of failure will be intensified mangrove resource-use pressure, thus re-exposing and exacerbating degradation and over-exploitation of the already fragile mangroves of Gazi.

Materials and methods

Study area

The study was conducted in Gazi Bay on the south coast of Kenya (4°25'S and 39° 30'E) located 55 km south of Mombasa Island along Lunga-Lunga road which comprises the two villages of Gazi and Makongeni. Gazi village was chosen for this study because it hosts the Gazi Women Boardwalk ecotourism venture (Fig. 2). The bay comprises a total of 650 ha of mangrove forests by area and is home to all the 9 species of mangroves found in Kenya as well as marine fauna and migratory seabirds (Kairo *et al.*, 2001; Kirui *et al.*, 2013). The bay lies within the Diani-Chale peninsula – a tourism hotspot with one of the best sandy beaches in the world, yet the initiative has not capitalized on its strategic position. Nevertheless, Gazi receives a significant number of local and international students linked to the KMFRI-Gazi station and its networks that are interested in mangrove conservation and research.

Gazi has a total human population of ~5,000 living within 500 households (KNBS, 2020). The Digo, part of the Mijikenda ethnic community, is the dominant

population in the village. This ethnic group is organized around matriarchy, a social system that defines unique dynamics in resource use, value or perceptions and governance (Mugaju, 1980). An itinerant fisher community (Pemba), originally from the neighbouring country of Tanzania, forms a small and significant demography in the village. The Pemba people offer affordable and highly skilled fishing services while Digo people provide the capital for fishing operations, serve as middlemen and coordinate fish sales (Wanyonyi, 2016).

randomly selected households to test the questionnaire. The questionnaire was subjected to a thorough revision ensuring that all the redundant questions were removed. The team made final changes on the questionnaire and a Swahili language translation was provided for each question since this is the commonly spoken language in the area. Six key informants from KMFRI, Worldwide Fund for Nature (WWF-Kenya), Kwale County Government, local tour operator, Gazi Women Boardwalk Group and the local Beach Management Unit (BMU) were selected for the interview

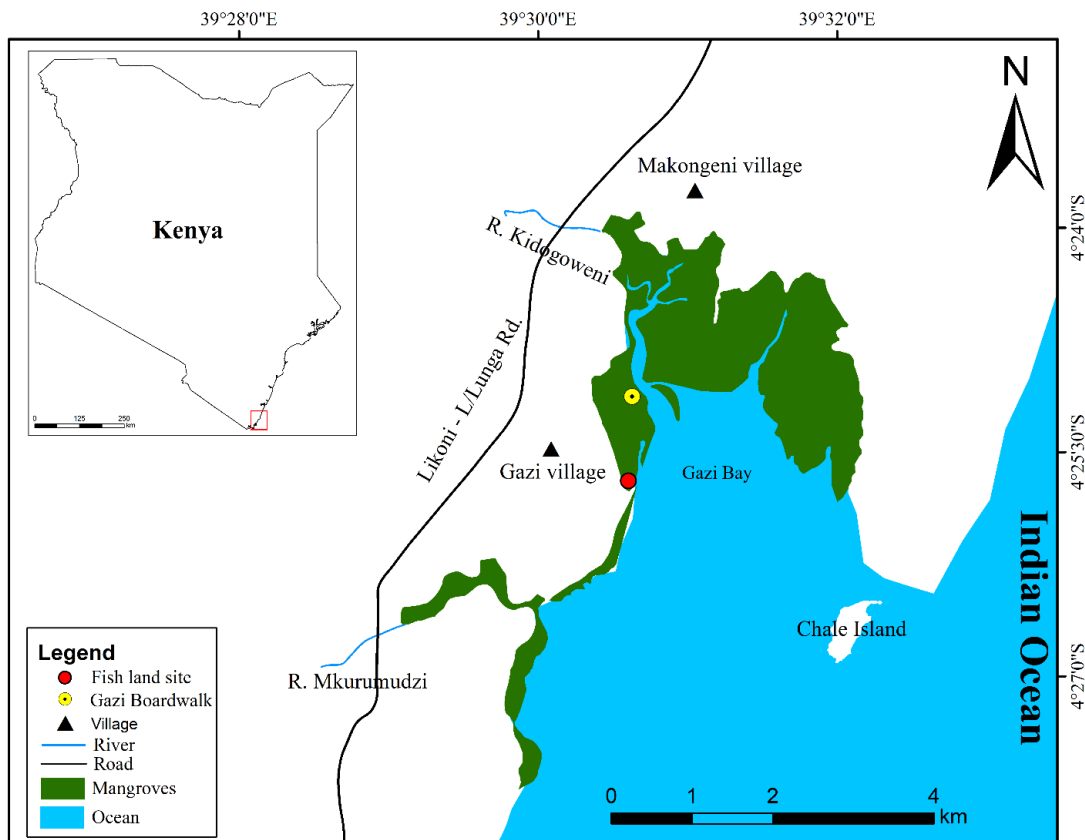


Figure 2. Map of study site showing the two adjacent villages of Gazi and Makongeni and the extent of mangroves in Gazi Bay, south coast of Kenya. Inset - map of Kenya locating the Bay.

Sampling design and data collection

A total of 102 households were systematically selected and surveyed based on a list provided by the village head (each fifth household was picked from the list). A semi-structured questionnaire was used, and this covered local perceptions on performance (impact and challenges) of the ecotourism venture and opportunities that can enable sustainable ecotourism development as well as promote sustainable use and mangrove conservation. The household head was the primary target for the survey. Prior to the main data collection exercise, a reconnaissance survey was conducted in five

based on their prior working knowledge of the subject matter. Two Focus Group Discussions (FGDs) were undertaken with participants drawn from Gazi Women Boardwalk Group and Gazi BMU (Table 1). Each group was made up of 15 members and a series of open-ended questions on mangrove conservation and ecotourism were discussed and recorded.

Data analysis

Data analysis was carried out with Microsoft Excel (v.2010) and SPSS (v.22.0) software. Descriptive statistics were mostly applied, which helped to transform

Table 1. Participants in key informant interviews and actors in ecotourism and mangrove conservation in Gazi Bay.

Key Informants/Actors	Role
Gazi Women Boardwalk Group	They are the project administration and custodian of the ecotourism venture in Gazi village in charge of day-day operations.
Gazi Beach Management Unit	Comprises members drawn from Gazi (such as fishermen, fish traders, transporters) that ensure sustainable use of fishery resources including mangrove breeding grounds.
Kenya Marine and Fisheries Research Institute	A government institution that conducts research on aquatic resources and mangroves. They provide technical support, and a link between the community and international funders/institutions.
Kenya Forest Services	A government agency that oversees conservation, protection and management of all state-owned forests including mangroves.
Kwale County government (Tourism department)	A devolved unit of the national government in charge of administration. Through the tourism department, they formulate policies aimed at promoting sustainable tourism practice.
Worldwide Fund for Nature-Kenya	A non-governmental organization that supports local communities to conserve, protect and restore natural resources including mangroves.
Local tour operators	These include private tour and travel agencies that are responsible for organising and preparing holiday and travel packages to tourists which include ecotourism sites.

raw data into a form that summarized a set of factors in a way that it was easy to understand and interpret. The Chi-squared test was used to statistically test relationships between categorical variables. Yate's Correlation for Continuity (Yate's Chi-square) was used as it compensated for overestimates of Chi-square values while the association among various categorical variables was tested using the Pearson Chi-square test. The p-value of < 0.05 was assigned to each statistically significant relationship.

Results

Socio-demographic characteristics of Gazi village

By gender, 78.4 % and 21.6 % of the respondents were female and male, respectively. Ethnic diversity was observed with 70.6 % Digo as the majority, and the communities of Pemba, Gunya, Fundi, Duruma, Bajun, Arabs, Kamba and Luo as the minority comprising the remaining 29.4 % (Table 2). The study depicted low literacy levels where approximately 4 % of the respondents confirming to have gone through tertiary education while -10 % completed 12 years of formal education (Table 2). The study established that men (95 %) were the household heads, providing support towards subsistence through small-scale business and fishing (25.5 %).

The average household size was 7 members, with each household having an average of 3 individuals above 18

years. Fishing and small-scale business were identified as the main livelihoods sources. Farming, food vending and dealership in wood fuel provide alternative and significant sources of livelihood (Table 2).

Perceptions of the local community towards the mangrove-ecotourism initiative *Ecotourism venture in Gazi*

The majority (81.4 %) of the respondents acknowledged having knowledge of ecotourism activities in Gazi village. Cross tabulation of educational level against knowledge of ecotourism activities revealed no significant association between the two variables ($\chi^2 (7, N = 102) = 9.00, p > 0.05$). Respondents identified visiting the Gazi women mangrove boardwalk as the main tourist activity in the area (Fig. 3). Other activities identified to promote ecotourism in Gazi included educational and research activities by the KMFRI Gazi station, sharing of Swahili culture and traditions between locals and visitors, artisanal fishing, boat riding and visiting the sandy beach.

A relatively small number of respondents (19.6 %) reported to be directly involved in ecotourism activities in Gazi either as active members of the Gazi women mangrove boardwalk group, tour guides or as cooks to facilitate the picnics for those visiting the ecotourism initiative. Results of Chi-square test between gender and involvement in ecotourism activities

Table 2. Socio demographic characteristics of respondents in Gazi village.

Demographic Characteristics		Number	Percentage
Gender	Male	22	21.6%
	Female	80	78.4%
Ethnicity	Digo	72	70.6%
	Pemba	17	16.7%
	Gunya	7	6.9%
	Other (Fundi, Duruma, Bajun, Arabs, Luo, Kamba)	6	5.9%
Age	Range	18 – 80	
	Mean	38.89 ±13.9	
	Mode	30	
Marital status	Single	17	16.7%
	Monogamous Married	75	73.5%
	Polygamous Married	4	3.9%
	Living together without marriage	5	4.9%
	Widowed	1	1.0%
Literacy Levels	No Education	14	13.7%
	Incomplete Primary	15	14.7%
	Complete Primary	25	24.5%
	Incomplete Secondary	10	9.8%
	Complete Secondary	10	9.8%
	Higher Education	4	3.9%
	Madrassa	23	22.5%
	Adult Education (<i>Ngumbaru</i>)	1	1.0%
Livelihood Activities	Fishing	26	25.5%
	Farming	6	5.9%
	Small Scale Business	40	39.2%
	Food Vending	4	3.9%
	Transport Business	1	1.0%
	Fish Dealer	2	2.0%
	Others	23	22.5%

(χ^2 (1, N = 102) = .013, $p > 0.05$); and ethnicity and involvement in ecotourism activities (χ^2 (7, N = 102) = 4.85, $p > 0.05$), showed no significant association. The majority of the people (69.5 %) reported to have an interest in being involved in ecotourism activities in Gazi while 27.6 % of the respondents reported that their family members were already involved in the ecotourism initiative through the Gazi women mangrove boardwalk group and as tour guides.

Socio-economic impact of ecotourism in Gazi

Cross tabulation of respondents' involvement in ecotourism activities against impact of ecotourism on respondents' wellbeing revealed a significant association between the two (χ^2 (1, N = 102) = 40.29, $p < 0.05$); the majority (60 %) of individuals involved in the ecotourism initiative said they had benefited either directly or indirectly from ecotourism. Benefits realized by

the community included the creation of business and employment opportunities for locals in Gazi, supporting educational activities in the local school and madrassa (e.g., salary for madrassa teacher), and ploughing back the revenue obtained from ecotourism into the renovation of the mangrove boardwalk which forms the major source of income (in form of tourist fees) for the ecotourism initiative. In addition, earnings from mangrove-ecotourism were used to support portable water projects for the community, to buy school equipment, and sponsor school-going children. Generally, the respondents agreed that ecotourism in Gazi village made a positive contribution towards access to education, access to better health, boosting small enterprises, access to credit, expansion of employment opportunities, environmental conservation, as well as enhanced entrepreneurial skills for the locals in the village, either directly or indirectly (Table 3).

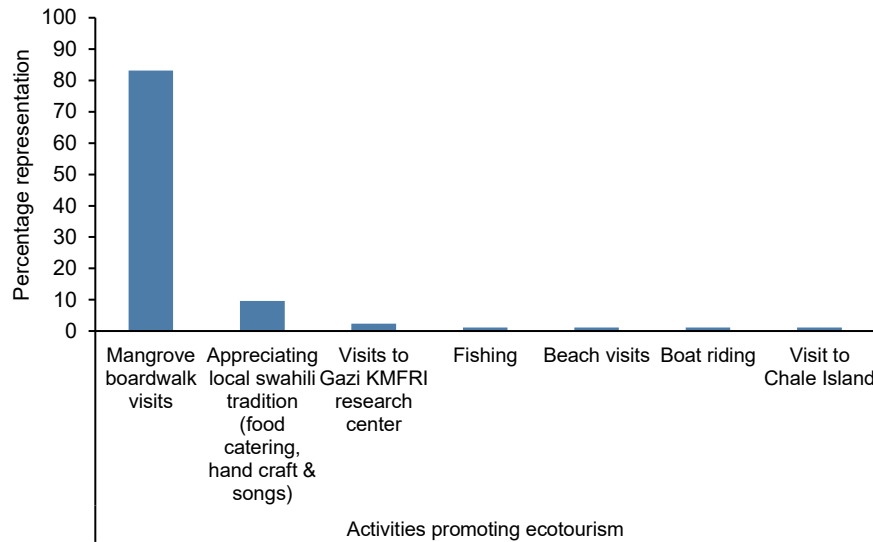


Figure 3. Activities promoting ecotourism in Gazi village, south coast of Kenya as perceived by the local community.

Impact of ecotourism to mangroves in Gazi

From the survey, 82% of the respondents reported that there were frequent visits to the mangrove forest in Gazi by the locals and tourists. The highest frequency of visits observed included monthly visits (27%), daily visits (21%), weekly visits (18%) and annual visits (16%) (Fig. 4). Results of Chi-square test between gender and visit to mangrove areas ($\chi^2 (1, N = 102) = .058, p > 0.05$) showed no significant association, meaning gender had no influence on the frequency of visits to the mangrove forest.

In order of preference, the place within the mangrove forest that had the highest frequency of visits was the Gazi women mangrove boardwalk for recreational purposes followed by the mangrove forest (mostly by women to collect fuelwood) and lastly the beach area (by fishermen accessing the landing site, and swimming for villagers and visitors; Fig. 5).

On the question of whether ecotourism activities had an impact on mangrove conservation the majority (64.4%) of the respondents agreed that ecotourism had reinforced ongoing efforts to conserve mangroves in Gazi Bay (Fig. 6). Association between the level of knowledge of ecotourism activities and impact on mangrove conservation was not significant ($\chi^2 (2, N = 102) = 15.63, p > 0.05$). Also, the level of education of respondents had no association with the knowledge of ecotourism activities and mangrove conservation ($p > 0.05$). In Gazi, participation in ecotourism activities and mangrove conservation is not contingent on formal education level. However, they acknowledged receiving informal education on ecotourism activities and mangrove conservation from state (e.g. KMFRI) and non-state (e.g. WWF-Kenya) actors as well as active members of the Gazi Women Boardwalk Group. These interactions between state, non-state and community actors are considered to

Table 3. Socio-economic impact of ecotourism in Gazi village, south coast of Kenya.

Ecotourism contribution	Level of Agreement	
	Yes	No
Access to education	59.8% (n = 61)	40.2% (n = 41)
Access to health facilities	85.3% (n = 87)	14.7% (n = 15)
Increased small enterprise opportunities	77.5% (n = 79)	22.5% (n = 23)
Access to credit	95.0% (n = 96)	5.0% (n = 6)
Expansion of employment opportunities	69.6% (n = 71)	30.4% (n = 31)
Environmental conservation	54.9% (n = 56)	45.1% (n = 46)
Sale of goods and services locally	87.3% (n = 89)	12.7% (n = 13)
Training on entrepreneurial skills	88.2% (n = 90)	11.8% (n = 12)

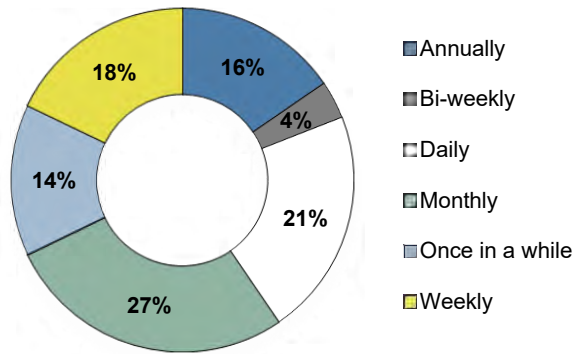


Figure 4. Frequency of visits to the mangrove forest in Gazi village, south coast of Kenya.

influence local perceptions and participation in mangrove conservation activities, including ecotourism.

Challenges of local participation in mangrove-based ecotourism

About 66 % of respondents believed the local community had no control over the existing ecotourism initiative in Gazi and that they do not draw financial benefits from the initiative (71 %). Moreover, 87 % of the respondents did not belong to any conservation group. Of the remaining 13 % who belonged to different community groups, the majority (72.7 %) were from the Gazi Women Boardwalk Group, 18.2 % from Mikoko Pamoja community organization (carbon-offset project) while 9.2 % were members of the local BMU.

The major challenges identified by the respondents that hinder ecotourism development and participation in Gazi village included poor condition and maintenance of the boardwalk due to theft and vandalism (22.4 %), poor management (no transparency)

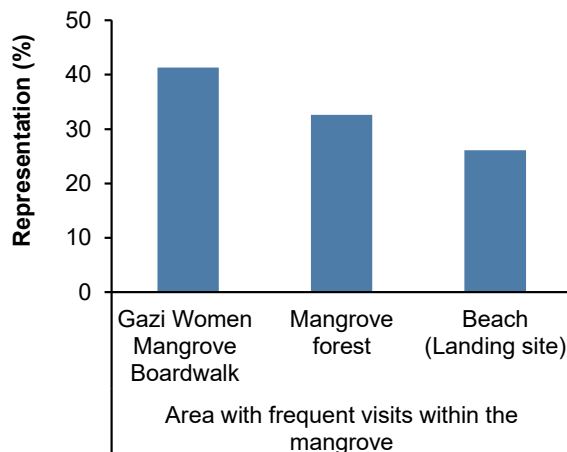


Figure 5. Most frequently visited areas within the mangrove forest of Gazi, south coast of Kenya.

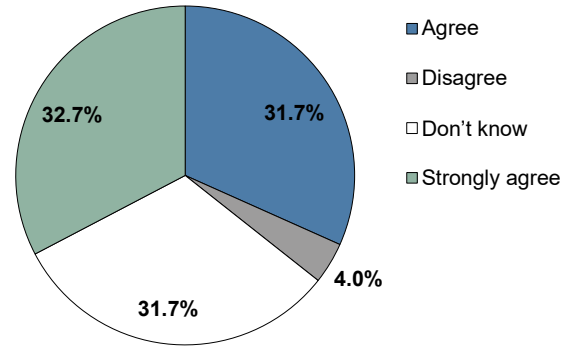


Figure 6. Respondents' level of concurrence on the positive impact of ecotourism on mangrove in Gazi, south coast of Kenya.

and marketing skills of ecotourism activities (17.2 %), and low tourist visits (13.8 %). Also, a low level of local participation, lack of measurable social economic impacts, inadequate accommodation facilities for visitors coming to Gazi village, lack of formal knowledge on ecotourism by the locals, the language barrier, moral decadency and discrimination were identified as challenges impeding long-term development of ecotourism. Moreover, a significant proportion of the respondents (28 %) felt they were dissatisfied with the way the operations and activities of the ecotourism initiative were conducted by the Gazi Women Boardwalk Group (project custodian).

Opportunities for promoting sustainable mangrove ecotourism development

Usage was used as an indicator for examining the value placed by the local community on the mangrove ecosystem. Both use value and non-use value of mangroves were identified by respondents. Use value (92.1 %) dominated mangrove usage and it comprised direct use value (70.1 %) and indirect use value (22 %). The direct use value of the mangrove ecosystem in Gazi included extraction of construction material (36.3 %), collection of firewood (30.3 %), use of mangroves for medicinal purposes (treatment of stomach ailments) (1.5%), use of mangrove poles for sailing boats (1 %) and use of mangrove areas for human waste disposal (0.5 %) (Fig. 7). The indirect benefits of the mangroves as identified by respondents included tourist attraction (7.5 %), carbon credit through carbon sequestration to mitigating global warming (7 %), breeding grounds and habitat for fish and other faunal communities (4.5 %), shoreline protection (2.5 %), and use of mangroves for scientific research (0.5 %). The non-use value of mangroves as identified by respondents were freshening of air (6.5 %), aesthetic value (1.5 %), and attraction of rainfall (0.5 %).

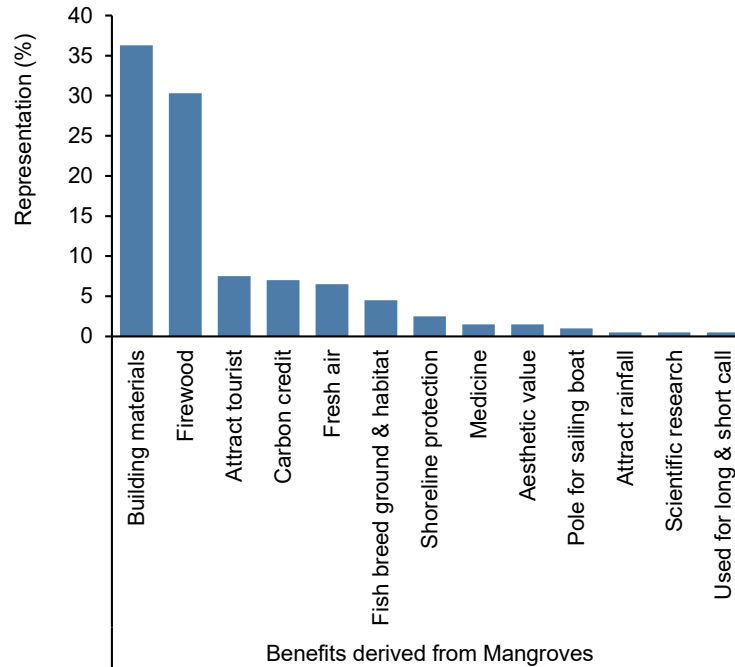


Figure 7. Perceived benefits derived from mangroves in Gazi Bay, south coast of Kenya.

Local talent such as handcrafting, music and photography (66 %) were identified as an enabler that could be tapped and marketed together with ecotourism activities in Gazi village to generate more conservation incentives. Of the remaining 34 %, internet accessibility and social media usage were recognized as factors that have the potential of promoting ecotourism and conservation activities. On internet accessibility, only 32.4 % of the respondents had access to the internet. Of these, 29.4 % said they were able to access social media platforms. The most utilized social media platforms were WhatsApp (59.6 %), followed by Facebook at 25.5 %, Twitter (2.1 %), Messenger (2.1 % and others (10.7 %). A cross tabulation of access to the internet against use of social media revealed significant association between the two ($\chi^2 (1, N = 102) = 76.21, p < 0.05$); access to the internet influenced respondents' use of social media platforms. Most respondents (77 %) reported using social media daily.

Discussion

Socio-demography of Gazi village community

Demographic variables such as gender, ethnicity and marital status describe the population structure, especially gender-specific roles, and interest and participation in socio-economic activities (Wang and Yamamoto, 2009; Bennett *et al.*, 2019). With reference to gender, the study recorded a higher number of females than males. Gazi is a fishing village and

fishing is a male-dominated activity. The observed high involvement of females in the survey was due to absence of majority of men being involved in fishing at sea and in fish distribution, while women dominated value addition and subsistence fish mongering within the village (Huxham *et al.*, 2015), and active participation in Gazi Women Boardwalk ecotourism initiative. Most of the study's respondents were in their economically productive age (< 60 years), indicating that the success of any conservation or economic interventions would require careful consideration targeting this group as a priority (Ochiewo *et al.*, 2020).

The study further revealed that most adults in Gazi village are characterised by a relatively high illiteracy level. This could either mean that education was either previously inaccessible or its relevance in the community was ignored. A study by Kenya Demographic and Health Survey (2014) identified education as a key determinant of lifestyle and social status. Besides, previous studies by Richard (2013) and the European Association for the Education of Adults (2010) pointed out that education increases prospects of gainful employment resulting in a decrease in poverty and an increase in innovations among a population. The effort by the ecotourism venture in Gazi village to promote education among youths will greatly enhance employability and expand livelihood options among locals in the future.

Perceptions of the local community towards the ecotourism initiative

The perceptions of the community were not based on gender, ethnicity and education level, especially regarding the knowledge of ecotourism activities in Gazi village. The respondents acknowledge that the Gazi women boardwalk was the main active tourists attraction site in Gazi. Other activities perceived by the community as forms of ecotourism were the field research tours by KMFRI, sharing of the Swahili culture and traditions, fishing activities and walks along the sandy beach of Gazi. Specifically, the presence of the KMFRI research station in Gazi has attracted visitors coming for educational excursions and research (local and international) and has promoted sustainable utilization of mangroves through their research and conservation activities (Kirui *et al.*, 2008; Kairo *et al.*, 2009; Huxham *et al.*, 2015; Huff and Tonui, 2017).

From this study, it is evident that many of the locals in Gazi were aware of the existing ecotourism activities and attractions, and mangrove conservation, yet many were not actively involved in them. The results showed that awareness of ecotourism activities had a low impact on local participation. The informal interaction between state (e.g. KMFRI, KFS) and non-state (e.g. WWF-Kenya) actors facilitated the improved awareness of ecotourism and mangrove conservation activities. However, the weight of active local participation is placed upon availability of good governance by the project custodian, social inclusion, measurable social impacts and ecological effectiveness (Bluwstein, 2017; Bennett *et al.*, 2019; Hunt *et al.*, 2019); traits which the community feels are missing in the management of the ecotourism initiative. Inconsistent and insufficient revenues from the ecotourism initiative and poor management discourage locals from participating in ecotourism.

The results showed a strong relationship between ecotourism-derived benefits and enhanced local participation in ecotourism. Though a precise measure of the impacts as recommended by Bennett *et al.* (2019) and Cobbinah (2015) could not be provided, the ecotourism venture carried out by the Gazi Women Boardwalk Group generates direct income via tourist fees and indirect income to local businesses (e.g., sale of handicrafts and food). This revenue goes a long way in supporting education activities in the village and boosts the local economy of the people. Again, direct employment is created when participants in

the ecotourism project are paid during the mangrove planting exercises either from funds generated from ecotourism or financed by NGOs, private companies or other government institutions like KMFRI and the Kenya Fisheries Service (KeFS). Besides this, other community-based organizations such as the Mikoko Pamoja project engage locals in mangrove nursery establishment and planting and subsequently create employment for youths and women (<https://www.planvivo.org/mikoko-pamoja>). Sustainable ecotourism can improve the living standards of the local community and can enhance environmental protection, thereby reducing the pressure on the area's already vulnerable mangrove resources (Ma *et al.*, 2019).

Ecotourism activities were perceived by most of the respondents to have an impact on mangrove conservation in Gazi. The number of visits to the mangrove forest is used as an indicator of place attachment and value put on mangroves by the locals (Ma *et al.*, 2019). The frequency of visits to the mangroves as captured in the study indicated a weak link with gender and education levels. However, the number of visits to the Gazi women boardwalk facility enhanced the place attachment of the locals and how they valued the mangrove forest. According to the findings, the locals derive both use and non-use value from mangroves. These direct and indirect uses of mangroves in Gazi include extraction of building materials, firewood collection, carbon sequestration, shoreline protection, breeding grounds for fish and use for scientific research. Meanwhile, the non-use value of mangroves as identified include the exploitation for their aesthetic purposes, use for their clean air and precipitation attraction. A functional ecotourism initiative has the potential to elevate the conservation status of natural systems and especially of ecosystems and species under human threats (Hunt *et al.*, 2014). Ecotourism in Gazi has enhanced the value and conservation of mangroves via awareness creation campaigns, restoration of degraded areas and enhanced surveillance of the mangrove forest.

Challenges of local participation in mangrove-based ecotourism

The study identified several challenges that are considered a hindrance to local participation and sustainable development of ecotourism activities in Gazi village that include poor management and lack of marketing skills. Also, the high cost of maintaining the boardwalk was considered as a bottleneck to

ecotourism development. In this instance, the boardwalk serves as an anchor for ecotourism activities, and its dilapidated condition means that there will be no incentive for tourists to visit certain mangrove areas, resulting in diminished incentives for mangrove conservation. These findings are in line with Bennett *et al.* (2019) and Hunt *et al.* (2015) which links the poor performance of CBET initiatives to poor governance and conflicts, lack of active local participation and lack of measurable social economic impacts (Towner, 2018; Bennett *et al.*, 2019). Due to these obstacles, the success and capacity of ecotourism as a sustainable tool to generate incentives for mangrove conservation in Gazi is limited.

Opportunities for promoting sustainable mangrove ecotourism development

The study confirms the existing reliance on mangrove resources by the community mainly as construction materials, firewood and supporting local fisheries (Kimani *et al.*, 1996; Huxham *et al.*, 2004, 2015). The value placed by the local community on mangrove resources is seen as an opportunity to rally the community to support mangrove-related ecotourism and conservation activities. Various specific opportunities were identified as potential enablers for promoting sustainable development of ecotourism and mangrove conservation in Gazi Bay. First, the availability and use of local talent if included in ecotourism marketing, could enhance the initiative's visibility and attract visitors and subsequently generate more revenue. For instance, this might include the use of a professional photographer and a local brand ambassador to both serve as promoters of Gazi bay as an ecotourism hub. Also, talented members of the community (e.g., fishing, weaving, folk songs, Swahili cuisines etc.) can also be incorporated into the ecotourism initiative. Lastly, the local community can take advantage of the existing low-cost internet services and access to market ecotourism and mangrove conservation activities via social media platforms. The majority of the locals were found to be conversant with various social media platforms which can be used to reach a wider audience at a relatively low cost.

Conclusions

Poor governance, lack of transparency in benefit sharing and high operational costs are directly linked to low participation of the community in mangrove-based ecotourism. However, these results are context-specific and might vary with location hence cannot be generalised. Future research will benefit

from taking sampling bias into account by ensuring that all groups, especially the marginalised, are well represented in the sample. Again, expanding this survey to the larger Gazi Bay communities (Gazi and Makongeni) will provide a comprehensive understanding of local perception towards ecotourism and mangrove conservation. Still, this case study in Gazi offers an opportunity to assess and compare the impact of ecotourism on local communities *vis-à-vis* mangrove conservation efforts. Lessons and experiences derived from this study can be used as a benchmark to inform how strategies and policies to conserve and manage mangroves are formulated.

For a community-based ecotourism initiative to be successful, the study recommends full participation of the locals from initial project design to full implementation. Specifically, capacity building is seen as one of the key elements recommended to sustain ecotourism activities. Also, a full refurbishment of the boardwalk with new durable materials would go a long way in minimizing the maintenance cost and thus unlocking funds available for nursery establishment and mangrove planting. On the other hand, the involvement of marginalized members of the community such as youths will ensure social inclusion is realized which will improve the general performance of these initiatives in the future. With the project solely depending on tourists earnings, it is suggested that private sector involvement be made a priority which will not only uplift the face value of the project but also provide additional resources to enhance the management of ecotourism activities in the area.

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References

- Abuodha P, Kairo JG (2001) Human-induced stresses on mangrove swamps along Kenya coast. *Hydrobiologia* 458: 255-265
- Andreea A, Ion-Danut J, Juganaru M (2008) Sustainable tourism types. *Analele Universitatii Din Craiova. Seria Stiinte Economice* 2 (36): 797-804
- Bennett NJ, Di Franco A, Calò A, Nethery E, Niccolini F, Milazzo M, Guidetti P (2019) Local support for conservation is associated with perceptions of good governance, social impacts, and ecological effectiveness. *Conservation Letters* 12 (4) [doi.org/10.1111/conl.12640]
- Bluwstein J (2017) Creating ecotourism territories: Environmentalities in Tanzania's community-based conservation. *Geoforum* 83: 101-113
- Cater E (2006) Ecotourism as a western construct. *Journal of Ecotourism* 5 (1-2): 23-39
- Christie P (2005) Observed and perceived environmental impacts of marine protected areas in two Southeast Asia sites. *Ocean & Coastal Management* 48: 252-270
- Cobbinah PB (2015) Local attitudes towards natural resources management in rural Ghana. *Management of Environmental Quality: An International Journal* 26 (3): 423-436
- Cobbinah PB, Amenuvor D, Black R, Peprah C (2017) Ecotourism in the Kakum conservation area, Ghana: Local politics, practice and outcome. *Journal of Outdoor Recreation and Tourism* 20: 34-44
- Donato DC, Kauffman JB, Murdiyarso D, Kurnianto S, Stidham M, Kanninen M (2011) Mangroves among the most carbon-rich forests in the tropics. *Nature Geoscience* 4: 293-297
- European Association for the Education of Adults – EAEA (2010) The role of adult education in reducing poverty. EAEA Policy Paper. 20 pp
- Githaiga MN, Kairo JG, Gilpin L, Huxham M (2017) Carbon storage in the seagrass meadows. *PLoS ONE* 12 (5): 1-13
- Gossling S (1999) Ecotourism: A means to safeguard biodiversity and ecosystem functions? *Journal of Ecological Economics* 29 (2): 303-320
- Government of Kenya (2017) National mangrove ecosystem management plan 2017-2027. 115 pp
- Habinc M (2012) Folklorization as diversification or molding. Comparing two “traditional” holidays. *Traditiones*: 185-196 [doi: 10.3986/traditio2012410116].
- Hall CM (2019) Constructing sustainable tourism development: The 2030 agenda and the managerial ecology of sustainable tourism. *Journal of Sustainable Tourism* 27 (7): 1044-1060 [https://login.research4life.org/tacsgr-ldoi_org/10.1080/09669582.2018.1560456].
- He G, Chen X, Liu W, Bearer S, Zhou S, Cheng LY, Zhang H, Ouyang Z, Liu J (2008) Distribution of economic benefits from ecotourism: a case study of Wolong nature reserve for giant Pandas in China. *Environment Management* 42 (6): 1017-1025 [doi: 10.1007/s00267-008-9214-3]
- Huff A, Tonui C (2017) Making “Mangroves Together”: Carbon, conservation and co-management in Gazi Bay, Kenya. STEPS Working Paper 95. STEPS Centre, Brighton [https://opendocs.ids.ac.uk/opendocs/handle/20.500.12413/12970]
- Hunt CA, Gao J, Xue L (2014) A visual analysis of trends in the titles and keywords of top-ranked tourism journals. *Current Issues in Tourism* 17 (10): 849-855
- Hunt A, Samman E (2019) Gender and the big economy: critical steps for evidence-based policy. Overseas Development Institute, London. 48 pp [https://odi.org/en/publications/gender-and-the-gig-economy-critical-steps-for-evidence-based-policy/]
- Huxham M, Emerton L, Kairo J, Munyi F, Abdirizak H, Muriuki T, Nunan F, Briers RA (2015) Applying climate compatible development and economic valuation to coastal management: A case study of Kenya's mangrove forests. *Journal of Environment Management* 157: 168-181
- Huxham M, Kimani E, Augley J (2004) Mangrove fish: A comparison of community structure between forested and cleared habitats. *Estuarine, Coastal and Shelf Science* 60: 637-647
- Jamaliah MM, Powell RB (2018) Ecotourism resilience to climate change in Dana biosphere reserve, Jordan. *Journal of Sustainable Tourism* 26 (4): 519-536
- Kairo JG, Dahdouh-Guebas F, Bosire J, Koedam N (2001) Restoration and management of mangrove systems a lesson for and from the East African region. *South African Journal of Botany* 67: 383-389
- Kairo JG, Wanjiru C, Ochiewo J (2009) Net pay: Economic analysis of a replanted mangrove plantation in Kenya. *Journal of Sustainable Forestry* 28 (3-5): 395-414
- Kenya Demographic and Health Survey- KDHS (2014) A publication of the Kenya National Bureau of Statistics (KNBS). 603 pp [https://dhsprogram.com/pubs/pdf/fr308/fr308.pdf]
- Kenya National Bureau of Statistics- KNBS (2020) Kenya Population and Housing Census 2019. Government Printer, Nairobi. 546 pp
- Kimani EN, Mwatha G, Wakwabi EO, Ntiba JM, Okoth BK (1996) Fishes of shallow tropical mangrove estuary,

- Gazi, Kenya. *Marine and Freshwater Research* 47: 857-868
- Kirui BYK, Huxham M, Kairo J, Skov M (2008) Influence of species richness and environmental context on early survival of replanted mangroves at Gazi bay, Kenya. *Hydrobiologia* 603: 171-181
- Kirui KB, Kairo JG, Bosire J, Viergever KM, Rudra S, Huxham M, Briers RA (2013) Mapping of mangrove forest land cover change along the Kenya coastline using Landsat imagery. *Ocean and Coastal Management* 83: 19-24
- Ma B, Cai Z, Zheng J, Wen Y (2019). Conservation, ecotourism, poverty, and income inequality – A case study of nature reserves in Qinling, China. *World Development* 115: 236-244
- Manyara G, Jones E (2007) Community-based tourism enterprises development in Kenya: An exploration of their potential as avenues of poverty reduction. *Journal of Sustainable Tourism* 15 (6): 628-644
- Mondino E, Beery T (2018) Ecotourism as a learning tool for sustainable development: The case of Monviso Transboundary Biosphere Reserve, Italy. *Journal of Ecotourism*: 1-15
- Mugaju J (1980) The Kaya complex: a history of the Mijikenda peoples of the Kenyan coast to 1900. *TransAfrican Journal of History* 9 (1/2): 233-236
- Ochiewo J, Munyi F, Waiyaki E, Kimanga F, Karani N, Kamau J, Mahongo BS (2020). Livelihood impact and adaptation in fishing practices as a response to recent climatic changes in the upwelling region of the East African Coastal current. In: Marsac F, Everett B (eds) *Productivity in the east Africa Coastal Current under climate change*. Western Indian Ocean Journal of Marine Science: 105-125
- Richard JC, Bruce B (2013). *Poverty and education: Finding the way forward*. ETS centre for research on human capital and education research and development, Princeton. 60 pp [https://www.ets.org/s/research/pdf/poverty_and_education_report.pdf]
- The International Ecotourism Society – IES (2018). What is ecotourism? [<http://www.ecotourism.org/what-is-ecotourism>]
- Towner N (2018) Surfing tourism and local stakeholder collaboration. *Journal of Ecotourism* 17 (3): 268-286
- UNCED (2002) Plan of implementation of the World Summit on Sustainable Development. Sustainable Development 24. 20 pp
- UNCTAD (2011) Is the concept of sustainable tourism sustainable? Developing the sustainable tourism benchmarking tool. 37 pp [https://unctad.org/system/files/official-document/ditctncd20065_en.pdf]
- Wall G (1997) Is ecotourism sustainable? *Environmental Management* 21 (4): 483-491
- Walter PG (2013) Theorising visitor learning in ecotourism. *Journal of Ecotourism* 12 (1): 15-32
- Wang Q, Yamamoto H (2009) Local residents' perception, attitude and participation regarding nature reserves of China: Case study of Beijing area. *Journal of Forest Planning* 14 (2): 67-77
- Wanyonyi IN, Wamukota A, Tuda P, Mwakha VA, Nguti LM (2006) Migrant fishers of Pemba: Drivers, impacts and mediating factors. *Marine Policy* 71: 242-255
- Wondirad A, Tolkach D, King B (2019) NGOs in ecotourism: Patrons of sustainability or neo-colonial agents? Evidence from Africa. *Tourism Recreation Research* 44 (3): 1-17
- Wondirad A, Tolkach D, King B (2020) Stakeholder collaboration as a major factor for sustainable ecotourism development in developing countries. *Tourism Management*: 104024 [<https://doi.org/10.1016/j.tourman.2019.104024>]
- World Commission on Environment and Development – (WCED) (1987) *Our common future*. Oxford University Press, Oxford. 300 pp [<https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf>]