

# Resource Use Conflicts and Biodiversity Conservation in Jozani Ecosystem, Zanziba

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**Abstract**— *Resource Conflicts are the major challenge to the responsible Institutions in the management and conservation of biodiversity in Zanzibar due to the existence of multiple and interactive reasons that lead to conflicts. This paper intends to reveal the less known current status of resource conflicts in the management of biodiversity in Jozani ecosystem, Zanzibar. The study employed descriptive survey research design of the causal comparative research design to collect data from 280 respondents which constitute the study population. Descriptive statistics such as percentages, mean, frequency, standard deviation and Pearson correlation were used for data analysis. The outcome of the study showed that there is significant relationship existed between resource conflicts and the management of biodiversity conservation in Jozani ecosystem. The study has implications for environmental policy makers. The study concludes by asserting that unemployment, poverty and scarcity of environmental resources are the major causes of conflict, therefore the call is directed to policy makers to strengthen efforts on resolving conflicts by establishing overall strategies such as establishment of participatory community-based approaches to natural resource management, conflict resolution capacity building measures among the stakeholders, amendment of Laws and expansion of employment to reduce direct relying on using natural resource assets for livelihood.*

**Keywords**— *Resource conflicts, biodiversity conservation, Jozani ecosystem.*

## I. INTRODUCTION

### 1.1 Background information

Management and conservation of biodiversity established on the basis of three key objectives: conservation of biological diversity, sustainable use of its components, and fair and equitable sharing of the benefits arising from the use of genetic resources (The United Nations Convention on Biological Diversity (CBD), 1992). These efforts are now problematic in their application because of

competition for those resources resulted to conflicts at national and global level.

Resource conflicts have been major threats for sustainable management and conservation of biological diversity since time immemorial (Ruckstuhl, 1999). Currently it is recognized as one of critical and complex problem areas that have implications on the conservation of ecosystems in global environment and development discourse (CBD, 2016). Increasing resource competition at the global environment brings about social disparity and conflicts. These types of conflicts greatly impacted environmental quality, linked to human activities (UNEP, 2016). The effectiveness and peaceful management of natural resources depends on the ability to identify resource conflicts and adopt strategies that prevent disagreement from becoming intractable disputes (WCPA, 2016). Resource conflicts and insecurity are caused by a number of transnational problems which once seemed quite distant, like environmental degradation, natural resource depletion, rapid population growth and refugee flows which poses a threat to prosperity and have security implications for both present and long-term development policies. Thus, embraced environmental component after recognizing risks including massive population flight, desertification, large-scale ecosystem damage, biodiversity loss, pollution and climate change because these can unbalance international stability (Mulongoy and Gidda, 2008).

Risks associated with resource conflict in the world generally come into sharp focus when considering the potential impacts of global trends, such as climate change, population, urbanization and food crises. A number of global assessment reports, have all emphasized the liability to climate change impacts which includes degradation and competition of resource that stimulate war (UNEP-WCMC and IUCN, 2016). At present, the majority of literatures in the world concerned with environmental issues consider resource conflicts as one among serious problems for biodiversity conservation. Current discussions on the social impacts of climate change, for example, emphasize

the risk of negative causes toward social conflict in poor countries as a consequence of trends toward scarcity of resource, increased population movements, and thus greater competition over natural resources (CBD, 2016).

In many African countries which having many biodiversity species indicates that, resource conflicts are caused by competition of scarcity of resources and human made disturbance of ecosystems (FAO, 2016). This scarcity of resources has resulted from overuse of resources, growing human populations and the level of resource consumptions, which eventually lead the destruction of biological resources due to human competition and conflicts. Several headquarters of tropical forests in DRC are now taken over by military, including Kivunga National Park, Kahuzi-Biega National Park and the Okapi Wildlife Reserve (WCPA, 2016). Liberia conflict forced rural people to hunt duikers (*Cephalophus spp*), pygmy, hippos (*Choeropsis liberiaensis*), forest elephants and chimpanzees for foods (Wolkomir and Wolkomir 1992).

In East African countries the increasing of human-wildlife conflict are highly contributed by changing of land use in areas surrounding protected areas, which bring about difficulties for community based conservation to succeed. These areas were experiencing expansion of small holder cultivation in wildlife dispersal areas. The situation has been reported to reduce animal home ranges, leading to increase human wildlife interaction, which may degenerate into human wildlife conflict (Kaswamila, 2009).

In Tanzania, human problems constraining Wildlife Sector are responsible for increasing of resource conflicts. Wildlife Conservation Authority is accused for marginalizing people, denying people access to traditional and legitimate rights, property damage and risk to human life through attack by wild animals and disease transmission (UNEP, 2016). In broad sense, the primary causes of resource conflict are demographic, economic, institutional and technological (UNEP, 2016). Again the report of (CBD, 2016) revealed that the habitat loss in Tanzania was a serious problem for different ecosystems (CBD, 2016).

Community competitions of using natural resources in Jozani Chwaka Bay National Park area stimulate the emergence of resource conflicts. People use resources in an unsustainable and highly destructive way (ZRG, 2015). This situation results into high destruction of antelope's habitat and other biological diversity species in Jozani National Park.

## 1.2 Problem statement

In recent decades, there are an increasing trend of destruction of biodiversity particularly in forestry, land and wildlife that endanger efforts of management and conservation of biodiversity in Jozani ecosystem especially

Jozani Chwaka Bay National Park area because of resource conflicts between communities themselves, park management and community, and between individuals. This situation has severe implication in efforts of management and conservation of biodiversity in Jozani Chwaka Bay National Park (JCBNP), Zanzibar. Since the declaration of Jozani National Park in 2004, more than 68 resource conflicts associated with competition and scramble of resources between the communities themselves and institutions responsible for management of National Park have been reported. The Zanzibar Land Tenure Act No. 12 of 1992 has created land problems and conflicts especially in the Protected Areas where the Act does not recognize land tenure rights at the community level. This creates the scramble for demanding land for cultivation which resulted into resource conflicts. Communities living around Jozani National Park are directly relying on using natural resource assets to ensure their livelihoods which result into community resource conflicts as individuals are competing over declining level of existing resources. This study therefore investigated how communities and government Institutions could address and analyze resource conflicts issues so as to minimize the escalation of biodiversity in Jozani ecosystem.

## 1.3 Objectives of the study

### 1.3.1 Main objective

The main objective of this study was to examine the current status of resource use conflicts and the management and conservation of biodiversity in Jozani ecosystem, Zanzibar.

### 1.3.2 Specific objectives

- i. To establish the level of resource conflicts in the study area.
- ii. To establish the level of the management of biodiversity conservation in in the study area.
- iii. To examine the causes of resource conflict on the management of biodiversity conservation in the study area
- iv. To determine the results of resource conflicts on the management of biodiversity conservation in the study area.
- v. To establish the relationship between resource conflicts and the management of biodiversity conservation in the study area.

## 1.4 Scope of the Study

The geographical scope of this study focused on Jozani Chwaka Bay National Park, Zanzibar. Jozani forest lies about 35 km South-East of Stone Town in the South of the Island and lies between the Chwaka Bay in the North and

Uzi Bay. The Jozani Chwaka Bay National Park is a 50 square kilometer National Park located on the Island of Zanzibar Tanzania. The Park is situated between the villages of Pete, Jozani and Kaebona to the North; and Kiongoni, Kinduni, Chuchumile and Kisomanga to the West and Northwest, and Mapopwe village is within the National Park. The Park extends to the Ufufuma and Chwaka village to the North and Northeast respectively. On the Eastern side of the Park is Jozani Charawe road.

The theoretical scope of this study focused on conflicts theory, in the area of conflict resolution and management such as ‘human need theory’ Burton (1987), ‘scarcity based theory’ by Hobbes (1996), ‘unmet needs theory’ by Maslow (1971), ‘statist theory’ propounded by (Kahl, 2006) and population theory which is known as “Malthusian theory” propounded by Malthus (1798).

The content scope of this study focused on the relationship between resource use conflicts and the management and conservation of biodiversity in Jozani National Park area, Zanzibar. On other hand the study focused on identifying

the level of resource conflict, levels of the management of biodiversity conservation, causes of resource conflicts, and results of resource use conflicts in the management of biodiversity conservation and provides appropriate methods and techniques for controlling them.

## II. METHODOLOGY

### 2.1 Research design

This research used Descriptive survey research design of the causal comparative research design because researcher intended to examine the causes of conflicts and relationship between resource conflicts and the management and conservation of biodiversity in Jozani National Park, Zanzibar as explained much by Kothari (2008).

### 2.2 Research population

The study population includes 66 Jozani Park Authority which is government officials as the main stakeholders, 30 NGOs dealing with Jozani environmental conservation and 278 local leaders of the community living around Jozani National Park as shown in the table 1.

*Table.1: Total population of the study*

Participants	Population	%
JPA government officials	66	17.94
JECA	30	8.15
Jozani Local Leaders	278	73.91
<b>Total</b>	<b>368</b>	<b>100</b>

### 2.3 Sample size

Sample size of this study was 280 respondents as shown in the Table 2.

*Table.2: Sample size of the Study*

Participants	Population	%
JPA	66	23.58
JECA	30	10.71
Jozani Local Community	184	65.71
<b>Total</b>	<b>280</b>	<b>100</b>

### 2.4 Sampling procedure

Purposive sampling procedure was used to Government Officials and Non-government Organizations such as JPA and JECA. Simple random sampling procedure was also used in selecting participants within Community Leaders because every one of the targeted population had equal chance to be selected.

### 2.5 Research instruments

Non-standardized questionnaire for data collection was used as it provides a convenient way of gathering information from respondents. The questionnaire includes questions relating to demographic background and other

research objectives. i.e. constitute the level of resource use conflicts, the level of management of biodiversity, causes of resource conflicts and the results of resource conflicts in the management of biodiversity conservation. The instrument was used to government officials, Non-government organization and local communities relating to management of biodiversity conservation. Also, Likert scale was employed to rank questions ranges from Strongly Agreed to Strongly Disagreed.

### 2.6 Data Analysis

The researcher analyzed quantitative data using descriptive statistics such as percentages, mean,

frequency, standard deviation, tables and bar charts by using Statistical Package for Social Science (SPSS). Also correlation co-efficient was used to establish relationship between resource conflicts and the management of biodiversity conservation in Jozani National Park area, Zanzibar.

### III. FINDINGS AND DISCUSSIONS

#### 3.1 Demographic information

According to finding in this study as shown in table 3, 71.1% (199) of the respondents were male and 28.9% (81) were female. 34.6% (97) of the respondents range from 20 – 30 years of age, 36.8 (103) of the respondents range from 31 – 40 years of age, 17.1% (48) of the

respondents range from 41 – 50 years of age and 11.4% (32) of the respondents range were above 50 years of age. The table demonstrates further that, the majority of the respondents had secondary education with a percentage 43.9% (123) while master level had the least respondents with a percentage 0.7% (2) of the total respondents. This is because the government of Zanzibar offers free education up to secondary education. The Table 3 also indicate that 27.9% (78) of the respondents are working in the Public sectors while 72.1% (202) of the respondents are working in the Private sectors. People use self-employment as a private employment because low level of employment opportunities.

Table.3: Background of information

Categories	Frequency	Percentage
<b>Gender</b>		
Male	199	71.1
Female	81	28.9
Total	280	100
<b>Respondent's age (in years)</b>		
20 -30	97	34.6
31 – 40	103	36.8
41 – 50	48	17.1
Above 50	32	11.4
Total	280	100
<b>Respondent's qualification</b>		
Certificate	82	29.3
Secondary	123	43.9
Diploma	13	4.6
Degree	6	2.1
Master	2	.7
None	54	19.3
Total	280	100
<b>Respondent's work place</b>		
Public sector	78	27.9
Private sector	202	72.1
Total	280	100
<b>Respondent's work experience</b>		
1 – 5	35	12.5
5 – 10	70	25.0
Above 20	175	62.5
Total	280	100

#### 3.2 The level of resource conflicts on the management of biodiversity conservation in Jozani National Park area, Zanzibar

##### 3.2.1 Interpretation of Likert Scale

4.45 - 5.00 Strongly Agreed  
3.45 – 4.40 Agreed

2.45 – 3.40 Neutral/Undecided  
1.45 – 2.40 Disagreed  
0.5 – 1.40 Strongly Disagreed

Table 4 illustrates the mean, Interpretation and Standard Deviation of the level of resource conflicts on the management of biodiversity conservation in Jozani

National Park, Zanzibar. The low Standard Deviation shown in the table such as 0.46 means that the respondents strongly agreed to the opinion as per information they provide that the level of resource conflicts are increased because of unemployment. This is because communities living around Jozani National Park are directly relying on using natural resource assets to ensure

their daily survival and livelihoods which result into resource competition and conflicts

At the same time the highest Standard Deviation shown in the table was 1.13 imply that the respondents also agreed to opinion of information provided that increasing of multiple actors in the management and conservation of resources makes the level of resource conflicts to be high.

*Table.4: The mean, Interpretation and Standard Deviation of the level of resource conflicts on the management of biodiversity conservation*

Item	Mean	Interpretation	St. Deviation
Increasing of scarcity of resources make the level of resource conflicts to be high.	4.00	Agree	1.10
The level of resource conflicts are increased because of rural hardship	4.68	St. Agreed	.66
The level of resource conflicts are increased because of poverty	4.82	St. Agreed	.49
The level of resource conflicts are increased because of unemployment	4.83	St. Agreed	.46
Lack of existence of resource rights such as land tenure rights at the community level makes the level of resource conflicts to be high	4.69	St. Agreed	.56
The demand of resources makes the level of resource conflicts to be high	4.40	Agreed	.61
Increasing of multiple actors in the management and conservation of resources makes the level of resource conflicts to be high	3.58	Agree	1.13
Poor management system of land and other natural resources makes the level of resource conflicts to be high	4.20	St. Agreed	.99

### 3.3 The level of the management of biodiversity conservation in Jozani National Park area, Zanzibar

Table 5 illustrates the mean, Interpretation and Standard Deviation of the level of the management of biodiversity conservation in Jozani National Park area, Zanzibar. The low Standard Deviation was 0.42 means that the respondents strongly agreed to the opinion as per information provided that the level of management of biodiversity conservation become is low because of

poverty. This is because people are directly relying on using natural resource assets to ensure their daily survival and livelihoods and hence set back the management and conservation of biological biodiversity.

At the same time the highest Standard Deviation was 1.36 imply that the respondents disagreed with the point that the level of biodiversity conservation is low and unachievable because of unclear, precise and achievable objectives.

*Table.5: The mean, Interpretation and Standard Deviation of the level of management of biodiversity conservation*

Item	Mean	Interpretation	St. Deviation
The level of management of biodiversity is low because of illegal harassment of habitats and their	4.42	St. Agreed	.72

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environment such as poisoning, shooting and trapping			
The level of management of biodiversity is low because of climate change	3.65	Agreed	1.10
The level of management of biodiversity is low because of lack of enough funds	4.26	St Agreed	1.26
The level of management of biodiversity is low because of lack of enough high skilled staffs	4.19	St. Agreed	1.30
The level of management of biodiversity is low because of long term period of biodiversity conservation	3.38	St. Agreed	1.33
Poor policy and law enforcement and governance in the department and communities, reduce the level of proper management of biodiversity conservation	3.81	St. Agreed	1.37
The level of management of biodiversity conservation is low because of human interaction and conflicts	4.35	Agree	.56
Changing of land uses in area surrounding protected areas has made the level of management of biodiversity conservation become low	4.27	Agreed	.79
The level of management of biodiversity become low because of poverty	4.76	St. Agreed	.42
The level of management of biodiversity become low because of hunger	4.71	St. Agreed	.49
The level of management of biodiversity become low because of diseases	3.06	Disagreed	1.45
The level of management of biodiversity become low because of illiteracy	4.63	St. Agreed	.64
The level of management of biodiversity become low because of lack of gender participation	3.24	Agreed	1.34
The level of management of biodiversity become low because of unclear, precise and achievable objectives	2.93	Disagreed	1.36
The level of management of biodiversity become low because of lack of careful evaluation of the cost and benefit of the projects	3.40	Agreed	1.34
The level of management of biodiversity become low because of lack of strong participation of the communities	3.60	St. Agreed	1.34

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### **3.4 The causes of resource conflicts on the management of biodiversity conservation in Jozani National Park area, Zanzibar**

According to the table 6 illustrate the mean, Interpretation and Standard Deviation of the causes of resource conflicts on the management of biodiversity conservation in Jozani National Park area, Zanzibar. The low Standard Deviation was 0.62 means that the respondents strongly agreed to the opinion as per information provided that scarcity of environmental resources are the causes of resource

conflicts. This is caused by population pressure and human consumption over the environmental resources that lead to environmental degradation and poverty.

At the same time the highest Standard Deviation was 1.06 imply that the respondents were neutral to opinion of information provided that climate change are fundamental causes of resource conflicts. That means that they were neither agreed nor disagreed to the information provided in the questionnaire.

*Table.6: The mean, Interpretation and Standard Deviation of the causes of resource conflicts on the management of biodiversity conservation*

<b>Item</b>	<b>Mean</b>	<b>interpretation</b>	<b>St. Deviation</b>
Human activities for demanding material needs such as foods, living spaces, health maintenances and supply of energy are the causes of resource conflicts	4.39	St. Agreed	.73
Absence of democracy and good governance that limit the capacity of the individual justice, rights to information and participation in environmental decision making are the causes of resource conflicts	3.48	Agreed	1.20
The scarcity of environmental resources are the causes of resource conflicts	4.57	St. Agreed	.62
Population growth is the causes of resource conflicts	4.70	St. Agreed	.82
The implication and bias of law and policies to rural communities are the causes of resource conflicts	4.13	St. Agreed	1.13
Climate change are fundamental causes of resource conflicts	3.53	Neutral	1.06
Conflicting of interests between the community and conservation authority are the causes of resource conflicts	4.35	St. Agree	.79
Illegal exploitation of natural resources, continue to be one of the contributing factor for resource conflicts	4.43	St. Agreed	.65
Lack of proper distribution of revenues from tourism, hunting and other source of revenues are considered to be the causes of resource conflicts	4.16	St. Agreed	1.12
Vulnerability of women's in physical, social, economical and political affairs are the causes of resource conflicts	3.36	Neutral	1.29

### 3.5 The results of resource conflicts on the management of biodiversity conservation in Jozani National Park area, Zanzibar

Table 7 illustrates the mean, Interpretation and Standard Deviation of the results of resource conflicts on the

management of biodiversity conservation in Jozani National Park area, Zanzibar. The low Standard Deviation was .59 shows that the respondents strongly agreed to the opinion as per information provided that resource conflicts lead to the destruction of forestry.

Table.7: The mean, Interpretation and Standard Deviation of the results of resource conflicts on the management of biodiversity conservation

Item	Mean	Interpretation	St. Deviation
Resource conflicts lead to the destruction of ecosystems	4.09	St. Agreed	1.10
Resource conflicts lead to the habitat destruction	4.10	St. Agreed	1.05
Resource conflicts made people to use natural resources in an unsustainable and destructive way	4.63	St. Agreed	.64
Resource conflicts lead to destruction of forestry	4.71	St. Agreed	.59
Resource conflicts lead to the destruction of animal meat	4.68	St. Agreed	.60
Resource conflicts lead to the destruction of resources and pollution	3.98	St. Agreed	1.09

Table 8 indicates that there is a significant relationship between resource conflicts and the management of biodiversity conservation in Jozani National Park Area, Zanzibar. This is shown by P value of 0.355 which indicate a significant relationship since it is above 0.000.

Table.8: The relationship between resource conflicts and the management of biodiversity conservation in Jozani National Park Area, Zanzibar

Correlation			
Variables Correlated	R. values	P. values	Interpretation
Resource Conflicts Vs The Management of Biodiversity Conservation	0.355	0.000	Significant Correlation

## IV. CONCLUSIONS AND RECOMMENDATIONS

### 4.1 Conclusions

Mostly all natural resources are part of environment and the conflicts associated with resource use are environment in nature. Environmental conflict is a common issue worldwide and it linked to political, economic, social, and ecological context of the world. Scarcity of environmental resources which are considered to be important source of conflicts can be important factors leading to tension and clashes in the many societies because resource scarcity has its greatest social impact when these factors interact. This study therefore concluded by emphasize that poverty and unemployment were the major causes of resource

conflicts and poor management and conservation of biodiversity in Zanzibar.

### 4.2 Recommendations

Therefore, the call is directed to the government to intensify efforts on conflict management plan by establishing overall strategies for managing conflict such as establishment of participatory community-based approaches to natural resource management and conflict resolution. Establishment of conflict resolution capacity building measures among the stakeholders such as training negotiation skills, facilitation skills, mediation skills, communication skills, leadership skills and



awareness about rising the process of consensus-building. Laws should be also amended to avoid doubtful of land tenure rights in the management and conservation of biodiversity conservation at the community level. Again the economic situation of the country also needs to be restoring so as to enhance the standard of living of the citizens and emancipate societies in directly relying on using natural resource assets to ensure their daily survival and their livelihoods. Finally government and corporate bodies should create conducive employment opportunities to the people so as to reduce the high level of poverty and unemployment.

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