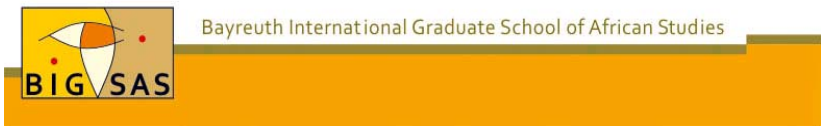

The History of Use and Conservation of Marine Resources in Zanzibar: Nineteenth Century to the Present

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Dedication

To the memory of my mother, Mwajab Mohammed Sendaro, and
my father, Rashid Abdallah Mkumbukwa.
To Maryam Ali M. Sendaro,
Ali, Rashid Amina
And Luqman

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Abstract

The aim of this study is to examine the history of use of marine resources as well as historical changes in efforts towards their conservation in Zanzibar from the nineteenth century up to the present period. More specifically, the study identifies important periods and dynamics in the use and conservation of marine resources in Zanzibar from the 1840s up to the 2000s, with special attention to mangroves as well as fish. For its empirical analysis, the study takes up several general terms and explanatory concepts from debates about conservation, environmental history and the commons with regard to Africa, including external influences such as colonialism and globalisation.

Empirical analysis yielded the following key findings: Firstly, significant changes in the use of marine resources, notably, fish and mangroves, started as early as the 1840s with the expansion of the clove plantation economy and the development of Zanzibar town. Secondly, by that time, local communities in Zanzibar already had established practices of conserving marine resources. They used, for instance, periodical closing and opening of mangrove forests for cutting, and also of fishing areas for fishing, which had conservation effects. *Wavyale* (local leaders who were also mediators in fishing and land use issues in Zanzibar) in collaboration with *Watu Wanne*, the "(council of) four elders," led and supervised such activities. However, such practices came under pressure through socio-economic changes already in the late pre-colonial period.

Thirdly, pressure on marine resources considerably increased during the colonial period. One significant factor for that was expansion of an export market for mangrove barks in Europe and America in the 1930s, which was further stimulated by the Second World War from 1939 and thus caused mangrove forest degradation. Fourthly, another factor was the concentration on artisanal inshore fishing, which had started long before, but continued while catches increased considerably during the British colonial period. Even government research efforts concentrated on inshore fishing during that period, rather than opening new avenues for offshore fisheries thereby contributed to degradation of the fishing environment and decrease in fish stock including size as well as disappearance of some fish types.

Fifth, the Zanzibar policy of socialism between 1964 and the 1970s contributed to other changes in use of marine resources, especially fish, on the islands. Thus, nationalisation of fishing firms weakened the fishing sector because of an ineffective functioning of large scale fishing towards the possibility of expanding fishing to off-shore areas. Sixth, with liberalisation policies in recent years, there has been a marked increase in fishing efforts in Zanzibar. Parallel to this, the government's new policies of community-based marine conservation have in practice resulted to an increase in alternative employments for fishermen rather than in actual successes in the conservation of fish resources. Seventh, the study assumes that the dual concentration of efforts and knowledge in fishing on inshore areas during colonial and post-colonial eras contributed to underutilisation of fish resources in the offshore deep sea fishing areas by inhabitants of Zanzibar and Tanzania, in general, leaving these waters to illegal fishing by big foreign fishing companies from Europe and Asia.

Acknowledgement

I humbly submit my sincere gratitude to the Almighty Allah bestowing me with knowledge and health, which enabled me to pursue this study as well as successfully complete it.

A doctoral study is a process involving a long journey that at times seems like a back and forth or spiral process but gradually proceeds forward. Throughout such long journey (studies), I received support from different individuals and various institutions, all of whom I extend my sincere gratitude. It is my pleasure to express my gratitude to several people and different institutions that supported my graduate studies and the process of writing this dissertation at different stages. I extend my sincere gratitude to the German Academic Exchange (Deutscher Akademischer Austauschdienst - DAAD) in collaboration with the Ministry of Education and Vocational Training (MoEVT) for a scholarship to pursue PhD studies at the University of Bayreuth. Moreover, I am deeply grateful to the Bayreuth International Graduate School of African Studies (BIGSAS) for providing me with workstation/office, computer and internet access. Additionally, BIGSAS supported me with other logistical aspects while writing up my dissertation and financed my fieldwork trips to Zanzibar as well as provided financial support for summer schools and international conferences during my study period at Bayreuth. I also appreciate assistance from the State University of Zanzibar (SUZA) that granted me with a study leave from 2010 to 2014.

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I am so grateful to the staff of the State University of Zanzibar for their support I enjoyed during my studies. My colleagues from the Department of Social Sciences, some of whom took up the courses, which I was previously teaching to cover the gap I left, '*Asanteni sana!*' In particular, I convey my sincere appreciation to Bi. Saada Omar, who assisted me to collect some data from Zanzibar National Archives and Dr. Makame Omar whom we shared information during our PhD study period.

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List of Abbreviations

CE	Common Era
CHICOP	Chumbe Island Coral Park
DOAG	Deutsch-Ostafrika Gesellschaft
EAFFRO	East African Freshwater Fisheries Research Organisation
EAFRO	East Africa Fisheries Research Organisation
EAHC	East Africa High Commission
EAMFRO	East African Marine Fisheries Research Organisation
EAP	East Africa Protectorate
EEZ	Exclusive Economic Zone
GDR	German Democratic Republic
IMF	International Monetary Fund
IUCN	International Union for Conservation of Nature
IUU	Illegal, Unregulated and Unreported fishing
MPA	Marine Protected Areas
PECCA	Pemba Channel Conservation Area
RGZ	Revolutionary Government of Zanzibar
TANU	Tanganyika African National Union
VECA	Vitongoji Environmental Conservation Association (Pemba)
ZAFICO	Zanzibar Fishing Corporation
ZNA	Zanzibar National Archives
ZTC	Zanzibar Tourist Corporation

CHAPTER ONE

GENERAL INTRODUCTION TO THE STUDY

"...the tide is as much as a carrier of goods as the donkey and the sea the provider of food as much as the garden,"[1]

"...environmental regulation lies deep in the history of many societies, and takes a multitude of forms, more or less explicit."[2]

1.1 Introduction

Marine resources are vital components in daily life of the coastal communities in East Africa, including people of Zanzibar. Therefore, studying the resources is synonymous with examining social and economic well-being of coastal communities and Zanzibar, in particular. Zanzibar isles depend on agricultural and natural resources whereby marine-related resources such as fish and mangroves are crucial in their social and economic activities due to geographical position as isles in the Indian Ocean. This chapter presents a general overview of the research as well as geographical profile of Zanzibar. Moreover, this chapter presents research methodology, literature review and provides organisation of the dissertation.

1.2 General Introduction to the Area and Topic

Zanzibar[3] is a semi-autonomous part of the United Republic of Tanzania. Zanzibar gained independence from British colonial rule on December 10th, 1963. One month later, Zanzibar Revolution happened on January 12th, 1964. Subsequently, the People's Republic of Zanzibar and the Republic of Tanganyika united on April 26th, 1964. Zanzibar consists of two main coral isles, Unguja and Pemba, plus over fifty islets. The islands are located between latitudes 4.8^0 and 6.2^0 south of the Equator and longitudes 39^0 and 40^0 East of Greenwich. The islands cover a total land area of 2,332 square kilometres, whereby Unguja covers 1,464 square kilometres and Pemba 868 square kilometres. Unguja is divided into three main administrative regions, namely, North Unguja, South Unguja and Urban West, while Pemba has two regions, North

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[1] A. H. J. Prins, *Sailing From Lamu: A Study of Maritime Culture in Islamic East Africa*, (Assen: Van Gorcum & Comp. N.V. 1965), 157.

[2] William Beinart and Lotte Hughes, *Environment and Empire*, (Oxford: Oxford University Press, 2007), 14.

[3] There are two explanations concerning Zanzibar. The first meaning of Zanzibar is that, it is used for Unguja Island only, whereas secondly, Zanzibar means a compliment of the two islands of Unguja (Zanzibar) and Pemba. From here Zanzibar will refer to both Unguja and Pemba Islands.

Pemba and South Pemba. Zanzibar's area includes coral reefs, which are in relatively good conditions together with mangrove areas, continental shelf and continental slope. Mangrove vegetation covers about 6 percent of the whole area of Zanzibar including 5 percent in Unguja and 15 percent in Pemba[4] (see Maps 1.2 and 1.3).

[4] J. P. Shunula, "Towards sustainable Utilization of Mangroves in Zanzibar" http://wwwuser.gwdg.de/~izne/mombasa/abstracts/shunula/.html Accessed: 29.7.2010

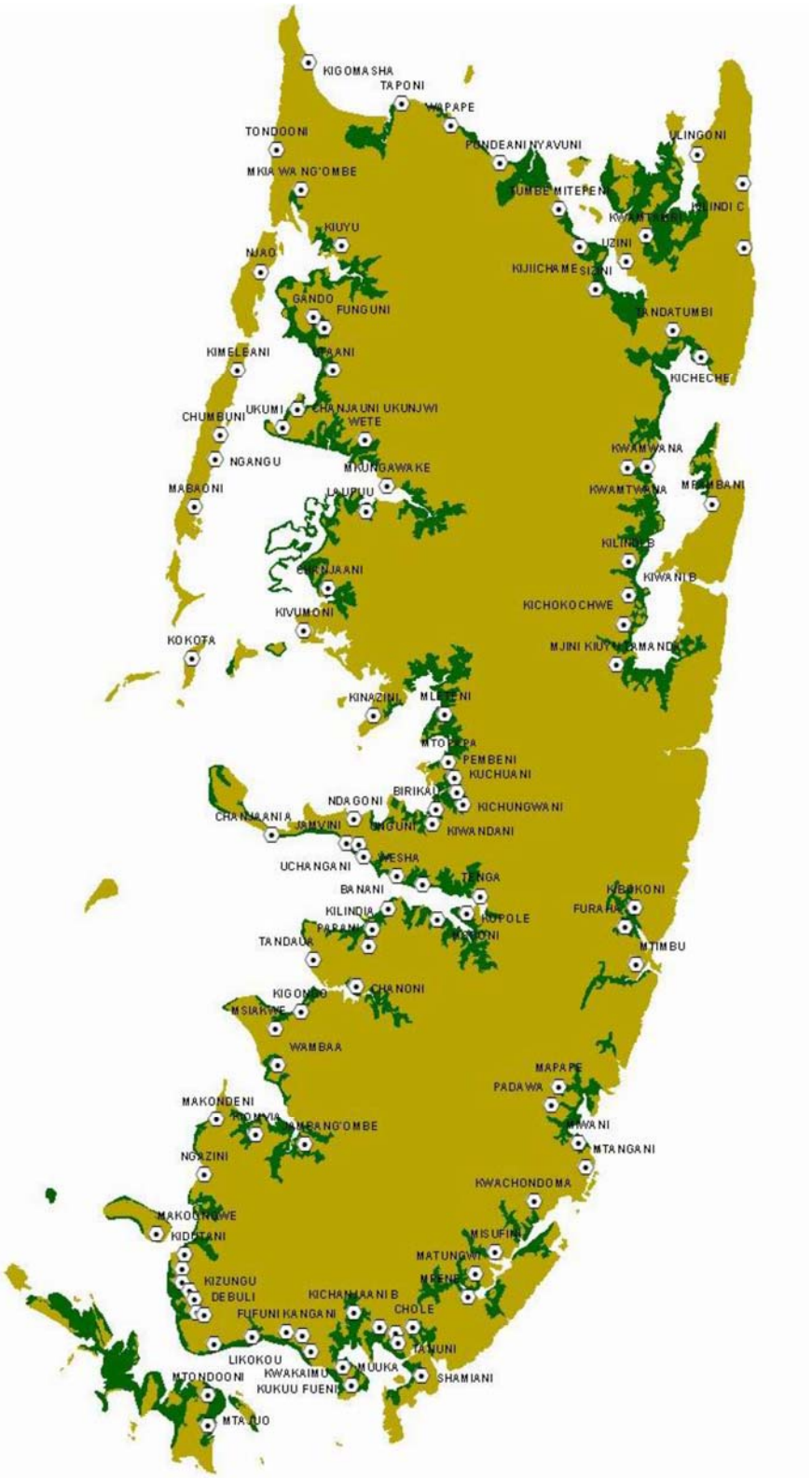
1.1 Map of Zanzibar (Unguja and Pemba Islands)

Source: NationMaster.com **(**http://maps.nationmaster.com/country/tz/1**)**

Map 1. 2 Mangrove Distribution and Fish Landing Sites in Unguja

Source: Muhando and Rumisha (2008: 82).

1. 3 Mngrove Distribution and Fish Landing Sites in Pemba



Source: Muhando and Rumisha (2008: 83).

The islands have a tropical climate with temperatures ranging from 20 degrees Centigrade and 40^0 Centigrade and they receive annual rainfall between 1300 millimetres and 1400 millimetres in two seasons: long rains falling between March and May and short rains that normally fall between October and December. Pemba Island has swampy loam soils and receives higher rainfall than Unguja, which makes Pemba more favourable for agriculture than Unguja. The north-easterly winds of northern monsoon and south-easterly winds of the southern monsoon dominate climatic and surface oceanographic conditions of Zanzibar. Cooler temperatures, stronger winds and more rain characterize the southern monsoon winds between June and September. The monsoon winds were important in connecting Zanzibar with the wider Indian Ocean world thereby facilitating easy socio-economic transactions between Zanzibar and the Indian Ocean world, in general.

Many developing countries such as Tanzania and, in particular, Zanzibar almost entirely depend on natural resources. Being an island, Zanzibar relies on its marine resources, including different types of fish, mangroves, coral reefs, sandy beaches and seaweeds for both social development and economic development. Since pre-colonial period, fish and mangroves have been important socio-economic items among marine resources in Zanzibar. The communities used fish for food and exchanged with other items for economic as well as social demands. In addition, they used mangroves as building poles and firewood. However, given relative small number of population, there was no high pressure on the resources. From the middle of the nineteenth century up to the twentieth century *Anno Domino* (AD), more pressure was placed upon exploitation of marine resources. By then, population and demand for resources such as mangrove trees and fish began to expand. Gradually, fishing began to be commercialised and trading gained more significance. The demand for mangrove poles within Zanzibar and in the Gulf countries such as Oman increased and more mangrove trees were cut down to cater for such demands. Such pattern resulted in widespread environmental degradation including depletion of resources. Indeed, the situation indicates that human activities are responsible for endangering the marine environment and marine resources.[5]

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[5] Toby Roxburgh, Ian Morton, Chikambi Rumisha and Julius Francis, (eds.) *An Assessment of the Stakeholders and Resource Use in Dar es salaam Marine Reserve System*, (Nairobi: ICRAN/WIOMSA, 2002), p. 1.

In the 1840s, Zanzibar became the headquarters of the Omani-Arabs Sultanate and it developed plantations of cloves as well as coconuts. Large tracts of land, including forested areas were turned into farmland, while the land tenure system was changed. In addition, a new capital (Stone Town) was established close to the coast of Malindi in Zanzibar.[6] Such developments later influenced the marine environment and resources as far as mangroves and fish were concerned in Zanzibar. The events also transformed the traditional land use pattern in the islands and the situation continued in the British colonial period.

In 1890, the British declared Zanzibar a British Protectorate. The declaration was followed by intensifications of colonial economic policies and exploitation, especially from the First World War onwards. In 1915 and 1916, the British increased their efforts in clove production.[7] In the 1930s, mangrove barks were discovered as a new export item. Soon afterwards, Second World War erupted and the British authorities needed more raw materials and currency. Therefore, the colonial government relaxed effectively on supervising and managing the marine resources during the war period to the extent that the resources, especially the mangrove forests were excessively utilised and the effects were visible after the war.[8]

There were several land use and management laws established by the colonial government in Zanzibar that were relevant for the use and protection of marine resources, including the following: the Land Acquisition Decree (1909), the Land Survey Decree (1912), the Land Alienation Decree (1935), the Land Acquisition (Assessment and Compensation) Decree (1949) and the Town and Country Planning

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[6] See: Abdul Sheriff, "Introduction: A Materialist Approach to Zanzibar's History" in Abdul Sheriff and Ed Ferguson (eds.) *Zanzibar Under Colonial Rule* (London: James Currey, 1991), p. 4; Abdul Sheriff, "The Peasantry Under Imperialism, 1873 - 1963" in Abdul Sheriff and Ed Ferguson (eds.) *Zanzibar Under Colonial Rule* (London: James Currey, 1991), p.112 and Abdul Sheriff, "The Spatial Dichotomy of Swahili Towns: The Case of Zanzibar in the nineteenth Century" in *AZANIA: Journal of the British institute in Eastern Africa*, Volume XXXVI-XXXVII 2001-2002, (Nairobi: The British Institute in Eastern Africa), 2002, pp. 66 -68

[7] Ed Ferguson, "The Formation of Colonial Economy, 1915 -1945" in Abdul Sheriff and Ed Ferguson (eds.), *Zanzibar Under Colonial Rule* (London: James Currey, 1991), p. 36 – 7. Also see Abdallah Mkumbukwa, "Socio-economic Change and Malaria in Zanzibar, 1915 – 2000" (University of Dar es salaam, 2008), unpublished M.A. Dissertation

[8] Erik O. Gilbert, *Dhows and the Colonial Economy of Zanzibar, 1860 – 1970*, (Oxford: James Currey Ltd., 2004),

Decree (1956).[9] Although the said establishments dealt with regulating land use and management systems during the colonial period in Zanzibar, terrestrial management and conservation, they also affected marine resources as far as the geographical land pattern of Zanzibar is concerned.

After independence and revolution in 1963 and 1964, respectively, there were changes in the land tenure system, which also affected the use and conservation of marine resources in the Islands. However, the government did not pay much attention to regulated conservation of marine resources. Therefore, the extent and magnitude of illegal means of using the resources increased. From the 1990s, the Revolutionary Government of Zanzibar (RGZ) started to regulate marine environment conservation. Subsequently, the RGZ established several Marine Protected Areas (MPAs) in both Unguja and Pemba. The activities were established in areas such as Misali, Mnemba and Chumbe Islands as well as Menai Bay.[10]

There is scant literature on environmental history of Zanzibar specifically, on marine resources. Moreover, available literature does not treat the use and conservation of marine resources as well as related activities from a historical perspective. Therefore, it is the objective of this study to draw a connection between the history of Zanzibar in general and the marine environment by placing particular emphasis on the use and conservation of mangroves as well as fishes over a historical period.

1.3 Statement of the Problem and Justification of the Research Topic

The coastal environment of Zanzibar contains rich biological diversity and a valuable collection of natural resources that support expansion of socio-economic opportunities through activities such as fishing, agriculture and tourism. Nevertheless, the ecosystem has started to show signs of degradation, partly caused by increased exploitation of marine resources in Zanzibar. The trend of exploitation has been a result of concentrated use of the resources, especially fish in some specified areas as opposed

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[9] See the following: Salim Rashid Abdulla, "Institutional Developments in Land Administration in Zanzibar" in http://www.fig.net/pub/fig2006/ppt/ts22/ts22_02_abdulla_ppt_0289.pdf Accessed: 22.02.2011 and Mika Törhöne, "A Thousand and One Nights of Land Tenure: The Past, Present and Future of Land Tenure in Zanzibar" 1998 in http://lib.tkk.fi/Diss/2003/isbn9512264919/article1.pdf Accessed: 23.02.2011

[10] Arielle Levine, "Local Responses to Marine Conservation in Zanzibar, Tanzania" (Berkeley: University of California, 2004), 3–5, http://www.escholarship.org/uc/item/8mc3v0p5 Accessed: 29.07.2010

to distributed fishing efforts from the coastal waters to the deep sea. In addition, intensification of mangrove cutting from the 1930s,[11] for poles and mangrove barks within a short span does not allow for sufficient re-growth of the trees thereby caused signs of the forest degradation during the colonial period. Destruction of mangrove cover along coastal areas of Zanzibar contributed to destroying fish breeding grounds and thus, hindered growth of the fish stock, which depended on mangroves. Societies throughout history had means and capacity to use natural resources, many of which had conservation significances.[12] Therefore, use and conservation of marine resources in Zanzibar, which signalled degradation of the resources, have historical interpretations that this study seeks to examine.

During the nineteenth century AD, there were three major issues concerning the use of mangroves and fish in Zanzibar. The first issue was development of new capital, which went together with massive construction of new together with relatively modern large buildings in Zanzibar, given that they used building materials such as mangrove poles and coral stones.[13] Secondly, there was an increase in trade in mangrove poles whereby people in Zanzibar harvested mangroves and exported mangrove poles to Middle East and Asia.[14] Thirdly, there was an increase in population on the islands, which required more houses and food including fish, whose consumption also increased. The trend of events affected the marine environment in Zanzibar and contributed to transforming the use, conservation and even people's perceptions on ownership of resources.

Therefore, with introduction of the British colonial rule during the end of the nineteenth century, Zanzibar had already begun transformations that led to greater concentration of the use of marine resources. Introduction of the colonial economy and land use policies affected the use as well as conservation of mangroves. Around the 1930s, in addition to the mangrove poles, trade in mangrove barks became one of

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[11] Gilbert, *Dhows*, 110 – 112.

[12] Huruma L. Sigalla, "Trade-Offs Between Wildlife Conservation and Local Livelihood: Evidence from Tanzania," African Review Vol. 40, No. 1, (2013), 157.

[13] See: Abdul Sheriff, "The Spatial Dichotomy of Swahili Towns: The Case of Zanzibar in the nineteenth Century" in *AZANIA: Journal of the British institute in Eastern Africa*, Volume XXXVI-XXXVII 2001-2002, (Nairobi: The British Institute in Eastern Africa), 2002, pp. 66-8 and Abdul Sheriff, "Introduction: A Materialist Approach to Zanzibar's History" in Abdul Sheriff and Ed Ferguson (eds.) *Zanzibar Under Colonial Rule* (London: James Currey, 1991), 4.

[14] Gilbert, Ibid, 110 – 112.

significant export items in Zanzibar. As the trade developed, it threatened the well-being of mangrove forests as well as development of the fishing industry with fish breeding grounds destroyed. However, through Department of Agriculture, the British colonial government in Zanzibar supervised and controlled the cutting of the trees. Nevertheless, when the Second World War erupted in 1939, the British supervision was relaxed and hence, more trees were cut, while export of the mangrove barks increased. In due regard, mangrove forests suffered consequences whereby it was discovered after the end of the war that mangroves were overcut and there was a need to limit the use of the trees to allow forests recover.

In 1964, after the Zanzibar revolution, the land tenure system was changed with all land nationalised and re-distributed in three acres to each family. Commercial firms, including fishing companies were also nationalised. However, the trend further placed the environment and marine resources, such as fish at risk. More farms were subsequently neglected and others misused and fishing firms worked below their capacities. On the other hand, mangroves began to be protected as the government prohibited use of forests for trading in mangrove poles and barks. Mangrove areas are important breeding places for fish and with more than a quarter of the population in Zanzibar depend on them.[15] Many people in rural coastal areas in Zanzibar relied on fishing and conserved the marine environment accordingly.

Conservation of marine resources, like wildlife, is an ancient phenomenon, which started long before the advent of colonialism. The local community conserved their marine resources and environment according to their culture.[16] Since pre-colonial period, authorities tended to ignore coastal and marine resources conservation efforts for a long time, concentrated on cloves and coconuts plantations as well as trading activities. Mainly, the governments left conservation activities in the hands and expense of the local population surrounding the coastal areas. In recent years after the Zanzibar revolution, the RGZ authorities started to intervene and began marine conservation activities efforts through establishment of Marine Protected Areas (MPAs) that have

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[15] J. P. Shunula, *op. cit.*; Arielle Levine, *op. cit.*

[16] Abdallah R. Mkumbukwa, "The Evolution of Wildlife Conservation Policies in Tanzania during the Colonial and Post-independence Periods," in *Development Southern Africa*, *Vol. 25 No. 5*, (Essex: Rutledge Taylor and Francis Group, 2008), p. 589. See also, Lual A. Deng, *Rethinking African Development: Toward a Framework for Social Integration and Ecological Harmony*, (Trenton: Africa World Press, Inc., 1998), 83.

success and challenges as discussed in the next chapters. The study analysed the historical evolution of marine use and conservation in Zanzibar from the 1840s to the 2000s by focusing particularly on mangroves and fish resources.

1.4 Objectives of the Study

The main objective of this study was to examine the history of use of marine resources as well as historical transformations in terms of the conservation of the resources in Zanzibar from late pre-colonial era (early 19th century) up to the present period. The study analyses the way in which changes in the country's political power affected the utilisation and conservation of marine resources through influencing different activities. In addition, the study intends to account for social perspectives concerning use and conservation of marine resources on the Islands. More specifically, the study seeks to identify important periods and dynamics concerning the use and conservation of the resources in Zanzibar from the 1840s up to the 2000s by paying particular attention to mangroves and fish.

1.5 Literature Review

1.5.1 General Ideas on Marine Resource Use and Conservation

The use and conservation of marine resources received attention from many scholars with both natural and social scientists having written about the subject. One such scholar is James R. McGoodwin, who argued in his book *Crisis in the World's Fisheries: People, Problems and Policies* that the first maritime society in the world was Maglemosians from the Baltic Sea, who lived in the period around 10,000 years ago. They were the first people who conducted a semi-sedentary way of life in a large and nucleated society. This suggests that the Maglemosians produced surplus of food, and particularly shellfish.[17] McGoodwin disclosed that the earliest example of over-exploitation of marine resources occurred almost 3,000 years ago along the Peruvian coast. People in the area began to experience a depletion of marine resources, especially shellfish and resorted to devise ways through which they could sustainably continue to exploit their marine resources. They started limiting fishing efforts to preserve the

[17] James R. McGoodwin, *Crisis in the World's Fisheries: People, Problems and Policies* (Stanford: Stanford University Press, 1995), 150.

resources.[18] Evidence of the said society represents initial efforts of conservation of marine resources in the world.

Another scholar who studied marine resources and their conservation is Clinton J. Dawes. In his book, *Marine Botany*, he examined different botanical species found in coastal areas. For instance, he studied characteristics of mangroves according to different environmental conditions in different areas. He explained that the word mangrove is derived from a combination of Portuguese and English words. It comes from the Portuguese word "mangue," which means tree as well as the English word "grove" that denotes for trees.[19] He argued that there are about 80 species of mangroves throughout the tropical and subtropical regions of the world, with about 65 of them found in south-eastern Asia and the remaining few are around America and the Caribbean as well as the western part of the Indian Ocean.[20] The western Indian Ocean includes the coast of East Africa and Zanzibar Islands.

Lual A. Deng contends that since the ancient period, African communities have used and conserved their environments, co-existing in harmony with their natural (marine and terrestrial) environment as well as among themselves.[21] Likewise, McGoodwin revealed that conservation process of marine resources is an old phenomenon. However, he did not provide reasons, even in ancient times, people were sometimes already in trouble with their environment and resources as well as whether or not there is a point of departure between indigenous methods and modern 'scientific' methods of conservation of marine resources. Nevertheless, Sigalla contends that human societies generally failed to balance the trade-offs between conservations and development that involves use of resources although "our survival depends on our interactions with the environment."[22]

Scholars including L. Bunce, P. Townsley, R. Pomeroy and R. Pollnac examined the marine environment and resources concentrating on coral reef management because the reefs are one of the most significant for fish breeding and

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[18] Ibid, 51 - 2.
[19] Clinton J. Dawes, *Marine Botany* (Toronto: John Wiley & Sons Inc., 1998), 516. Today, "mangue" in Portuguese means actually mangrove tree.
[20] *Ibid.* 521.
[21] Lual A. Deng, *Rethinking African*, 83.
[22] Huruma L. Sigalla, "Trade-Offs," 158.

living grounds. In their study, *Socioeconomic Manual for Coral Reef Management*, they insisted that marine resources of coral reef should have a balanced management between their sustainable use and conservation to better maintain relations between human behaviour and reef ecosystems.[23]

> This is mainly because reef healthy environment is affected by human activities but at the same time the livelihood of the people living in the coastal tropical areas depends on the condition of the marine resources. Therefore, coral reef uses, reef management and reef ecology cannot be considered in isolation.[24]

Therefore, healthy coral reefs can support and sustain development of the fishing industry in general. However, in their study, they did not show a kind of integration between the newly scientific researched and introduced methods of reef management including those of local communities in place to ensure the wellbeing of fish species. Moreover, they failed to indicate whether or not there are traditional methods of reef conservation so that they could possibly be used for other marine resources such as mangroves and fish. Indeed, this is a very important point in terms of community-based marine environmental conservation.

1.5.2 Dynamics of Use and Conservation of Mangroves on the East African Coast

Many scholars have written about mangroves and their socio-economic significance in Zanzibar and the East African coast, in general. Such scholars examined the use and conservation of the resources as well as the way in which people in Zanzibar perceived their use and sustainability.

According to Roxburgh, Morton, Rumisha and Francis, poverty is described "as both a cause and effect of marine environmental degradation,"[25] which also affects the marine resources. Intensive use of marine resources that cause a decline in fish stocks results in the decline of fishermen's earnings as well as their reduced ability to acquire and use suitable including effective fishing gears. In turn, the fishermen are forced to employ methods that "provide better short-term rewarding for their cost but are

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[23] L. Bunce, P. Townsley, R. Pomeroy and R. Pollnac, *Socioeconomic Manual for Coral Reef Management* (Townsville: Australian Institute of Marine Science, 2000), 1.
[24] *Ibid*.
[25] Toby Roxburgh, Ian Morton, Chikambi Rumisha and Julius Francis, (eds.), *An Assessment, op. cit.*, 61.

environmentally degrading."[26] Such methods accelerate decline in marine resources available for utilisation and include the use of dynamite and small-mesh seine, which are both destructive and reduce fish recruitment.[27] The scholars call for better ways of fishing to conserve marine resources and the environment.

In his study, "The Spatial Dichotomy of Swahili Towns: The Case of Zanzibar in the Nineteenth Century,"[28] Abdul Sheriff shows that since the tenth century, people in Zanzibar constructed houses using traditional technologies common in the East African coast and used local raw materials such as coconut palm fronds, coral rag, lime and mangrove poles. Sheriff propounds that after suppression of slave trade by the treaty of 1822, Zanzibar local merchant class directed their efforts at clove production. The planters, the majority of whom were Omani Arabs, built houses in their plantation farms, while some of them had mansions in Zanzibar town. Such pattern resulted in cutting down of many forests for plantations as well as house construction. He further submitted in the 1840s, many large houses of one to three stories were built on the islands.[29] This signified that there was increased demand for construction raw materials, most of which were derived from the marine environments, such as mangroves and corals.

In another study, "The Peasantry under Imperialism, 1873–1963," examining Zanzibar economic history, Abdul Sheriff also analysed environmental issues, especially concerning land use, ownership and conservation. For instance, he describes that people started to clear forests for clove plantation from the 1840s onwards. However, he said that extensive forest extermination in the Islands took place after a cyclone that occurred in 1872.[30] That was mainly due to clove replanting process, since many clove trees perished. Therefore, given the geography and ecology of Zanzibar, a large part of marine resources of both Unguja and Pemba, especially mangrove trees, was indirectly affected by forest clearance. So people had to go for mangroves in demand for forest-related items.

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[26] *Ibid*.
[27] *Ibid*.
[28] Sheriff, "Spatial Dichotomy," 65.
[29] Sheriff, "Spatial Dichotomy," 66–68; See also, Gilbert, *Dhows*, 21.
[30] Abdul Sheriff, "The Peasantry," 112.

Adding to this idea, Erik O. Gilbert argued that mangrove poles were largely used in construction of a new capital of Zanzibar Stone Town. Apart from being used to construct large houses in the capital, the poles were also used in building mud and thatch houses in different areas in Stone Town and *Ng'ambo* (a Kiswahili word meaning 'the other side' – of the creek). In addition, Gilbert associated mangrove poles to dried fish in Zanzibar during the nineteenth century as far as trade between Zanzibar and Arabia was concerned. He mentioned the two items as "staples" in the import-export trade during the period. Stability of export trade of poles to Asia continued from the nineteenth century up to the 1960s, when it declined abruptly, due to changing social and political conditions in Zanzibar. Otherwise, it would have been expected to have a slow declining process.[31] It was estimated that an average traditional local house consumed up to sixty mangrove poles and hundreds of small poles.[32]

Edna A. Nyika also studied about use of different marine resources in Africa and Tanzania, in particular. In her chapter on Tanzania in *The African Ocean and Coasts*, Nyika contends that mangroves have been used over time as source of energy and raw materials for construction works as well as furniture in the country. Nyika mentions Zanzibar as among places that are in danger of marine environmental degradation in Tanzania by stating that it is "currently suffering measurable degradation."[33] Therefore, it was the aim of this study to historicise marine environmental issues in Zanzibar.

Jude P. Shunula and Alan Whittick studied mangroves in Zanzibar, with their work, *The Mangroves of Zanzibar*, concentrated on uses of those trees and contend that uses of mangroves include fuel, dhow-building, dugout canoes, bed legs and traditional medicine. Additionally, they provide food and shelter for other organisms.[34] The scholars raised their concern about increased pressure on demand for mangrove trees for trade items such as charcoal and poles, which, if not checked, such pattern poses threat to future sustainability of mangrove forests.[35] However, Shunula and Whittick

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[31] Gilbert, *Dhows*, 57 & 116
[32] Gilbert, *Dhows*, 116
[33] Edna A. Nyika, "Tanzania" in *The African Ocean and Coast*. http://www.odinafrica.org/learn-about-odinafrica Accessed: 25.01.2011
[34] Jude P. Shunula and Alan Whittick, *The Mangroves of Zanzibar* (Dar es salaam: Institute of Marine Science, 1996), 53.
[35] *Ibid*. 59, See also, Jude P. T. Shunula, "Ecological Studies on Selected Mangrove Swamps in Zanzibar Unpublished PhD Thesis, University of Dar es salaam, 1996, 17 – 30.

did not clearly address the social context of conservation of mangroves, despite the fact that local communities in Zanzibar has been living with as well as using and conserving resources. The scholars did not disclose about traditional methods of mangrove conservation that local people in Zanzibar used to conserve resources and environment for sustainability of the forests. Thus, this study aims at analysing traditional methods and places them in a historical perspective to understand influence of the British colonial rule and policies on them as well as its influence on colonial policies including practices.

The mangroves are also significant in the fishing industry given that they provide breeding spaces and food for a number of fish species.[36] Destruction of mangroves through overcutting harms the coastal environment and the environment within the ocean. Peninah Aloo analyses the importance of the mangrove as follows:

> They [mangroves] efficiently trap runoff sediments, thus preventing siltation of adjacent seagrass beds and coral reefs, and possibly promoting land accretion. The tangles of their roots break away wave action, thus preventing erosion of the shoreline. Mangroves act as a buffer for water pollution by trapping pollutants from runoff water.[37]

Given the important relationship between mangroves and fishery, it was imperative to study and historicise the significant linkage of mangrove forests to the fishing industry and the marine environment, in general. While doing so, it was necessary to pay attention to the socio-economic interaction of coastal people in relation to mangroves and the fishing industry because they are important components in their socio-economic activities.

1.5.3 Fisheries in Zanzibar and East Africa in General

One of the major significant economic activities in Zanzibar and East Africa, in general, is fishing. Therefore, it is equally important to document and examine the history of use and conservation of fish in Zanzibar and East African coastal societies, from the British colonial era to the present period. Fishing has been dominated by

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[36] Peninah Aloo, "Marine Resources," in Jan Hoorweg, Dick Foeken and R. A. Obudho Eds., *Kenya Coast Handbook: Culture, Resources and Development in the East African Littoral,* (Hamburg: LIT Verlag, 2000), 44; and Mwakio P. Tole, "Current Environmental Problems," in Jan Hoorweg, Dick Foeken and R. A. Obudho (eds.), *Kenya Coast*, 67.

[37] Aloo, "Marine Resources," 44. Also see for example; Tole, Ibid.

artisanal fishing for a long time in history. However, there is scarce literature on the history of development of the fishing industry in Zanzibar and the East African region as a whole from pre-colonial era to colonial era to the present. Indeed, available literature is either written in geographical terms or provides economic or biological accounts of the fishing sector in the region.

A major work dealing with development of the fishing sector in East Africa, with focus on the Kenyan coast, is the *Kenya Coast Handbook: Culture Resources and Development in the East African Littoral*. It is an extensive edited book by Jan Hoorweg, Dick Foeken and R. A. Obudho with 26 articles. Most chapters provide accounts of the Kenyan coast during a period from the British colonial rule in the recent past.[38] The work is interdisciplinary, based on historical, anthropological, medical, zoological, psychological, geographical, nutritional and political science disciplines. It elucidates different aspects of the Kenyan coast from fishing, environmental conservation, health care and nutritional endeavours to religion as well as political issues in the region, which is home to around 10 percent of the population[39] and 18 percent of Kenya's urban population.[40]

In terms of fish resources in Kenya and East Africa, in general, there are ecological limitations concerning availability of marine fish and other marine creatures. The continental shelf of Kenya and the whole of East Africa, in general, is narrow, which leads the area to have comparatively fewer fish resources for both local consumption and export.[41] Artisanal fishermen dominate the fishing industry, mostly fishing the demersal fish species on the onshore of the Kenyan waters.[42] In order to improve the fish catch, Peninah Aloo suggests the utilisation of by-catch fish, which "is usually thrown back into the ocean but with proper management this could be used for the processing of fish meal and included into livestock feed."[43] However, it is also

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[38] Ali A. Mazrui, "The Kenya Coast: Between Globalization and Marginalization," in Jan Hoorweg, Dick Foeken and R. A. Obudho (eds.), *Kenya Coast Handbook: Culture, Resources and Development in the East African Littoral,* (Hamburg: LIT Verlag, 2000), xxi, xxiii, xxv.

[39] Dick Foeken, Jan Hoorweg and R.A. Obudho, "The Kenya Coast: A Regional Study," in Jan Hoorweg, Dick Foeken and R.A. Odhiambo (eds.), Ibid, 3.

[40] R.A. Obudho, Urbanization," in Jan Hoorweg, Dick Foeken and R.A. Obudho (eds.), ibid, 85.

[41] Aloo, "Marine Resources," 48 & 54.

[42] Ibid., 48-9.

[43] Ibid., 48.

significant to improve offshore fishing to integrate it with the onshore efforts for better fish catch and conservation of the onshore resources, where the artisanal fishing is currently concentrated. This would reduce the fishing impact on concentrated onshore fishing grounds.

Martin Guard described artisanal fisheries in the Southern coast of Tanzania along Mafia Island, Songosongo Archipelago and Mnazi Bay and mentioned blast fishing as one of dangerous fishing methods, which destroy coral reefs and fish in the areas. He mentions the fishers who used these methods, namely, the local youth and fishers from Dar es Salaam. They fished using a blast fish method and purchased fish from local fishers, which further complicated control of blast fishing since the local fishers although knew the threat from blast fishing but could not report about Dar es Salaam based blast fishers cum traders because they provided them with "regular incomes."[44]

Major sources of dynamite that fishers used were projects such as road construction, mining and quarries.[45] According to Guard, three factors hinder control of blast fishing in the areas. The first is "inaction of legal authorities" when the matter was reported and therefore, the local people did not report incidences. Secondly, there were questions of poverty and ineffectiveness of marketing strategies for local fishers. Such pattern led them (the local fishermen) to depend on selling their fish catch to Dar es Salaam based traders who also fished using blast fishing methods. Thirdly, there was "leniency of sentences" in case the culprits were caught and convicted for their action(s).[46] Therefore, all the circumstances led to continuation of offences among local and distant fishermen in the region.

In describing fishing activities and methods in Pemba Island, Anas Othman outlined use of beach seines and dynamiting as destructive fishing methods used in Pemba. The law prohibits the said methods, but fishermen in areas such as near

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[44] Martin Guard, "Artisanal Fisheries of Southern Tanzania data Collection Methods, Status of Fisheries and Resource Management," in Narriman S. Jiddawi, and Richard D. Stanley, *Fisheries Stock Assessment in the Traditional Fishery Sector: The Information Need*, Proceedings of the National Workshop on the Artisanal Fisheries Sector, Zanzibar. September 22-24, 1997, Zanzibar, Institute of Marine Sciences of the University of Dar es salaam, 1999), 41.

[45] Guard, "Artisanal Fisheries," Ibid.

[46] Guard, "Artisanal Fisheries," 41.

Mtumbini reefs and Misali Islands continued to use dynamite and beach seines methods. The two fishing methods destroyed coral reefs and they significantly depopulated fish in areas because firstly, they destroyed fishing habitats and therefore, restricted or retarded breeding of fish. Secondly, the fishing methods tend to kill all types and sizes of fish around the fishing area. Therefore, they even caught unwanted fish, especially small size, which fishers threw back to the sea. Also it is typical misuse of marine resources in the islands.[47]

Moreover, in their study on *An Assessment of the Stakeholders and Resource Use in Dar es Salaam Marine Reserve System*, Toby Ruxburg, Ian Morton, Chikambi Rumisha and Julius Francis suggested several reasons that call for marine resource conservation. Major reasons include unregulated fishing and extensive use of destructive fishing methods such as dynamite. They contended that dynamite fishing is very dangerous to marine resources as well as human beings.[48] Dynamite destroys the marine environment and results in reduction of fish stocks in general.

Issa Mohammed Issa, the former Minister of Information, Culture, Tourism and Youth in the Revolutionary Government of Zanzibar, had the same ideas concerning misuse or rather unregulated use of marine resources and their adverse effects. In his opening address to the National workshop of artisanal fisheries sector in Zanzibar in 1997, the minister cautioned stakeholders of marine resources that availability of fish in the Island was declining. He described that the fish catch had dropped by more than 50 percent in 1991 from 16,500 tonnes in 1987. He submitted further that issue such as over-exploitation and use of destructive methods of fishing and tools as well as the destruction of some breeding places for fish as being among the factors behind the diminishing return in fishing.[49] Moreover, the minister described that another factor contributing towards declining fish catches in the islands is removal of live corals for use as raw materials in construction works. He warned that it is a destructive activity for both fishing and the tourism sector, which are vital for socio-economic wellbeing of the islands.

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[47] Anas M. Othman, "An Overview of the Status of the Pemba Island Fishery," in Narriman S. Jiddawi, and Richard D. Stanley, *Fisheries Stock*, 16, 18

[48] Toby Roxburgh, Ian Morton, Chikambi Rumisha and Julius Francis, (eds.). *Ibid. op. cit.*. 1, 26 & 27.

[49] Issa Mohammed Issa," Opening Address" in Narriman S. Jiddawi and Richard D. Stanley, *Fisheries Stock*, 1.

Thus, there was a need to examine how the pre-colonial society in Zanzibar used as well as conserved marine resources and what happened after their encounter with the foreign influences that affected the resources. Furthermore, this study analyses the extent at which the Revolutionary Government of Zanzibar (RGZ) adopted and devised the socio-economic policies that influenced marine resource use and conservation from 1964 to 2000s.

1.6 Research Methodology

1.6.1 Data Collection Methods

Data were collected using interview method, Focused Group Discussions (FGDs), field observation and documentations, including archival work. The interviews lasted from thirty minutes to around an hour and took place at the selling depots of mangrove poles, at Zanzibar harbours, fish landing sites, fishing grounds, fish markets, or sometimes close to the house of the research partner (respondent). Some discussions took place while fishing was conducted or while going to sea for fishing (see Photo1.1). Snowball sampling technique was employed in the study, which made it easy to locate relevant respondents and experts as the study continued. Research guiding questions were used to administer semi-structured interviews. Research Assistants helped the researcher to identify key informants[50] in the villages who were knowledgeable about use and protection of marine resources, including some Shehas,[51] former and current mangrove cutters and dealers as well as retired and old fishermen, active fishermen, fish sellers, some members and leaders of the Fishermen Committees in some villages such as Fumba, Kizimkazi, Vitongoji and boat makers. Furthermore, interviews were conducted with executive officials from the government ministries, including the Ministry of Livestock and Fisheries (Fisheries Development and Department of Marine Resources), Ministry of Agriculture and Natural Resources (Heads of Department of Forest and Non-Renewable Natural Resources), Fisheries Officers and Forest Officers at regional as well as district levels in Pemba and Unguja.

In addition, FGDs were conducted and involved several research partners including fishermen, mangrove poles dealers or marine environment activists such as

[50] Nirmalya Kumar, Louis W Stern and James C. Anderson, "Conducting Interorganizational Research Using Key Informants," *Academy of Management Journal* 36 No. 6 (1993), 1633-1651

[51] Sheha is a head of shehia, which is an administrative division below the district and just above the village level. It may consist of one to several villages.

members of marine conservation Non-Governmental Organizations (NGOs) and traditional healers who use marine related medicines together with healing procedures. The interviews and discussions took place in the presence of Research Assistants, Mussa Hajj in Unguja and Hassan Rashid in Pemba. Their presence made the participants feel highly free and confident. In addition, the presence of Mussa helped the researcher, especially when some of the research participants used a mixture of Kiswahili and Kimakunduchi languages. They were particularly relevant when the research team (the researcher and the assistants) conducted the discussions in some fishing villages. The discussions began with collection of personal information about the participants and their personal histories in relation to undertakings under discussion such as fishing, mangrove activities and conservation activities.

A digital recorder (Olympus digital voice recorder) and notebooks were used to collect as well as store data obtained from oral interviews[52] for analysis of different methods of use as well as practices of conservation of marine resources, including the traditional knowledge and the adoption of the policies on conservation practices. In addition, photography was used as part of data collection.[53] A digital Canon camera was used to collect visual qualitative data. The research team collected and stored useful visual documentations concerning different environmental aspects in relation to equipment for fishing methods and fish handling as well as fish supply. In addition, the research team collected visual data for spatial coverage of mangrove vegetation and utilisation of mangroves.

The research fieldwork was conducted in Zanzibar and organised into two major periods of fieldwork. The first phase was between May 2011 and September 2011, while the second phase was from January 2012 to May 2012. The three months intermediate period was used for further data evaluation, analysis and presentation of preliminary results to supervisor, mentors and colleagues to gain important feedback as well as gain new insights. The platforms used for presentation included the BIGSAS colloquium for work in progress, departmental seminar for history graduate students,

[52] Most of the data are still on the possession of the researcher/author

[53] See the following: Elisa Bignante, "The Use of Photo-elicitation in Field Research: Exploring Maasai Representations and Use of natural Resources," in *EcoGeo*, 11 (2010), Source: http://echogeo.revues.org/11622, accessed 23 December 2011; and Douglas Harper, "On the Authority of Image: Visual Methods at the Crossroads," in Norman K. Denzin and Yvonna S. Linciln (eds.), *Handbook of Qualitative Research*, (Thousand Oaks, CA: Sage Publications, 1994), 403-412.

consultation meetings of the Board of Mentors and BIGSAS workgroup discussions. However, the presentations were not strictly confined on fieldwork intermediate period of the three months rather, they were an ongoing process that included presentations in a summer school and international conferences in Africa, America and Europe.

The researcher used information from primary and secondary sources. Data were extracted from documents that were accessed from the Zanzibar National Archives (ZNA) and in libraries at the University of Bayreuth, the University of Dar es Salaam Marine Institute - Zanzibar, the State University of Zanzibar (SUZA), the Western Indian Ocean Marine Science Association (WIOMSA) in Zanzibar as well as the Zanzibar Indian Ocean Research Institute (ZIORI). Other documents were obtained from the University of Dar es Salaam Main Library (Mwalimu Nyerere Mlimani Campus).

Figure 1.1 A Trip to a fishing ground

Source: Field data

Reports from the following ministries in Zanzibar were consulted: Ministry of Agriculture and Natural Resources; Ministry of Livestock and Fisheries; Ministry of Trade, Industry and Marketing; Ministry of Land, Housing and Energy; and the Ministry of Information, Culture, Tourism and Sport. From the said sources, the researcher sought for information about policies, attitudes and ideas of different actors

and institutions towards use including conservation of marine resources in Zanzibar at different historical periods. Secondary sources such as books, journals, newspapers and other published including unpublished documents mainly from libraries also provided vital information from previous studies in Zanzibar in relation to this study.

1.6.2 Data Evaluation and Analysis

Data collected from primary and secondary sources were evaluated and processed through qualitative data analysis techniques. Qualitative data analysis helped to examine forces that led to changes of the utilisation and conceptualisation of conservation of marine resources that were conducted by different actors. In addition, in the analysis, the researcher examined points of departure related to the practices between different actors in the society and the authority during different periods. After the fieldwork, qualitative information was categorised according to themes based on research objectives. Some qualitative data were analysed on a daily basis, after each interview. The study used research-guiding questions. In the study, the researcher formulated and used guiding questions to conduct semi-structured interviews in the field. Moreover, the researcher evaluated and revised the questions after each interview to find relevance together with accuracy for subsequent interviews. Such pattern followed a close examination and evaluation of the collected data evaluated for analysis after each interview. Finally, the researcher evaluated all the data from the field for a general analysis and presentation after the fieldwork.

1.7 Organisation of the Study

The study is organised in six chapters. The first chapter deals with an introduction to the study. It sets grounds for the study as a whole, stating the objectives and methodology employed to conduct the study. Moreover, it presents empirical literature review to establish the state of academic knowledge and its gaps in order to address them as far as possible in this study. Lastly, the chapter provides this brief overview on the organisation of the dissertation.

The second chapter examines important terms and concepts used in the study. They include terms and concepts such as "marine resources," "use," "external influence and colonialism" and debates such as "the debate about conservation," "the commons debate" and "the environmental history debate." The aim is firstly, to establish how these terms and concepts have been discussed or applied by different scholars and

secondly, to explain how these terms and concepts are understood as well as employed in this study.

The following chapters of the study develop the empirical results from this research in a chronological order. The third chapter examines the environmental history of Zanzibar in the period before intrusion of the British colonialism. It starts from the period of the Oman-Arab sultanate, when both clove and coconut plantations were expanding and when the city of Zanzibar developed. All mentioned events contributed to setting the ground for transformations of the use and conservation of marine resources in the islands. They contributed to accelerate attention to the use of mangroves and fish as the urban population expanded and the forested areas of western parts of both Unguja and Pemba islands were reduced for the clove plantations from the 1840s onwards. The chapter ends with introduction of the British colonial rule in the form of the Protectorate of Zanzibar.

Chapter 4 traces trends of marine environment during the British colonial era. In this chapter, presentation is on analysis on the manner colonial economic policies and practices as well as socio-economic practices of the local population influenced on use and conservation of mangrove and fish in Zanzibar.

In Chapter 5, the study attempts to recollect and examine issues of use and conservation of marine resource in the post-independence period, from the land policy reforms in 1964 all the way to the socialist and liberal economic policies of the 1980s and 1990s. It also analyses the changing attitudes of the ZRG towards the exploitation of these resources, governance of the environment and towards the community of producers and users of the resources in Zanzibar from the mid-1980s onwards. These transformations resulted in creation of Marine Protected Areas (MPAs) in the islands during that period. Moreover, they also brought about increased participation of the local communities in marine conservation through the MPA and other programmes.

In Chapter 6, provides summary and outlines significant results from the study including conclusions. Additionally, some issues that would have been interesting to pursue further but could not be covered in this study because of limited time and space are presented. Therefore, such issues reflect potential areas for further studies in future along the lines of this research.

1.8 Conclusion

This chapter sets the ground for subsequent chapters of this dissertation. It presents the geographical profile of the area where the study was conducted and points out significance and relevance of the study. This is not only for academic insights on the environmental history of the region, but also specifically for the people of Zanzibar most of whom rely on their natural marine environment as a source of food and livelihood. Fish and mangroves were selected because they are particularly relevant and they can help to understand the trend of history of Zanzibar islands with regard to use and conservation of marine resources in general. The research that gave answers to these issues was conducted, on the one hand, in Zanzibar archives and libraries in Dar es Salaam, Zanzibar and Bayreuth, and in the field, on the other - mostly in fishing villages of Unguja and Pemba and in villages around the mangrove forests in Zanzibar. Secondary data were also collected for the study. In addition, the researcher conducted interviews and discussions at several places, such as Zanzibar city port where the business in fish and mangrove poles was concentrated and influenced the environment over a long period in history of the islands.

Literature review makes it clear that at least from a historiographical perspective, the use and conservation of marine resources in Zanzibar society including other parts of the East African Coast are under-researched. Therefore, considering the changing significance of the resources in development of Zanzibar, this study treats their utilisation and conservation from a historical viewpoint. The next chapter presents examination of important terms and concepts used in the study.

CHAPTER TWO

INTERROGATION OF IMPORTANT TERMS, CONCEPTS AND DEBATES

> "If we define environmental history to be the history of the interaction of human communities with the natural world, then no environment can be said to have a longer history than that of Africa...African environments nurtured the tiny earliest human communities."[54]

2.1 Introduction

This chapter examines significant terms, concepts and debates that are relevant for the following analysis in Africa, with special reference to Tanzania and Zanzibar. It discusses terms such as 'marine resources' and 'use' as used for analysis in this study. The terms are also discussed as they are used by the local people in the study area in order to understand the local perceptions and conceptions concerning the marine environment and thus, discussing issues parallel to the local understanding and experiences on the subject matter. This chapter also examines the external influence and colonialism in Africa together with debates on conservations, environmental history and the commons in the continent. The debates are important in this work because they inform development trends of various issues about the African environment and society. The concepts from the debates were used to develop discussion and findings of new possible solutions to environmental issues such as ownership rights in Africa and Zanzibar, in particular. Therefore, the terms, concepts and debates are important to discuss here because they help to set parameters for the analysis and discussions in the next chapters.

2.2 What are “Marine Resources”?

It is significant here to introduce the terms 'marine resources' because this study uses the local concepts and perspectives in the analysis of use and conservation of the resources over different historical periods. Marine resources comprise all living things and non-living properties that are related and found in the sea or ocean and estuaries.[55] Peninah Aloo describes that there are several different types of marine resources in any

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[54] Gregory Maddox, *Sub-Saharan Africa: An Environmental History*, (California: ABC-CLIO, Inc., 2006), 1

[55] United Nations Convention on the Law of the Sea, *United Nations Convention on the Law of the Sea*, (New York: Nova Science Publishers, Inc., 2009), vii, 1.

tropical coast and that "the diverse marine life is primarily due to the presence of the variety of marine habitats which include the sea shore, lagoons and estuaries, mangrove swamps, seaweeds beds, coral reefs, open waters and the sea bottom."[56] The mangroves as one of the resources discussed in this work, are forests or swamp ecosystems that are found along the coast of the tropical and some parts of warm temperate regions.[57] At the same time, the terms also refer to individual plants that are described as a group (species) of trees or large shrubs that are found in intertidal zones.[58] They are made to survive the harsh environment of the shoreline shaped by a mixture of saltwater of the sea and freshwater.[59]

In East Africa and Zanzibar, in particular, the terms *Rasilimali za baharini* (marine resources) or *Viumbe wa baharini* (creatures of the ocean) are old terms with relatively new frequent usage in Zanzibar. However, people on the East African coast usually mention the actual resources such as *samaki* (fish) as well as different names of mangroves, which are collectively mentioned as *mikoko* (mangroves).[60] Instead, terms referring to marine resources as one single group, such as *rasilimali za baharini,* are not frequently used.[61] However, when using *rasilimali za baharini*, people use them to denote all ocean-related resources, including fish, coral reefs, sea-salt, seaweeds and mangroves.[62]

Therefore, this study examines marine resources not only from the researchers' perspectives but also based upon the local people's perspectives and conceptions in the study area. 'Marine resources' is rather an analytical abstraction and the local people use the term infrequently. Important questions include how the local people perceive

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[56] Peninah Aloo, "Marine Resources," in Jan Hoorweg, Dick Foeken and R. A. Obudho Eds., *Kenya Coast Handbook: Culture, Resources and Development in the East African Littoral,* (Hamburg: LIT Verlag, 2000), 43.

[57] Christopher A. Muhando and Chikambi K. Rumisha, "Distribution and Status of the coastal Habitats and Resources in Tanzania", Draft Report Submitted to World Wildlife Fund for Nature (WWF), 2008, 15

[58] Mark Spalding, Mami Kainuma and Lorna Collins, *World Atlas of Mangroves*, (New York: Earthscan, 2010), xv and 3.

[59] Ibid, 3and 5.

[60] Interviews with Abubakar Mohamed Ngali-100-Pemba - 17.06.2011; Busara Abdallah - Unguja - 22.03.2012 and Rajab Abdallah - Unguja - 23.03.2012

[61] ZNA/BA41/6 Serikali ya Mapinduzi ya Zanzibar, (hereafter SMZ) "Sera ya Taifa ya Uvuvi Nchini," (Zanzibar, Oktoba, 1985), 10.

[62] Interview with Khamis Ali Haji (Kibabu), (VECA) - Pemba - 16.06.2011 and - 06.2012

the 'marine resources' in terms of their environmental, social and economic significance together with ownerships.

2.3 Use

Use is an important concept of this study because it involves different aspects applied in this study. It involves consumption and production sides of socio-economic activities. Thus, it is widely applicable in this study of use and conservation of marine resources in the islands of Zanzibar. For example, use of the mangrove trees includes cutting for making poles and fuel wood, which encompass production part, while using the mangrove poles in building and using firewood falls on the consumption side of the same concept.

The word 'use' is applied to denote holding and/or employing something to obtain certain material, psychological, physical or social results. The term also means to make something (or someone) serve a purpose, which could be one's own purpose or even the purpose of the community[63]. Therefore, depending on nature or social and cultural background of society, use may also mean an act, gesture or sign that indicates holding or possessing something or part of it. In this sense, there are differences in the extent and effectiveness of "use" in different communities. It also involves issues such as legal and social rights of uses of different materials or resources. However, the term 'use' has multifaceted connotations, especially in relation to natural resources, in general and marine resources, in particular.[64]

The term 'use' can also be referred to as application of a resource or a certain item for some benefits, outcome or reward. For example, Helge Kjekshus used this term by denoting application of a mixture of anthill soil to gain some benefits from it. He describes application of manure in agriculture and soil preservation in Tanzania. He mentioned that in Unyamwezi (Tabora), people used a mixture of anthill soil, leaves of

[63] http://dictionary.reference.com/browse/use Accessed on 04 July 2012

[64] See the following for the applications: Fiona Brooks, Is Bigger Better? The Impact Of Marine Protected Area Expansion On Community-Based Conservation, Master of Arts Diss., Dalhousie University Halifax, Nova Scotia February 2013, 3, 11; and Dilys Roe, Fred Nelson , "The origins and evolution of community-based Natural Resource Management in Africa", in Dilys Roe, Fred Nelson and Chris Sandbrook, Community Management of Natural Resources in Africa: Impacts, Experiences and Future Directions, (London: International Institute for Environment and Development; 2009), 8 & 9.

mango tree, domestic wastes and ashes to make manure for agriculture.[65] Moreover, Kjekshus explains the historical trend of changing hands and uses of the Ngorongoro crater in Tanzania, from the pre-colonial period to the German and British colonial era, including the way in which the changing hands denoted different use practices.[66] Different use of natural resources in different regimes also represented change in ecological conditions in the area.

Concerning the context of marine resources, use can refer to temporal and spatial possession or ownership right of marine related property such as mangrove trees and fish in order to save a specified purpose.[67] For example, in Zanzibar, some people had a temporal ownership of fishing areas as part of marine resources, which was described as 'use' by implication and practice, as planned to analyse in this study. In the use of fence fish trap or *uzio*, one who built the fence temporarily owned the use right or usufruct of the area and the trapped fish were on the ownership of the fence user. In due regard, fishing is one of the consumptions in marine resources. Therefore, this study uses this concept of use as an application of marine resources to derive some kinds of benefit from it, whether material, economic or social. Thus, the researcher analysed the manner people used mangrove trees for fishing and ocean transportation, such as making parts of dhows in Zanzibar. Therefore, this study applied this concept of 'use' for the temporal ownership of part of the mangrove forest for cutting and the extraction of mangrove barks.

In addition to use, there are different types of marine fishing consumptions, namely, fishing tourism and traditional fishing consumptions. Fishing tourism is a consumptive form of wildlife tourism, which includes hunting. Both fishing and hunting tourisms are part of cultural tourism.[68] For instance, whale watching[69] and

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[65] Helge Kjekshus, *Ecology Control and Economic Development in East African History: The Case of Tanganyika, 1850-1950*, (London: James Currey, 1996), 42.

[66] Kjekshus, *Ecology Control*, 74-5.

[67] See for example; John Middleton, *Land Tenure in Zanzibar*, (London: Her Majesty's Stationary Office, 1961), 40

[68] Brent Lovelock, "An Introduction to Consumptive Wildlife Tourism," in Brent Lovelock (ed.), *Tourism and the Consumption of Wildlife: Hunting, Shooting and Sport Fishing*, (New York: Routledge, 2008), 3-4; and Bjørn P. Kaltenborn, Julius W. Nyahongo and Jafari R. Kideghesho, "The attitudes of tourists towards the environmental, social and managerial attributes of Serengeti National Park, Tanzania," Tropical Conservation Science Vol. 4 (2): 132-148, , 134, 144. Source: http://tropicalconservationscience.mongabay.com/content/v4/11-06-27_132-148_Kaltenborn.pdf Accessed: 29 December 2013

playing with penguins[70] are part of marine consumptive tourism. Countries that are prominent in Consumptive Wildlife Tourism in Africa include South Africa, Zimbabwe, Botswana, Congo, Cameroon, Central African Republic, Ethiopia, Tanzania and Mozambique.[71]

Therefore, for the purpose of analysis of this study, the researcher applies the terms "use" and "consumption" to understand how societies in Zanzibar applied their different social, economic and environmental knowledge related to dealing with mangroves and fish. The terms were used to investigate on the manner usage of mangroves and fishing activities transformed over time.

2.4 External Influence and Colonialism

The concept of external influence is significant in this study for two reasons. Many parts of Africa, Zanzibar included, have been visited by foreigners, prompting an exchange of experiences and perceptions of different issues including the use of natural resources. Also, contacts between Africa and foreigners through various means such as trading and politics related to power struggle and changes, which again resulted in influencing the use and conservation of natural resources, which includes marine resources in the case of Zanzibar islands. Therefore, it is important to define the concept of the external influence and colonialism as a major form of external influence that contributed to changing the environment and general history of Africa including Zanzibar.

Colonialism is a political and socio-economic concept with a long history and has its genesis from the Roman Empire and language whereby the term *colonia* meant "a settlement of the citizens in conquered territory."[72] Colonialism was a form of

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[69] C. Cater and E. Cater, "The Economic Impacts of Marine Wildlife Tourism," James Higham and Michael Lück (eds.), *Marine Wildlife and Tourism Management: Insights from the Natural and Social Sciences*, (Oxfordshire: CAB International, 2008), 148.

[70] This is commonly practiced in Zanzibar, especially at Kizimkazi where some fishing boats are also designed to carry tourists who go to play with Penguins near the place.

[71] Lovelock, "Consumptive Wildlife," 7; M. A. Ndolanga, "The Department of Wildlife's Perspective on Tourist Hunting in Tanzania," in N. Leader-Williams, J. A. Kayera and G. L. Overton (eds.), *Tourist Hunting in Tanzania*, (Gland: the International Union for Conservation of Nature (IUCN), 1996), 14; J. J. Jackson III, "A Tourist's Perspective of Tanzania Hunting Industry," in N. Leader-Williams, J. A. Kayera and G. L. Overton (eds.), Ibid., 19; R. B. Martin, "Sport Hunting: The Zimbabwe Government Viewpoint," in N. Leader-Williams, J. A. Kayera and G. L. Overton (eds.), Ibid., 43-44.

[72] David J. Mattingly, *Imperialism, Power and Identity: Experiencing the Roman Empire*, (New Jersey: Princeton University Press, 2011), 7.

sovereign rule and domination (with direct occupation), which was imposed by colonisers over a colonised community for socio-economic gains.[73] However, domination should be qualified to be a real colonial rule because its meaning was changed (in both practical and terminological terms) due to passage of time and change in demand as well as technology. In sense of the "colony" and as far as modern colonialism – especially on the African continent – was concerned, it involved physical presence of Europeans and control of African resources for their own imperial benefits.[74] Colonial establishment involved three processes, namely, conquest, occupation and establishment of colonial rule as well as economy.[75] Colonial conquests as well as occupations were processes towards effective imposition of colonial rule and the colonial economy. However, there are two different types of colonialism, mainly depending on the historical period. As some scholars have noted, there is an "old" and a modern colonialism.[76] Nonetheless, in any case and under any given period, colonialism mainly involved control of access to economic resources.

In the context of this work, the researcher concentrates on modern colonialism, which was formalised by the Berlin West African Conference of 1884-85 that was held in Berlin, Germany. That period marked the formal beginning of the European scramble and partition of the African continent.[77] Subsequently, the conquest era of the African societies followed around the 1890s up to completion of establishment of a colonial system in the 1910s.[78] Colonialism, like slavery, left far-reaching impacts on socio-economic history of the African continent and the world, in general. Hence, it was legitimate trade in colonial context that "replaced a type of slavery in which Africans

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[73] See for example: Jürgen Osterhammel, *Colonialism: A Theoretical Overview*, (Princeton, N. J.: Markus Wiener Publishers, 2005), 4-8; Frederick Cooper, *Colonialism in Question: Theory, Knowledge, History*, (Berkeley: University of California Press, 2005), 27; Mattingly, Ibid., and Mueni wa Muiu and Guy Martin, *A New Paradigm of the African State: Fundi wa Africa*, (New York: Palgrave Macmillan, 2009), 8.

[74] Muiu and Martin, *New Paradigm*, 8.

[75] A. Adu Boahen, "Africa and the Colonial Challenge," in A. Adu Boahen (ed.), *General History of Africa. VII: Africa Under Colonial Domination 1880–1935*, (Paris: UNESCO, 1985), 17.

[76] Mattingly, Ibid p. 4.

[77] Peter O. Ndege, "Colonialism and its Legacies in Kenya," unpublished paper delivered during Fulbright – Hays Group project abroad programme, July 5th to August 6th 2009 at Moi University, 2.

[78] Boahen, Ibid., 14; See also, Dick Foeken, Jan Hoorweg and R.A. Odhiambo, "The Kenya Coast: A Regional Study," in Jan Hoorweg, Dick Foeken and R.A. Odhiambo (eds.), *Kenya Coast Handbook: Culture, Resources and Development in the East African Littoral,* (Hamburg: LIT Verlag Münster, 2000), 5.

worked on large plantations with little or no pay."[79] However, the replacement seemed to be a gradual process, as Jürgen Osterhammel analysed, in that different forms of brutality, "unpaid and paid" hard and forced labour continued in colonial Africa.[80] In this case, by any means possible, it was imperative for the colonial states to reassure the investors and settlers that the colonial governments in Africa would securely protect their (investors) economic and political interests[81] including provision of cheap labour.

Therefore, the main objective of colonialism in Africa was exploitation of the African human and natural resources for benefits of imperial powers[82] and trading companies, such as *Deutsch-Ostafrikanische Gesellschaft* (DOAG), the Royal Niger Company and Imperial British East Africa Company (IBEACO) in Europe. The companies established economic exploitations in the African continent that could amount to open violence.[83] In essence, colonialism, which began in the late-nineteenth century, was a result of overproduction, surplus capital and under-consumption in metropolitan countries in Europe. They required imposition of monopolistic solutions outside Europe for investment of surplus capital, mainly, in the African continent.[84]

Therefore, colonialism in Africa can be categorised as the period of colonial conquest from the 1880s up to 1900, which was violent and brutal such that it claimed millions of lives of people in Africa.[85] That was followed by period of colonial occupation from 1900 up to 1919, when the division and occupation of the African continent was completed. However, for the Africans, the period from the 1880s to 1919 was also one of defending their sovereignty and freedom as well as employing various

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[79] Muiu and Martin, *New Paradigm*, 4.

[80] Osterhammel, *Colonialism*, 74-75.

[81] Walter Rodney, "The Colonial economy" in A. Adu Boahen, (ed), Ibid., 338. See also; Kjekshus, *Ecology Control*, xxi, 74-75.

[82] William Beinart, African History, Environmental History and Race Relations: An Inaugural Lecture Delivered before the University of Oxford on 6 May 1999, (Oxford: Oxford University Press, 1999), 3-5.

[83] Muiu and Martin, *New Paradigm*, 50-51.

[84] Boahen, "Colonial Challenge," 13; and G. N. Uzoigwe, "European Partition and Conquest of Africa: An Overview," in A. Adu Boahen (ed.), Ibid., 20-21; and Lotte Hughes, "Mining the Maasai Reserve: The Story of Magadi," in *Journal of Eastern African Studies, Vol. 2, No. 1*, (Routledge: March 2008), 134-36, 140-41, 152-53.

[85] Muiu and Martin, *New Paradigm*, 52; and Boahen, Ibid., 17; see also: Betrand Taithe, *The Killer Trail: A Colonial Scandal in the Heart of Africa*, (Oxford: Oxford University Press, 2009), 20-22, 27-30, 36-7, ; Kjekshus, *Ecology Control*, xxvi, 20, 39, & 131; and Arne Perras, *Carl Peters and German Imperialism: A Political Biography, 1856 - 1918*, (Oxford: Oxford University Press, 2004), 129, 158, 190, 194-202, 214-16.

means of reactions such as direct resistances, alliance and submissions.[86] Therefore, in a span of around four decades from 1880, revolutionary transformation swept the African continent under subjugation to the extent that apart from Ethiopia and Liberia, the whole of the continent was placed under the colonial powers of Europe.[87] The period transformed the fate of the African continent and placed the continent under foreign hands, as Muiu and Martin put it:

> These foreign entities were imposed on Africans without any considerations of culture, history, or the environment because colonial powers presumed to know what was best for them. As African labour was mobilised for plantation work, indigenous food production was neglected. Africans were forced into this situation by the need to pay heavy hut and poll taxes. In essence, colonialism was designed to extract the highest economic profit from the colonized.[88]

The period from 1919 to 1935 was the era when the Africans resorted to colonial protests. It starts from the date at which the African resistances to the intrusion of colonialism ended in most areas of the continent and the colonial invasion was almost completed.[89] In 1935, Italy invaded Ethiopia and the event changed the African outlook on colonialism as the oppressive system, with Boahen stated that, "it seems most likely that the struggle for the liberation of Africa from colonialism would have been launched in the late 1930s but for the outbreak of the Second World War."[90] Therefore, the period after 1935 characterised the epoch when Africans in Africa and Africans in diaspora collectively began to struggle for liberation and political sovereignty.[91]

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[86] Boahen, Ibid., 17.

[87] Boahen, Ibid., 1; and Andrew Roberts, "Preface," in A. D. Roberts, *The Colonial Moment in Africa: Essays on the movement of minds and materials 1900—1940* (New York: Press Syndicate of the University of Cambridge, 1990), 1. Also see for example; John Reader, *Africa: A Bibliography of the Continent*, (London: Penguin Group, 1997), 307-10.

[88] Muiu and Martin, *New Paradigm*, 52-3.

[89] Boahen, "Colonial Challenge," 17-8.

[90] Ibid., 18.

[91] Ali A. Mazrui, "Introduction," in Ali A. Mazrui, *General History of Africa. VIII: Africa Since 1935*, (Paris: UNESCO, 1993), 7-9.

In terms of environmental issues, colonial authorities in Africa gave priority to extractive economy, settlers and wildlife,[92] whereas ecology seemed to be secondary. In countries such as Tanganyika (now Mainland Tanzania), for instance, the Germans further reduced Maasai grazing grounds in 1896 to a 'Maasai reserve' of "one-seventh of their former [grazing] extent...".[93] The reserve was further reduced to meet demands of the settlers and wildlife interests.[94]

Therefore, the colonial era in Africa was a period whereby pressure on natural resources increased for colonial interests. In addition, there were changes in power relations, the economy and environment. Thus, the external influence in form of colonialism needed to be understood because it formed a central part in analysis of historical transformations of the use and conservation of marine resources in Zanzibar.

In the case of Zanzibar, it became a British Protectorate in 1890 and it was under the British foreign office until 1913, when it was moved to the colonial office in the British colonial administration[95] up to 1963 whereby Zanzibar gained independence from the British. In due regard, the researcher examined policies and activities that influenced on changes in use and conservation of marine resources in the islands during the British colonial era.

2.5 The Debate about Conservation

Conservation is a general term for conscious practice aimed at protecting the environment. It is usually practised deliberately to conserve natural resources for certain use or for the future. Under normal circumstances, important actors are the local people. Therefore, the discussion about conservation was significant here to establish the historical trend and development of conservation activities in other places of the world and the African continent, which helped in analysis and discussion of conservation activities in Zanzibar in the following chapters.

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[92] J. Donald Hughes, "Global Environmental History: The Long View," Globalizations. December 2005, Vol. 2, No. 3, pp. 293–308, Routledge, 296-7

[93] Kjekshus, *Ecology Control*, xxi & xxiii.

[94] Ibid., xxi, xxiii, 74-75, & 78-79.

[95] Abdallah R. Mkumbukwa, *Socio-economic Change and Disease: Malaria Control and Its Control in Zanzibar, 1915-2000*, (Saarbrücken: LAP Lambert Academic Publishing GmbH & Co KG., 2012), 39.

Conservation of natural resources is associated with protection, preservation and management of terrestrial as well as marine wildlife habitats to sustain current and future use in different ways. The idea of environmental conservation in terms of protection of the natural environment is ancient. Richard Grove, for instance, elucidated that, "as early as 450 B.C., Artaxerxes had attempted to restrict the cutting of the cedars of Lebanon."[96] A few years later, the Mauryan kings of Northern India followed by establishing elaborate wildlife conservation. Mainly, they protected forests and elephants.[97] Therefore, it can be observed that the history of environmental degradation and conservation is an old practice, but there is high concentration on terrestrial environment compared to marine issues.

Furthermore, with respect to the modern "environmental history," conservationism campaigns spread in the world during the 1850s. They were spearheaded by scientists to solve deforestation in tropical countries. Since the mid-nineteenth century, scientists in British colonial states influenced government environmental policies, especially concerning conservation of tropical forests in colonies.[98]

Some of the African practices over wildlife (marine and terrestrial) resources had conservation effects and implications. African societies have carried out such practices since pre-colonial era. Examples of regulating activities and protecting wildlife in some areas such as ritual and worshiping places protected areas in and around those places such that they had conservation impacts for a long time. Nonetheless, conservation as a movement in Africa is a relatively recent phenomenon.[99]

With advent of colonialism in Africa, in a later period from the mid-twentieth century, the British colonial governments began to practise environmental conservation. The role of the state in protection of natural resources in the British colonies was highly emphasised. Influential colonial officials emphasised on conservation of the

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[96] Richard H. Grove, *Green Imperialism Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600-1860*, (New York: Cambridge University Press, 1995), 6.

[97] Ibid.

[98] Ibid., 1-2

[99] David Anderson and Richard Grove, "Introduction: The Scramble for Eden: Past, Present and Future in African Conservation," in David Anderson and Richard Grove (eds.), *Conservation in Africa: People, Policies and Practice*, (Cambridge: Cambridge University Press, 1987), 1-3.

environment as opposed to the local communities or private owners of the resources[100]. Apart from specialists such as botanists, medical officers and veterinary officers in the colonial administration, there were also travellers and missionaries who used their professions and occupations to "legitimise" their points of view concerning conservation of natural resources.[101] This shows that in addition to economic exploitations, colonial governments introduced systematic ways of environmental conservation in parts of Africa.

Major ideas of the colonial conservationists included restoration of ecological balance against devastation of some Africans and controlling some "human and animal diseases: for example malaria, sleeping sickness, and tick-borne cattle diseases such as red water and East Coast fever."[102] However, the colonial state in South Africa had different approaches on conservation in areas where Africans lived and areas for the settlers (White farmers). In the former, the colonial state used a coercive approach as opposed to persuasion in the latter population groups.[103] In addition, ideas behind conservation, especially against soil erosion in South Africa were accelerated by drought events in the country before and during the 1920s as well as the American dust bowl in the 1930s.[104]

There were different methods used to control and restore the environment including soil erosion. One of methods used in South Africa, for instance, was construction of "contour banks" or "ridge terraces" to control soil erosion. However, people protested against the method of soil conservation whereby they complained that the practice disregarded extant traditional methods of channelling waters to the field.[105] In some cases, colonial officials rushed to conclusions and generalised the problem and solution after observing a few areas without considering different zones.[106]

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[100] Beinart, "Introduction," 148.

[101] Beinart, Ibid.

[102] Beinart, Ibid.

[103] Beinart, Ibid. 152-3.

[104] Beinart, "Introduction," 151-2.

[105] Ibid., 144-5.

[106] Ibid., 151.

Environmental conservation in some places in Africa during the colonial period was used to check land degradation as well as a means for controlling Africans and "poor" non-Africans (in South Africa) by limiting their access to land and other natural resources for benefit(s) of the white settlers.[107] However, settlers defended their rights to control land and excluded others (Africans and poor Whites) as a stance intended to conserve natural resources (land) as opposed to personal material benefits.[108] The colonial officials in South Africa partly shared ideas that Africans were causing environmental degradation and they had to be restricted to access some areas of natural resources. Beinart put it as follows:

> These conservationist ideas were projected, at the turn of the century, by officials servicing a rapidly expanding settler agriculture sector, and it was settler methods which stimulated their concern. Fears of the consequences of 'erosion and desiccation' were urgently voiced; settlers were 'scooping out the richest and most beautiful valleys, leaving them dry and barren' [land]... By the 1930s and 1940s, it was commonplace for both settlers and officials in southern Africa to describe African agricultural methods as careless and dangerous to the environment. And conservationist-minded officials were attuned to any perceived threat to the natural resources, from whatever source.[109]

In the end, laws were made and forests as well as game rangers enforced them to restrict Africans in South Africa, including their access to forested areas where the Africans looked for wood for energy, building materials and wild foods like animals, fruits as well as honey. Almost the same patterns of use of natural resources, albeit, different scenario, were established in Zanzibar during the British colonial era from the time it established forest reserve areas in 1945.

Karl S. Zimmerer and Thomas J. Basset quoted a political ecologist, Stan Stevens, in describing the way the Yellowstone Model influenced protected areas and conservation activities in the world. The model resulted in restricting local people's access to resources and therefore, became a source of spatial conflict, especially

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[107] William Beinart, "Soil Erosion, Conservationism and Ideas about Development: A Southern African Exploration, 1900-1960", Journal of Southern African Studies, Vol. 11, No. 1 (Oct., 1984), 55.

[108] Beinart, Ibid.

[109] Beinart, "Soil Erosion, Conservationism", 55 and 61.

between the government and communities. In due regard, problems resulting from the Yellowstone Model provided room for other ways of conservation that involve participation of local communities in the activities.[110] Local actors and communities collaborate with "nonlocal actors such as national governments, transnational corporations and international non-governmental organisations (NGOs)"[111] in conservation of natural resources. This study sought to expand the said debates about environmental conservation from the colonial period backwards to pre-colonial period and to bring it forth to the post-colonial era in the analysis. In this case, the researcher examined whether or not local communities conserved marine environment before British colonialism and aspects that happened after their encounter with different environmental perceptions from the British. The study went further in terms of evaluating conservation activities during the post-colonial era.

Other significant debates that are related to environmental conservation in Africa include "traditional knowledge" and "indigenous knowledge." It was important to discuss these concepts for this study because the researcher intended to use local community members' knowledge, concepts and perceptions together with western scientific perceptions on environmental management and conservations in the analysis. Therefore, by understanding these debates, the researcher subsequently discusses the manner local people perceived and managed their own environments.

By speaking of indigenous knowledge, it is important to establish whether or not indigenous knowledge is synonymous with traditional knowledge. Traditional knowledge is a way of thinking, perceiving and practising different aspects of knowledge for subsistence that is passed down orally for generations among members of the local community. Where else, indigenous people refer to original or first known people living in a place.[112] Therefore, traditional knowledge held by the group is indigenous. Traditional information and practices from other people who are not

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[110] Karl S. Zimmer and Thomas J. Bassett, "Approaching Political economy: Society, Nature, and Scale in Human-Environmental Studies," in Karl S. Zimmer and Thomas J. Bassett, *Political Ecology: An Integrative Approach to Geography and Environment Studies*, (New York: The Guilford Press, 2003), 5.

[111] Zimmer and Bassett, Ibid., 6.

[112] Felix Mukwiza Ndahinda, *Indigenousness in Africa: A Contested Legal Framework for Empowerment of 'Marginalized' Communities*, (The Hague: T.M.C. Asser Press, 2011), 155; and Seán Patrick Eudaily, *The Present Politics of the Past: Indigenous Legal Activism and Resistance to (Neo)Liberal Governmentality*, (New York: Taylor & Francis, 2005), 1.

indigenous are regarded as traditional knowledge. In this case, indigenous knowledge can also be traditional, whereas traditional knowledge is not necessarily indigenous.[113] For instance, traditional knowledge of the San of South Africa (the indigenous in the place) is indigenous, while "the information passed down by early South-African whites through traditional means"[114] is regarded as traditional knowledge but not indigenous knowledge.

Moreover, 'traditional' is linked to the local, which is used as a spatial and cultural identification of a particular community. Nevertheless, while applying terms and meanings such as local and traditional to particular people, there has to be consideration that the local actors are also global actors. Spatial actions are at times dual in nature. Walley contends that local is a globalised word for a "native" under European colonialism.[115] Therefore, the historical transformation of the term traditional is seen as it can be used to provide a spatial and cultural identification of a certain community together with knowledge in relation to global phenomena of cultural interactions.

One of Beinart's major ideas is significance of indigenous knowledge concerning environmental conservations. He suggests that traditional African resource use and control should be seriously considered when planning for environmental control as well as protection. As Beinart put it:

> Western sciences and the practices, which derived from it, as well as 'peasant science' or rural practices, should both therefore be subjected to rigorous historical examination if the pattern of state intervention and the potential for more successful and less conflictual policies is to be explored.[116]

In the debate about indigenous environmental control in Africa, it was contended that the loss of the indigenous ability to control the environment caused by external agency, such as the European penetration and control, resulted in an

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[113] Ndahinda, Indigenousness in Africa, Ibid.

[114] Ndahinda, Ibid.

[115] Christine J. Walley, *Rough Waters: Nature and development in an East African Marine Park*, (Princeton: Princeton University Press, 2004), 11.

[116] William Beinart, "Introduction: The Politics of Colonial Conservation," *Journal of Southern African Studies, Vol. 15, No. 2, Special Issue on the politics of Conservation in Southern Africa*, (Taylor and Francis Ltd., January 1989), 146, Source: http://www.jstor.org/stable/2636798 Accessed 2 October 2011

accelerated spread of diseases such as trypanosomiasis in some places of Tanganyika.[117] For instance, colonialism restricted and retarded the local people's ability to continue with their traditional knowledge practices, some of which had environmental control benefits. As Helge Kjekshus says:

> Disruption [made by colonialism] visited most indigenous agencies, technologies and practices, whether for trading and transportation or ecological control (grass burning, transhumant cattle herding or settlement patterns). Also, systems designed for human survival were negatively affected. This was the beginning of the transformation from man-controlled terrain in the 1890s to wildlife domains in colonial times.[118]

Following the presented discussion, this study examines the interventions of the British colonial authority in the use and conservation of mangroves and fishing resources in Zanzibar. In addition, the researcher examines the impact upon traditional knowledge and reaction of the local communities to interventions.

Moreover, dispositions of indigenous knowledge such as land use without proper preparations, plans and probably without clear understanding of nature as well as practices of concerned communities are likely to cause problems. Such type of control and interventions were not peculiar to the colonial period, although some continued after independence. Idriss S. Kikula, quoting from R.K. Udo, provides examples of several African countries with these phenomena, especially concerning use and conservation of natural resources. He provided examples of resettlements of communities after independence in countries such as Cameroon, Zambia, Nigeria, Tanzania, Kenya and Zaire.[119] Resettlements rendered some communities powerless on their natural environment and resources. The idea of development in terms of easy access to social services such as schools and clean as well as safe water for domestic use were good, although their implementation reduced their expected efficacy. Such

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[117] Eginald P.A.N. Mihanjo, "Colonial Policy On Sexually Transmitted Diseases And Other Infectious Diseases In Tanganyika, 1900-1960", In Yusufu Lawi and Bertram Mapunda (eds.), *History Of Diseases and Healing in Africa: Proceedings of a Workshop Held at the University of Dar es Salaam 20th December 2003*, (Dar es Salaam: GeGCA-Nufu - University of Dar es Salaam 2005), 90-91.

[118] Kjekshus, *Ecology Control*, xxi.

[119] Idriss S. Kikula, *Policy Implications on Environment: A Case of Villagisation in Tanzania*, (Dar es salaam: DUP (1996) Ltd., 1997), 13; and R. K. Udo, "Disintegration of Nucleated Settlement in Eastern Nigeria," Geographical Review, vol. 55, No. 1, (January 1965), p. 53-67.

situation might be equally related to communities' inability to practise their traditional practices in their natural settings due to foreign intervention, especially when colonialism began in the nineteenth century in Zanzibar and other places in Africa.

Conservation as discussed here forms a significant part in the analysis of this dissertation. It is important in two ways: first, it was used to trace and analyse the history of use including conservation of mangroves and fishing in Zanzibar from pre-colonial, colonial to post-independence periods; and second, it was used in conjunction with the concepts about the external influence to draw useful colonial environmental control that was part of colonialism in Africa and Zanzibar, in particular.

2.6 Environmental History Debate

Environmental history is another important aspect in analysis of history of use and conservation of marine resources in Zanzibar. The debates about the historical trend of environmental issues in Africa from the time before encounter with colonial influence up to the period when the Africans countries gained independence provides milestones for analysis of this work. The analysis sought to find answers to conceptual and empirical issues, such as local people's perceptions on their natural environments in Zanzibar and the manner they regarded their marine resources. Moreover, it traced changes of perceptions in various periods of history of Zanzibar and what caused such changes, if any.

Environmental history is an account and examination of relationships of changing human societies and natural environments[120] including the way they influence one another over a certain period. It involves analysis of changes of perceptions of society concerning environmental transformation. Therefore, environmental history "...studies the mutual effects that other species, natural forces, and cycles have on humans and the actions of humans that affect the webs of connections with non-human organisms and entities."[121] Environmental history, for instance, examines the important socio-economic transformations that took place in Zanzibar in the nineteenth century. It evaluates how such changes contributed to transform natural environmental settings in both Unguja as well as Pemba and vice versa. Therefore, the researcher specifically

[120] Johnson Donald Hughes, *An Environmental History of the World: Humankind's Changing Role in the Community of Life* (London: Routledge, 2001), 4.

[121] Ibid.

examines the way clove plantations contributed to transforming society and environment in Zanzibar as well as influence of such developments on the environment in relation to marine resources such as mangroves and fish.

Moreover, not only practices of land use as such, but also the manner roles of norms, knowledge and perception of natural environment play an important role in debates about environmental history. Difference between knowledge and perceptions of the local people on one hand and that of the western scientists on environmental issues are very significant.[122] In studying the environmental problems and implications resulting from villagisation in Tanzania, Idriss Kikula examined "the biophysical environmental changes and local peoples' perceptions." Kikula emphasised the significance of understanding local people's perceptions to have a clear and fruitful future in resource use and management through different policies.[123]

Environmental issues during the colonial era were considered the second to economic considerations. Environmental conservation was conducted with assurance that the natural environment enabled colonial governments in Africa to fulfil their capitalists' objectives. Priority was to fulfil demand and interests' of the metropolis in Europe, especially in terms of raw materials. Second, it was necessary to fulfil demands and interests of settlers in the colonies. Third, the colonial government had to ensure that human and natural resources in African colonies provided socio-economic benefits to cater for administration of concerned colonies. In this study, the researcher examines the manner colonial officials cared for the environment and how their environmental perceptions met as well as coped with those of local Africans in Zanzibar.

In terms of environmental history in Africa, another important debate divides historians into two groups of academic discourses: there are proponents of the idea of a 'merry Africa' and those of a 'primitive Africa'.[124] The myth of merry Africa is all about the glorious period of economic and environmental control as well as peace (in humanity and ecology) in Africa. Africa is considered that it was a continent of 'milk and honey' prior to the intrusion of the European colonialism from the 1880s

[122] Kikula, Policy Implications, 12-15.

[123] Kikula, Ibid.

[124] For more discussion see: Anthony G. Hopkins, *An Economic History of West Africa*, (London: Longman Group Ltd., 1973), 9-10; and Juhani Koponen, *People and Production in Late Precolonial Tanzania: History and Structure*, (Jyväskylä: Gummerus Kirjapaino Oy, 1988), 20 - 22.

onwards.[125] The pre-colonial era is considered a friendly and hospitable period with sufficient rainfall as well as food availability. Colonial invasions in the end of the nineteenth century interrupted and destroyed that situation.[126] In contrast, ideas of primitive Africa considered the African continent as land of famine, hunger and diseases. Hopkins further argued that "according to this interpretation, Africa's release from barbarism waited until the close of the nineteenth century, when the Europeans came"[127] to rescue the predicament situation and made efforts to civilise the African society.[128] However, both historical interpretations ignored local African initiatives on different issues, which some had environmental impacts.[129] It is this issue of the African local initiatives such that this study was interested and endeavoured to trace as well as document African efforts on environmental protection in Zanzibar. It enables the study to contribute to the debate concerning conservation of marine resources in Zanzibar. The study examined local methods of use and conservation of mangroves together with fishing resources from the period prior to British colonialism up to post-colonial era.

2.7 The Commons Debate

This conceptual debate is important in this study because it relates to the normative rights of people over lands. Therefore, the researcher discusses it here and considers how society can avoid the "tragedy of the commons." The commons is a paradigm of environmental governance over land, water, wildlife, air and other natural resources by the public or a certain social community living close to these resources.[130] Therefore, the term “commons” includes all societal and natural properties that a given community has a freedom of access to and can utilise as well as conserve for

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[125] See the following: James Giblin and Gregory Maddox, "Introduction," in Gregory Maddox, James Giblin and Isaria N. Kimambo, *Custodians of the Land: Ecology and Culture in the History of Tanzania*, (London: James Currey, 1996), 2-3; Hopkins, Ibid., 10; and Koponen, Ibid., 21-2.

[126] Giblin and Maddox, Ibid.; Also; Hopkins, 10; Kjekshus, *Ecology Control*, 7, 17, 21, 27, 46, 126-7; and Koponen, Ibid., 21-2.

[127] Hopkins, Ibid., 10.

[128] See Koponen, Ibid., 22, quoting John Iliffe, *Modern History of Tanganyika*, (Cambridge: Cambridge University Press, [1979] 1994)

[129] Giblin and Maddox, Ibid, 2.

[130] David Bollier, "The Future of International Environmental Law: A Law of the Ecological Commons?" in *International Environment Law and World Order: A Problem-Oriented Coursebook* (West Group, 2012), Source: http://dlc.dlib.indiana.edu/dlc/bitstream/handle/10535/7827/Law%20of%20Ecological%20Commons%20chapter.pdf?sequence=1 Accessed 21 December, 2013.

sustainable individual and social benefits.[131] The commons are shared resources that a community should use and safeguard "for long-term common benefit."[132]

The role of the state is to supervise functionality of the community upon using the commons' resources, whereas the community under these circumstances shares use, conservation and other responsibility related to resources in question.[133] David Bollier further confirms that:

> Typically, a commons consists of non-state resources controlled and managed by a defined community of commoners, directly or by delegation of authority. Where appropriate or needed, the state may act as a trustee for a commons or formally facilitate specific commons, much as the state chartering of corporations facilitates market activity. But a commons need not be state sanctioned in order to be effective or functional.[134]

Moreover, Bollier cautions that the commons also involve cultural as well as customary phenomena and it is situational-specific. He exemplifies the case in which the government can take charge of a river for irrigation and set rules for use to limit others from using it.[135] Likewise, the government may intervene on use of the sea or ocean if necessary, by temporarily limiting fishing activities or any other use deemed to deplete marine resources.[136]

However, one of the major setbacks for the commons is the issue of "individuals [who are] driven by self-interest" and can end up depleting the resources[137] such as fish and forests for fishing and timbers, respectively. This leads to tragedy of the commons, which represents the possibility that some community members who are liable to use

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[131] Tomales Bay Institute, "The State of the Commons: A Report to Owners", (2003), 3; Source: http://bollier.org/sites/default/files/State%20of%20the%20Commons.pdf accessed 22 December 2013

[132] Tomales Bay Institute, "The State of the Commons", 5.

[133] Bollier, "The Future."

[134] Ibid.

[135] Ibid.

[136] The House of Representative of Zanzibar, "Fisheries Act of 1988," Part II Section 7 & 8, (8 April 1989), p. 9-12. http://zanzibarassembly.go.tz/act%201988%20pdf/ACT%208.pdf Accessed: 20 December 2013

[137] Daniel J. Rankin, Katja Bargum, and Hanna Koko, "The Tragedy of the Commons in Evolutionary Biology," in *Trends in Ecology and Evolution*, Vol. 22 No. 12, (2007), 743.

the shared (the commons) properties might misuse the resources to their depletion.[138] Therefore, in order to solve problems that result from the self-interested driven individuals, Hardin advised two solutions: firstly, use of authority from government institutions; and secondly, privatisation of resources to some people to manage resources to sustainable utilisation.[139] In addition, the researcher argues that depending on the context and nature of the community, government authority may not be necessary. With a well-organised traditional management of natural resources, with limited or no interference from the government, the common resources can be sustainably utilised. This study examines the manner use of marine resources in Zanzibar represented ideas of the commons, given that many of the mangroves and fishing areas were common properties. Moreover, it explores how the Zanzibar community regulated land use rights before the colonial era and after encounter with foreign practices and interventions.

2.8 Conclusion

This chapter presents terms and concepts that feature in discussions and analysis of this dissertation. The concepts and debates such as use, marine resources, colonialism, conservation, environmental history and the commons are presented here as a way of setting the ground for discussions in this work. The impact of human activities on the environment have a long history such that they begun during the pre-colonial period. However, a significant environmental influence took place in the colonial period. In addition, environmental issues were considered variously in different periods of colonial rule and post-independence era in Africa. The discussion and debates of these concepts is a continued theme and call for further environmental discussions.

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[138] See the following: Garrett Hardin, "Tragedy of the Commons," *Science Vol. 162 No. 3859*, (13 December 1968), 1244-45, Source: http://www.sciencemag.org/content/162/3859/1243.full accessed 20 December 2013; Human4832, "Garrett Hardin on the Tragedy of the Commons and Resources," Source: https://www.youtube.com/watch?v=L8gAMFTAt2M accessed: 12.01.2014; Jennifer Clapp and Peter Dauvergne, *Paths to a Green World: The Political Economy of the Global Environment*, (Cambridge: MIT Press, 2005), 10; and H. Scott Gordon, "The Economic Theory of a Coomon-Property Resource: The Fishery", *The Journal of Political Economy*, Vol. 62, No. 2 (April, 1954), 124.

[139] Leticia K. Nkonya, Rural Water Management in Africa: The Impact of Customary Institutions in Tanzania, (Amherst: Cambria Press, 2008), 56-58.

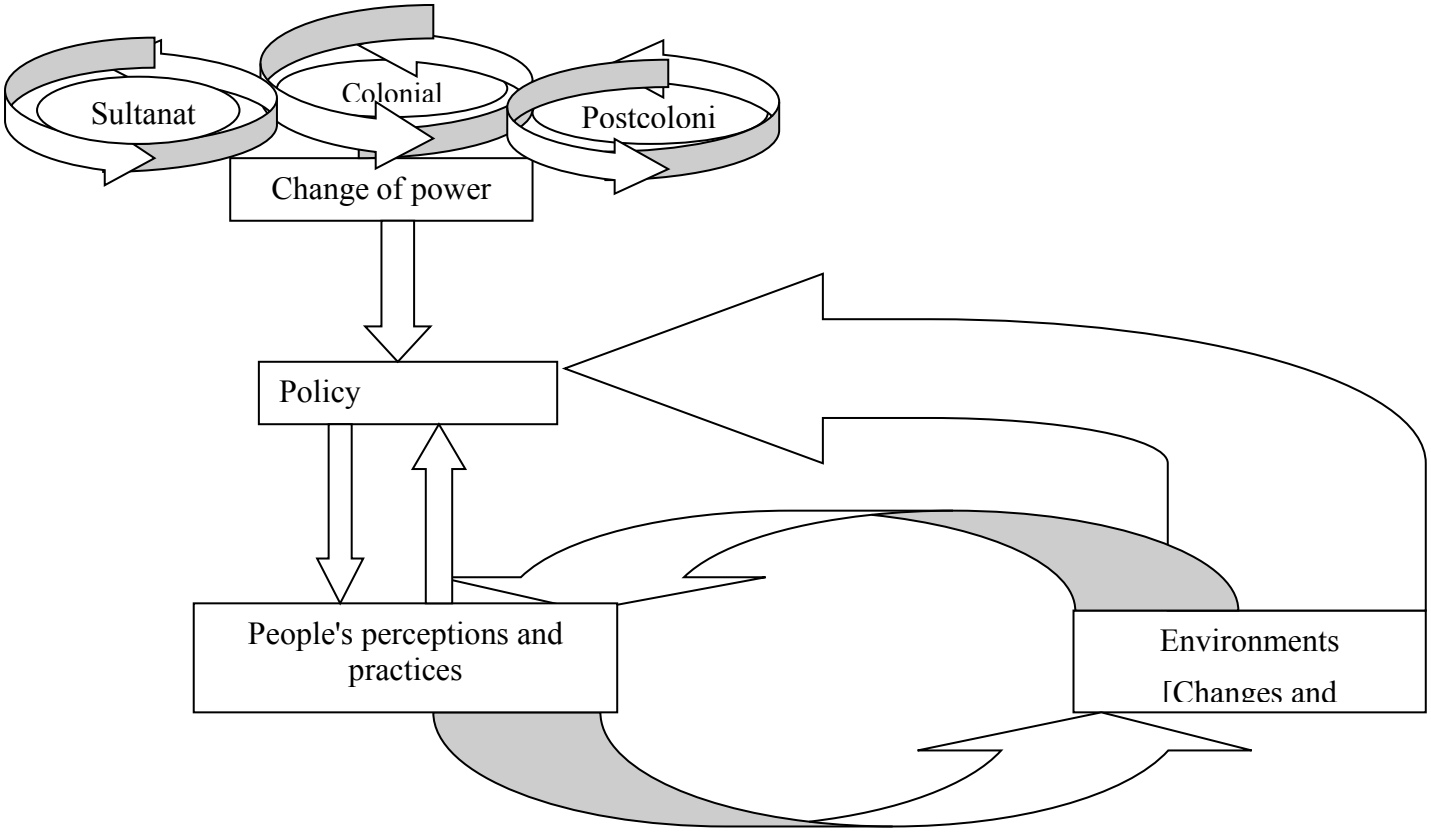

Figure 2.1 Theoretical Model on Use of Natural and Marine Resources

CHAPTER THREE

AN OVERVIEW OF THE HISTORY OF ZANZIBAR AND THE ROLE OF MARINE RESOURCES, 1840s-1890

Water covers more than 70 percent of the earth's surface, and more than half of the world population lives within 80 kilometres of the sea... For coastal society the sea is not the end of the world, but the beginning of a whole new world of resources and opportunities. It is the source of food and construction material.[140]

3.1 Introduction

The History of Zanzibar is inextricably connected with marine environments and resources. The genesis and historical development of the islands were guided by transformations taking place in the larger Indian Ocean world, including Zanzibar. As the quotation above shows, the sea is the source of wealth, cultural development and a pride from which people develop as well as test their cultural including technological advancement for coastal communities such as the Zanzibari. Using skills and technologies of the ocean, coastal communities reap marine resources for further development and socio-economic well-being.[141] Through the ocean, Zanzibar was able to intermingle with other communities in the world for millennia and entered socio-economic exchanges. Marine resources were among the most significant livelihood components of coastal communities of Zanzibar Islands. Although agriculture has been a major economic activity for majority of people in Zanzibar, use of marine resources, which include different types of fish, molluscs and varieties of plants, mainly, mangroves, form a significant base for communities' livelihoods in Zanzibar islands.

For several millennia, Zanzibar societies used and conserved marine and terrestrial resources in many ways. The way people used and benefitted from terrestrial resources influenced on use and conservation of marine resources in Zanzibar since the

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[140] A. Sheriff, *Afro-Arab Interaction in the Indian Ocean: Social Consequences of the Dhow Trade*, Occasional Paper No. 13, 2001, (Cape Town: The Centre for Advanced Studies of African Society - CASAS, 1998), 1.

[141] Abdul Sheriff, *Dhow Cultures of the Indian Ocean: Cosmopolitanism, Commerce and Islam*, (London: C. Hurst and Co. (publishers) Ltd., 2010), 2.

pre-colonial period. For instance, land tenure in Zanzibar during the pre-colonial era influenced on use, conservation and ownership of marine resources, especially fishing grounds. Methods of distribution and land use in communities contributed to transforming affairs on the ocean.

Therefore, marine resources were used as an important alternative and complement for people to seek for socio-economic refuge whenever there were increased pressures on terrestrial resources.[142] For example, development of clove production and expansion of Zanzibar city (Stone Town) from 1840 transformed use and conservation of mangroves as well as fish. After introduction of cloves in Zanzibar around the 1810s[143] and expansion the lucrative crop from 1840, clove plantations took over many areas of forests and farms for food crops. Fertile land that had been used for rice and coconut farming was taken over by clove plantations during that period.[144] Development of clove plantations deprived many people of their rights of access to resources such as firewood, wild fruits, medicinal plants and game meat. Such developments forced many people to concentrate on marine resources for their subsistence. For instance, mangrove forests became the main viable source of firewood and construction materials, while fish became the only major source of animal vitamins.

Communities in Zanzibar have been skilled and they are able to use both terrestrial and marine resources, which had different environmental conditions. They managed to employ almost identical methods to sustain resources from both areas. While the land tenure system depended on population and settlement distributions, soil fertility highly determined and guided land use and ownership patterns. That was also the case with marine resources. The fishing opening and closing system as well as

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[142] Peninah Aloo, "Marine Resources," in Jan Hoorweg, Dick Foeken and R. A. Obudho Eds., *Kenya Coast Handbook: Culture, Resources and Development in the East African Littoral,* (London: Transaction Publishers, 2000), 43.

[143] There are different dates for introduction of the cloves in Zanzibar. For example; A. Sheriff contends that they were introduced around 1910; J. Middleton says it was around 1918 and A.N. Al-Ismaily (p. 60) also says it was in 1818. Only F. Cooper says it was introduced in the 1930s.

[144] However, in a later period of the nineteenth century, coconut became commercially more valuable, and people started to grow on a plantations scale as opposed to the former period when the crops were cultivated for household consumption; see ZNA/BA 24/3, W. R. McGeagh, "A Review of the System of Land Tenure in the Island of Zanzibar," (compiled unpublished report, August 1934), 3 & 7.

ownership of *vilindi*[145] and fishing within and around the *vilindi* determined who, when and how fishermen had to fish.

Therefore, this chapter discusses the history and coastal ecology of Zanzibar, including the way people used marine resources, particularly mangroves and fish before the British colonial period. It also analyses about other terrestrial resources, especially land for agriculture, forests and urban expansion as well as how they influenced on use and conservation of marine resources in Zanzibar before British rule. The chapter also analyses development and expansion of the Zanzibar commercial empire on the Swahili coast in respect to marine resources. It discusses how its integration in the capitalist world gradually began to dismantle the empire and resources during the age of partition, which saw Zanzibar becoming separated from the coast of Tanganyika as well as Kenya and ended up under British colonial domination in 1890.

3.2 Pre-colonial Marine Resources and Land Tenure

3.2.1 History and Marine Resources

Zanzibar islands have been visited and inhabited by fishermen as well as merchants for over two millennia. Since the first millennium CE, merchants from different parts of the Indian Ocean sailed using monsoon winds to trade with Zanzibar and the East African Coast.[146] The merchants established trade centres, settlements and networks along the East African littoral from Mogadishu in Somalia to Cape Delgado in Mozambique.[147] Using their dhows, traders brought items such as porcelains, glass beads, cloth as well as dried fish and they returned when the monsoon winds changed. They took with them cargoes of ivory, tortoise shells, iron, gold and timber – mainly,

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[145] The *kilindi* (sing.) or *vilindi* (pl.) are deep waters or channels. Normally these are relatively deep water spots on corals that they usually have plenty of fish as they are close to or part of the breeding places for fish.

[146] See: Abdul Sheriff, *Slaves, Spices and Ivory in Zanzibar: Integration of an East African Commercial Empire into the World Economy, 1770 - 1873*, (London: James Currey, 1987), 8; and Francesco Siravo, *Zanzibar: A Plan for the Historic Stone Town*, (Zanzibar: the Gallery Publication, 1996), 11; see also, Gerrishon K. Ikiara, "Employment," in Jan Hoorweg, Dick Foeken and R. A. Obudho (eds.), *Kenya Coast Handbook: Culture, Resources and Development in the East African Littoral,* (Hamburg: LIT Verlag, 2000), 238.

[147] Siravo, *Ibid.*, 11, and Sheriff, *Slaves, Spices and Ivory*, 10; see also, A. H. J. Prins, *Sailing From Lamu: A Study of Maritime Culture in Islamic east Africa*, (Assen: Van Gorcum & Comp. N.V. 1965), 2-3.

mangrove poles as well as some slaves.[148] Therefore, Zanzibar and the East African coast, in general, became one of significant parts of the commercial system in the Indian Ocean, as "an intermediate zone of exchange between various producing and consuming zones around the Ocean."[149]

Intermingling between merchants and other people from different areas in the Indian Ocean as well as the Persian Gulf who permanently settled on the East African coast together with the established Africans in Zanzibar and other littorals of East Africa resulted in development of Swahili civilisation and a series of Swahili city-states from Mogadishu to Cape Delgado.[150] As the origin and development of city-states was mainly based on commercial relations among themselves and the Indian Ocean world, it pointed to significance of marine life in socio-economic wellbeing of Swahili communities and Zanzibar, in particular.

In terms of fishing, Zanzibar and the east African coast, in general, depend on a narrow continental shelf compared to other areas such as the Gulf of Oman and the Arabian Sea, which scientists and economists have referred to as among "the most productive regions in the world."[151] A continental shelf is generally considered to be limited to water shallower than 150 metres, with a slope of about 0.5 degrees, and less than about 20 metres of vertical relief. A general average width of the shelves is about 80 kilometres.[152] The width of continental shelf of the east African coast is generally between five kilometres and slightly less than 80 kilometres. Peninah Aloo informs that "the sea bed drops rather sharply after the continental shelf plunging to depths of 200

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[148] Siravo, *Ibid*., and Sheriff, *Dhow*, 11, 32, .

[149] Sheriff, *Slaves, Spices and Ivory*, 8.

[150] Ibid.

[151] Vivian Louis Forbes, "Arabian Sea", in John Zumerchik and Steven L. Danver (eds.), *Seas and Waterways of the World: An Encyclopedia of History, Uses, and Issues, Volume1,* (California: ABC-CLIO, LLC, 2010) 24. See also, Gulf Solidarity Committee, *Oman: A Class Analysis*, (Oregon: The Organisation of Arab Students in the U.S. and Canada and the Gulf Solidarity Committee, 1975) 13-14.

[152] "New World Encyclopaedia: Organizing Knowledge for Happiness, Prosperity, and World Peace" at http://www.newworldencyclopedia.org/entry/Continental_shelf accessed July 25, 2013, and Wikipedia Free Encyclopedia, "Continental Shelf" http://en.wikipedia.org/wiki/Continental_shelf accessed July 27, 2013

metres."[153] For instance, Kenya, which shares coastal borders with Zanzibar, has a shelf, whose width extends from five kilometres south of Malindi to around 60 kilometres to the north. The continental shelf in Tanzania "is relatively narrow, typically 8 - 10 kilometres wide, but extending to a little over 40 kilometres around Zanzibar and Mafia."[154] The continental shelf is a highly productive part of the ocean in terms of marine and other natural resource, providing more support to the ecosystem than other parts of the ocean. Therefore, the narrow continental shelf results in relatively limited availability of marine resources in the area.[155]

Zanzibar islands are endowed with many marine natural resources, including different species of fish and mangroves. Mangroves are trees that enjoy both terrestrial life as well as marine life and the trees grow healthily when getting mineral contents and water from land, but they also need oceanic mineral contents and nutrients.[156] Therefore, mangroves grow in or close to intertidal zones of estuaries.[157] The trees are sustained by ocean currents while protecting land from the havoc of the currents thereby providing breeding grounds and shelter for fish.[158] The mangroves provide fishing grounds and landing sites to many fishers. While most marine fish could be sustained in oceanic waters, few such as turtles and crabs also enjoy the worlds outside waters.

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[153] Aloo, "Marine Resources", 44. See also; F. Williams, *Preliminary Survey of the Pelagic Fishes of East Africa*, Fishery Publication Number 8, (London: Her Majesty's Stationery Office, 1956), 3.

[154] Mark D. Spalding, Corinna Ravilious and Edmund P. Green, *World Atlas of Coral Reefs*, (Berkeley: University of California Press, 2001), 183 and 186.

[155] See the following: Aloo, "Marine Resources", 44 and 48; Sheriff, *Dhow Cultures*, 33; Ahmad Razavi, *Continental Shelf Delimitation and Related Maritime Issues in the Persian Gulf*, (The Hague: Kluwer Law International, 1997), 95; Katrien Töpke, "Continental Shelf," September 18, 2008, http://www.marbef.org/wiki/Continental_shelf, accessed, September 20, 2013; and United Nations, *United Nations Convention on the Law of the Sea* (New York: Nova Sciences Publishers, Inc., 2009), 43-45.

[156] Paramita Punwong, "Holocene Mangrove Dynamics and Sea Level Changes: Records from the Tanzanian Coast," Unpublished PhD Dissertation: University of York, 2013, 70.

[157] See: Mami Kainuma, Lorna Collins and Mark Spalding, *World Atlas of Mangroves*, 1; and Paramita Punwong, Ibid.

[158] Abdulrahman Juma, *Unguja Ukuu on Zanzibar: An Archaeological Study of Early Urbanism*, (Uppsala: African and Comparative Archaeology - Uppsala University, 2004), 44; and Mami Kainuma, Lorna Collins and Mark Spalding, *Ibid*, 67.

3.2.2 Land Tenure and Resource Implications

Land ownership in Zanzibar depended on population and settlement distribution patterns. The two were also influenced by (i) the type of soil in different places; (ii) development of clove and coconut (copra) cultivation; and (iii) expansion of Zanzibar City. These factors were related and inter-dependent.[159] Although the land tenure system was similar in both main islands of Unguja and Pemba, there were some significant variations. The variations came from different soil types and fertility available in the islands including interethnic mixture, which were more pronounced in Pemba than Unguja.[160]

There are different soil types in Zanzibar. In Unguja, deep sandy types of soil prevail, especially on the western coast. The area had dense forest before the coming of Omani-Arabs and development of cloves into plantations from the 1840s. Development of clove plantation caused deforestation. The most fertile clay soil (*kinongo* or *kinamo* in Swahili[161]) can also be found on Unguja. Such soil is divided into two types, deep and shallow *kinongo*. The deep *kinongo* soil is widely distributed in the north, east and south of Unguja, supporting coconut plantations and permanent settlements. In some parts of Unguja, the soil also supports rice farming. About 40 percent of the Island comprises of shallow *kinongo* soil in coral rag areas or *maweni* and *uwanda* in Swahili. The areas hardly support cultivation and permanent settlement. However, there were patches of soils in the area that supported coconut cultivation and a few annual crops under shifting cultivation.

Settlements concentrated in areas with fertile soils. In the sandy soil areas along the coast, especially on the eastern coast, coconuts were cultivated. Although many people preferred to settle on areas that had deep *kinongo* soil, which could support coconuts and other permanent plantations, some indigenous populations concentrated in coral areas and close to the coast. They established fishing villages in the southern and south-eastern parts of Unguja. The western areas that had fertile soils and heavy

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[159] John Middleton, *Land Tenure in Zanzibar*, (London: Her Majesty's Stationary Office, 1961), 10.

[160] Middleton, *Land Tenure*, 52-3, 60.

[161] Mohamed A. Mohamed, *Comprehensive Swahili-English Dictionary*, (Nairobi: East African Educational Publishers Ltd., 2011), 335.

rainfall were covered with forests and thus, they were used as sources of wood for energy and other domestic uses as well as hunting up to the 1840s, when the forests were cleared and the area started to be used for clove cultivation.[162] Villagers who lived around the forests lost their sources of firewood, wild fruits as well as hunting area and began to concentrate on mangrove forests.

Soil fertility and rainfall are much higher on Pemba Island than on Unguja. Rural settlement density is also comparatively higher and spreads more evenly over the island.[163] In the west, there are hilly soils that were covered with forests up to the 1830s. Many valleys in the area are suitable and they are used for rice cultivation, much of which was exported to Mombasa and Arabia.[164] In the middle, there are *utasi* and *ubopwe* soils, which were mainly covered with reeds. The areas were later cleared for crop cultivation before they were transformed to clove plantation. Much of the east coast comprising sandy soil was used for rice farming. Moreover, it also consisted of coral rag area where food was cultivated. With introduction and development of cloves, forests were cut and food farms were transformed to relatively lucrative clove plantations.[165] Therefore, many people lost sources of food production and areas for firewood and fruit collections, as well as hunting areas thereby forcing the villagers to find alternative sources of wood for energy and building. Consequently, they focused on exploitation of mangrove forests.

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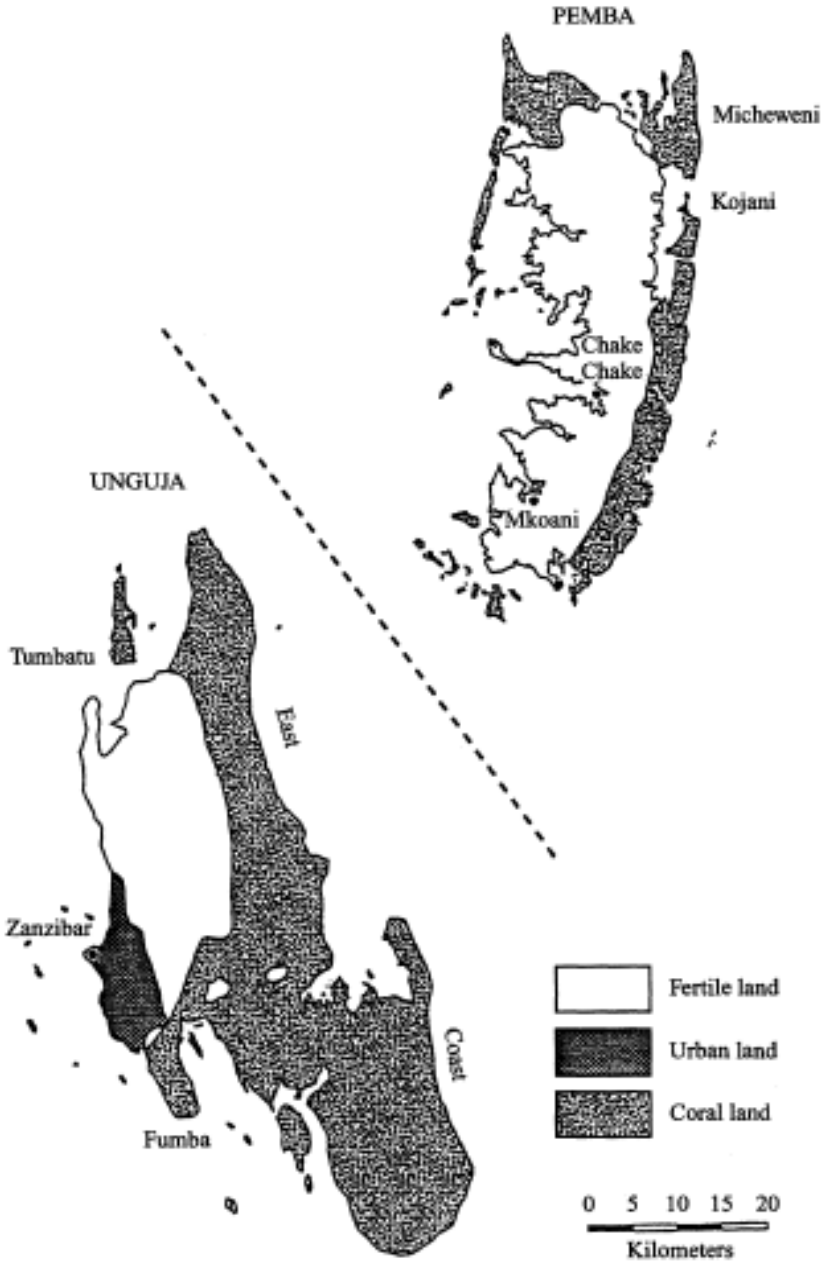
[162] See: Middleton, *Land Tenure* , 10-12; Abdul Sheriff, "The Peasantry Under Imperialism, 1873 - 1963", in Abdul Sheriff and Ed Ferguson (eds.) *Zanzibar Under Colonial Rule* (London: James Currey, 1991), 112 & 114; and Sheriff, *Slaves, Spices and Ivory*, 54 & 57.

[163] Middleton, *Land Tenure*, 52.

[164] Middleton, *Land Tenure*.; Sheriff, *Slaves, Spices and Ivory*, 17 & 54; and Sheriff, "The Peasantry" , 112.

[165] Sheriff, *Slaves, Spices and Ivory*, 54-56; see also, Garth A. Myers, "Political ecology and Urbanisation: Zanzibar's Construction Materials Industries," *The Journal of Modern African Studies*, Vol. 37, No. 1 (Cambridge: Cambridge University Press, Mar., 1999), 89.



Map 3.1 Soils of Zanzibar
Source: Garth A. Myers, "Political Ecology and Urbanisation", p. 88

In 1840, Seyyid Said bin Sultan shifted his capital from Oman to Zanzibar and started further expansion of both Zanzibar city and clove plantations. Expansion of clove plantations from the 1840s contributed to changes in the land tenure system and decline of self-sufficiency of Zanzibar in food crop production. In addition, expansion of clove plantations mainly involved two areas in Zanzibar: first, in the western part of

both Unguja and Pemba, major parts were still forested at that time and then, the western forests were cleared for cloves. For instance, in Unguja, areas from Zanzibar Stone Town northwards to Kizimbani, Mangapwani and Bumbwini were opened for clove cultivation.[166] Forest clearance deprived local communities from their forest resource use rights, such as collection of firewood, fruits, medicines and materials for housing like *fito,*[167] fibres as well as hunting for food. Consequently, the impact was felt on people's livelihoods. Development of clove plantations also had an impact on use of marine resources such as fish and mangroves. People were deprived from one source of animal protein, game meat from forests, while remaining with only one main source of animal protein, namely, fish. Other sources of animal protein comprised of livestock they kept.

Cleared forests also deprived the community from sources of traditional construction materials. House building involved trees for poles such as *boriti* and others. Moreover, people needed lime for building the houses and the process of making lime involved burning of coral stones, which needed much firewood previously obtained from forests. Therefore, people had to look for alternative sources to carry on with building their houses using lime, namely, mangroves along the coast. Consequently, the trend relatively increased pressure on mangrove forests from 1840s onwards. In addition to development of clove plantation at the expense of forests, Zanzibar city was expanded during the same period. Development of Stone Town, discussed later in this chapter, also added pressure on use of mangrove forests because it required more building materials such as poles and limes.

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[166] See the following: Middleton, *Land Tenure* , 12; Sheriff, *Slaves, Spices and Ivory*, 12 & 55; Mohammed Ali Bakari, *The Democratisation Process in Zanzibar: A Retarded Transition*, (Hamburg: Hamburg African Studies, 2001), 48 - 9; Christiane Reichart-Burikukiye, "The Railway in Colonial East Africa: Colonial Iconography and African Appropriation of a New Technology," in Toyin Falola and Emily Brownell (eds.), *Landscape, Environment and Technology in Colonial and Postcolonial Africa*, (New York: Routledge, 2012), 71; and Kirstin S. Siex, "Protected Area Spatial Planning for Unguja and Pemba Islands, Zanzibar," Unpublished consultancy final report submitted to World Wide Fund for Nature (WWF) from Wildlife Conservation Society (WCS), December 2011, 8.

[167] Poles of small size that are used for building houses

The forests were also used as places for taking temporary refuge during periods of social trouble.[168] In many coastal communities, some areas in the forests, particularly places where ancestors or inhabitants took refuge during violent periods such as invasions by foreigners, were regarded as sacred places.[169] It is likely that forests that were cleared included sacred places, which were consequently, destroyed. When discussing this due to clearing of forests for clove production, the researcher was provided with an example of a sacred place on Misali islet near Pemba, which fishermen and other people from Pemba Island used to visit to perform some traditional rites such as healing and divination.[170] Ali Juma also pointed out during interviews that social significance of such places has diminished due to several factors, including secrecy and privacy required when performing the rituals. There has been an increase of government activities and tourism in the island, especially after the area had been declared a protected conservation area and it was promoted with its advertisement as a tourist area.[171]

Agriculture and fishing have been crucial socio-economic activities in Zanzibar. Therefore, availability and easy access to agricultural land such as deep *kinongo* soil including marine resources guided settlements into specific areas like Makunduchi, Paje, Bwejuu, Unguja Ukuu, Micheweni, Shengeju and Vitongoji. As John Middleton argues:

> Settlements are situated on deep *kinongo* soil which can support coconuts and permanent or semi-permanent cultivation. Settlements are spatially distinct units and may be separated by several miles of coral land on which are merely

[168] Sheriff, *Slaves, Spices and Ivory*, 56.

[169] T. R. McClanahan, "Coral Reef Use and Conservation" in T. R. McClanahan, C. R. C. Sheppard and D. O. Obura (eds.), *Coral Reefs of the Indian Ocean: Their Ecology and Conservation*, (Oxford: Oxford University Press, 2000), 45.

[170] Interview with Ali Juma in Chake Chake, Pemba, June 2012

[171] Ali Abdullah, Ali Said Hamad, Ali Mbarouk Ali and Robert G. Wild, "Constituting the Commons: Crafting Sustainable Commons in the New Millennium," Unpublished paper presented at 8th Biennial Conference of the International Association for the Study of Common Property (IASCP), 31 May - 4 June, Bloomington - Indiana, 2000; and McClanahan, “Coral Reef Use”, 45.

> scattered fields under shifting cultivation, bush and occasional patches of grass, and a few winding paths between settlements.[172]

Although the terrestrial land tenure had no direct relation with marine resource ownership, it contributed to the way marine resources were used, conserved and owned in two ways. Firstly, the system of marine resource ownership, especially on issues of management of the resources, resembled management of terrestrial resources. For instance, *mvyale*[173] and *wakubwa wa mji*[174] managed both terrestrial and marine resources. Regarding marine resources, *mvyale* supervised and was always consulted on issues concerned with opening as well as closing periods of mangrove cutting and fishing, while the same applied to planting and harvesting periods in addition to supervision of land distribution.[175]

Secondly, changes in land use caused by development of clove plantations at the expense of forests and food crops, such as coconuts, paddy, cassava and sweet potatoes[176] propelled further change in socio-economic setup of indigenous people. Food production diminished and many people changed from food production to commodity production.[177] However, that happened with one exception, when coconuts later gained commercial value and were transformed to a plantation system, as opposed

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[172] Middleton, *Land Tenure*, 16.

[173] *Mvyale* (also *Mzale*) was locally recognised in the east African coastal places such as Zanzibar, Mombasa and Lamu, as a leader who had a duty of appeasing the spirits in the society. Also, *Mvyale*, was mediator in the communities and consulted in both fishing and agricultural issues. *Mvyale* was also countering the witchcrafts. See for example; John Middleton, *The World of the Swahili: An African Mercantile Civilization*, (New Haven, Connecticut: Yale University Press, 1992), 74; Sheriff, "The Peasantry", 116; and ZNA/BA24/5 R. W. H. Pakenham, *Land Tenure Among the Wahadimu at Chwaka, Zanzibar Island*, (Zanzibar: The Government Printer, 1947), 6, 8-9.

[174] The *Wakubwa wa Mji*, also known as the *Watu Wanne* was literally a council of elders in a village or a town, who in collaboration with the *Mvyale* managed the resources and other affairs such as land allocations, closing and opening of the mangrove cutting, in the local areas. According to Middleton, these people were "chosen from different kin-groups that compose the proprietors of the town". In some areas, especially among the Hadimu, these elders were known as *watu wa shauri*, the advisers that advises the *mvyale*, see, See; Middleton, Ibid, 17&18; Also, John Middleton, *African Merchants of the Indian Ocean: Swahili of the East African Coast*, (Long Grove: Waveland Press, Inc., 2004), 64, and McGeagh, "A Review of the System", 20.

[175] Pakenham, *Land Tenure*, 8, 28-9; Middleton, Ibid, 17, 18; McGeagh, Ibid., 6; and Sheriff, *Dhow*, 37.

[176] Sheriff, *Slaves, Spices and Ivory*, 54.

[177] Pakenham, *Land Tenure*, 20.

to when they were previously planted for subsistence.[178] From 1840s, many famers cultivated coconuts for exchange. Therefore, cultivation was mainly for exchange as opposed to the previous consumption habit.

Development of clove plantation had a significant impact on use of marine resources. Firstly, the diminishing food production, later from the 1860s, prompted Zanzibar to import more food items than it exported, especially rice.[179] Secondly, it can be assumed that people who produced food tended to sell a larger part of it than using it for subsistence. That was partly due to the "parasitic relationship between town and country...that kept town going"[180], which made indigenous peasants and slaves produce food commodities, including food they sold in Zanzibar town. Thirdly, the new perception of 'production for sale,' which began with production of the lucrative clove crop, gradually spread to food crops and also crossed over to mangrove trees as well as fish. People in rural areas slowly began to look at these resources mainly as items for sale in almost the same way like cloves were produced and consumed. That was the case because people took advantage of the growing demand for mangrove and fish products, especially in Stone Town, given that the city and its population were also expanding rapidly. Moreover, commoditisation of resources provided communities with supplement for subsistence due to the growing demand for money to cope with food and other goods, such as clothes imported from outside Zanzibar. Furthermore, commoditisation of marine resources was another viable option after "many of the food-producing and coconut-producing areas"[181] were acquired from the indigenous people and turned into clove-producing areas, a non-food cash crop. In that process, the emerging class of landowners marginalised indigenous peasants.[182]

To get back to the land tenure, there were different land tenure systems in Zanzibar and it is important to recognise them in order to understand dealings concerning marine resources. Some of the ownership systems and levels such as

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[178] ZNA/BA 24/3 W. R. McGeagh, “Review of the System”, 7.

[179] Sheriff, Ibid., 54-55 & 70.

[180] Ibid, 139

[181] Sheriff, *Slaves, Spices and Ivory*, 55.

[182] Ibid, 55 & 59.

proprietor and stranger, as well as individual and communal also applied to marine resources. There are individual, clan or family ownership as well as village or community ownership of land.[183] In Unguja, a family building site was known as *kiambo* (*viambo* – pl.).[184] However, as time went on and because of incidental changes such death of the family head, the tenure changed from one level to another. For example, it changed from an individual or family to communal ownership. That involved a death of the original land owner who had several children. Children might decide not to divide their shares but rather keep together whereby after several years and with increasing family members through marriages and births, land ownership could be jointly owned as opposed to being owned by the family or individual.[185]

Also, in the pre-colonial time, land was communally owned, where every clan member or a village member had equal rights to use land. For example, villagers used land for burial purposes, firewood collection and grazing cattle. When any villager decided to clear a piece of land (forest) for cultivation, then communal ownership of that cleared piece of land (farm) would continue but the person would be granted usage right especially when crops are planted.[186] But one who wanted to establish a farm had to seek for prior permission from *mvyale* or *Wavyale*.

In addition, people had different land rights in villages. There were villages whereby Baajuni, Hadimu, Tumbatu, Shirazi,[187] Indians as well as Arabs lived together

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[183] Ibrahim F. Shao**,** *The Political Economy of Zanzibar: Before and After Revolution* (Dar es Salaam: Dar es Salaam University Press, 1992), 3.

[184] McGeagh, "A Review of the System", 4. This was different in Pemba where the word *kiambo* or homestead did not carry concrete family ownership significance as was the case in Unguja but it meant "the place where huts are built." See McGeagh, Ibid., 20; & also, Pakenham, *Land Tenure*, 12.

[185] McGeagh, Ibid, 20.

[186] M. Törhönen, "A Thousand and One Nights of Land Tenure", 15.

[187] Traditionally, the ethnic communities of the Tumbatu, Hadimu as well as the Pemba are also considered as the Shirazi community. Shirazi is a generic term for people originating from intermarriage between the Africans, Arabs or Indians on one hand and ancestors from Persia on another hand. For further discussion see the following: John Middleton and Jane Campbell, *Zanzibar: Its Society and Its Politics*, (London: Oxford University Press, 1965), 16-18; Mika Törhöne, "A Thousand and One Nights of Land Tenure" Op. Cit., 16-17; Abdulaziz Y. Lodhi, "Islam and Early Globalization in the Indian Ocean World: An East African Perspective", Unpublished paper presented at International Symposium on the History and Culture of the Islamic Civilization in Eastern Africa, Zanzibar, Tanzania. 2-4 September 2013, 4; Abdulaziz Yusuf Lodhi, "The Iranian Presence in East Africa", in M. A. Khajeh

and they had different land rights as community members. However, the main difference was in regard to time of arrival of an individual in a certain place (land), which determined one to be either a stranger or resident and proprietor. In due regard, control and management of land or resource use rights has been done in the community, especially among the Shirazi in three levels, community level that was divided into family or clan and village, then the individual level.

Rights to use land were controlled by a council of elders. The rights were regulated at the level of village community and the rights of strangers[188] depended on discretion of the hosts who were also proprietors,[189] whereas activities and behaviour of the proprietor over land were controlled by *Wavyale*, who were local leaders. The latter conducted arbitration on fishing and land use problems in Zanzibar. For example, according to Shirazi custom, it was possible for a person to have "full ownership in a tree but hold no personal rights in the land in which it grows."[190] In due regard, the land tenure system was different because land as property was sometimes owned jointly but other specific properties on land, which signified land use rights, were privately owned. As Middleton clearly explained:

> Rules of land tenure, as distinct from rules of land use, consist of ordered relations between persons and groups in respect of land. Consequently the rules of land tenure can be understood only as part of the total set of relations between persons and groups that compose the social structure of Zanzibar society.[191]

Najafi and M. Assemi (Eds.), *Haft Kongeree wa Haft Murraka (Elegant Message and Eternal Beautitude)*, *Essays in memory of Professor Habibullah Amouzegar* (Uppsala: 2007) and Dionisius A. Agius, *Classic Ships of Islam: From Mesopotamia to the Indian Ocean*, (Leiden: Koninklijke BRILL NV, 2008), 98-99 and 366.

[188] This is referred to any new or recent comer in the community regardless of origin, race or ethnicity. According to John Middleton, *Land Tenure*, 22 a stranger (*mgeni* - sing. or *wageni* - pl. in Swahili language) can change his/her status to that of a resident and/or proprietor, mainly due to intermarriage.

[189] These were the owners of land. There were residents who also were proprietors.

[190] Middleton, *Land Tenure*, 21.

[191] *Ibid*.

An individual had land rights, but the extent of the rights depended on one's status in community because some people were natives and others were proprietors in areas while others were regarded tenants or strangers. In due regard, strangers had limited rights compared to proprietors.[192] All such land distribution and ownership relations were under *mvyale*[193] (sing.) or *wavyale* (pl.), and in case anyone from outside the community wanted to use land, he/she would be allowed to do so, albeit with limited rights over land, as McGeagh put it:

> It must be admitted however that there is little temptation to any outsider to obtain land there [east coast of Unguja] except where civilisation has established a trade centre as at Chwaka or in a few places where soils are good, and an instance of an Arab establishing himself at Uroa... An Indian trader there has however not been sold land but after paying Rs. 2/= to the *mvyale* has been allowed to build a store, though not to obtain any right in the land.[194]

Furthermore, elders or "*Wazee"* or *"Watu wanne"*[195] who were responsible for land use issues were also responsible for management and control of marine affairs, such as spirits[196] (in Swahili *mizimu*) for fishing, closing and opening of some fishing places *vilindi* (for fish conservation purposes) as well as supervision of cutting down mangroves, especially with the closing period of mangrove cutting.[197] The councils of *Wazee* were respected in societies and more significantly, *mvyale* or *mzale,* whose orders were followed. Also they were always consulted before events such as planting,

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[192] *Ibid.*, 17 - 18.

[193] Sheriff, "The Peasantry", 116.

[194] ZNA/BA 24/3 W. R. McGeagh, "A Review of the System", 5; One Rupee (Rs) was equal to one Shillings and 50 cents in 1934 when McGeagh compiled this information. He was then District Commissioner in Zanzibar.

[195] The *Wazee* or *Watu wanne* (also known as *Wakubwa wa mtaa*) comprised of the council of elders, normally four members in towns or villages in Zanzibar. They assisted in governing land right issues. See: John Middleton, *Land Tenure in Zanzibar*, (London: Her Majesty's Stationary Office, 1961), 17.

[196] For discussion about the *mizimu* in Zanzibar see the following: Robert Lebling, *Legends of the Fire: Spirits Jinn and Genies form Arabia to Zanzibar*, (London: I. B. Tauris & Co. Ltd., 2010), xii, xiii, 205 - 7; Godfrey Dale, *The People of Zanzibar: Their Customs and Religious Beliefs*, (Westminster: The Universities' Mission to Central Africa, 1920), 25 - 26; and Pakenham, *Land Tenure*, 6.

[197] Interview with Amour Hassan (Fitirodi) - 23.03.2012 Unguja

harvesting and exchange of land, mainly to a stranger. Indeed, those who did not follow the directives suffered the consequences.[198]

3.3 Ecology and Use of Mangroves, 1840s-1890

Ecology is the study on the way organisms interrelate with their environment and among one another. In this study, the environment includes two elements, organisms in their totality and physical environs. Organisms include humans and human social relations together with interaction between the human and physical environment. With this concept, it means that there are two major interactions: first, the relationship between organisms and their physical environments; and second, that of organisms among themselves. The actions of the organisms and those of their surroundings together with impact of the actions and activities for survival of each other lead to another level, namely, ecosystem.[199]

This study on use of mangroves in Zanzibar, it was intended to show the interplay between people in Zanzibar and their physical coastal environment as far as mangroves and other resources are concerned. The human and coastal environment relationships depended on interaction(s) between human agencies. In a larger picture, human beings are seen at the centre surrounded by the environments such as land, forests and ocean. The human tries to manipulate the surroundings to sustain living mainly, concerning food and shelter. All these activities, which in essence entailed use and conservation of the resources, they involved human beings and institutions for sustainability of resources. Human relations and their organisation influenced on marine environments.

3.3.1 The Building of Zanzibar City

Zanzibar city, which began as a fishing village, underwent changes in different phases. First, after it was established in the twelfth century, subsequently under

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[198] Pakenham, *Land Tenure*, 6; & McGeagh, “Review of the System”, Ibid.

[199] S. H. Ominde, "Ecology and Man in East Africa" in Bethwell A. Ogot (ed.), *Ecology and History in East Africa*, (Nairobi: Kenya Literature Bureau, 1979), 11. See also; Mwakio P. Tole, "Current Environmental Problems," in Jan Hoorweg, Dick Foeken and R. A. Obudho (eds.), *Kenya Coast Handbook: Culture, Resources and Development in the East African Littoral,* (Hamburg: LIT Verlag, 2000), 61.

Portuguese domination in the in sixteenth century, and then under Omani Arabs in the seventeenth century before coming of the British when the city further developed. Given the very position of the village, which developed into a city, Stone Town, had effects on marine resources, such as fish and mangroves in different ways as well as levels.[200] Origin of the modern Stone Town can be traced back from socio-economic development in the early nineteenth century, which saw the fishing village and community increasingly turning into a striving commercial-cum-plantation city centre.[201]

Like other Swahili city-states such as Kilwa, Lamu and Pate, Zanzibar's civilisation and architectural development were shaped by trade and building with mangroves as well as coral stones. Since the outset, the Swahili city states extensively used the trees and produced lime for trade and construction, as Thaddeus Sunseri clarified:

> Mangroves had long played a fundamental role in the history of coastal polities and Swahili civilisation, drawing East Africans into Indian Ocean trade networks for two millennia...Swahili civilisation was identified materially by trading towns that used mangrove poles and coral in construction. Artisans used mangroves wood to burn coral and shells for the lime used to cement the stone-and-coral houses of town dwellers and for the hundreds of stone mosques that dotted the coast after about 1000 CE. Swahili town architecture used mangroves to build multistorey houses called *viunga* that relied upon supports and crossbeams of uniform length.[202]

Therefore, from the preceding statement, there were two significant issues concerning mangroves and development of Zanzibar city (Stone Town) and other urban and rural areas in Zanzibar as well as other Swahili city states. The first is that mangroves were widely used for building purposes and energy, and second, they were for a long time trading items within and outside the coast. Mangrove poles were a chief cargo of *mtepe*

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[200] Abdul Sheriff, "An Outline History of Zanzibar Stone Town," in Abdul Sheriff (ed.), *The History and Conservation of Zanzibar Stone Town*, (London: James Currey, 1992), 8

[201] *Ibid*., 8, 12-15, 19, 28. See also, Sheriff, *Slaves, Spices and Ivory*, 137 - 40

[202] Thaddeus Raymond Sunseri, *Wielding the Ax: State Forestry and Social Conflict in Tanzania, 1820 - 2000*, (Athens: Ohio University Press, 2009), 28 & 30.

ships and dhows since the fifteenth century (or even before), and they were transported through the coast of Africa and passed to other port towns along the Arab and Persian Gulf, where they were used for construction of buildings.[203]

In Zanzibar, the period from 1835 up to 1890 is regarded as an important era for rapid growth of Stone Town in terms of expansion of infrastructure and population.[204] During that period, there was extensive construction of both stone houses and huts in the town (see Map 3.2 and Map 3.3). Although it may seem that the number of mud houses was dropping in the inner circle of the city, significant expansion of mud houses was taking place in Ng'ambo (compare the two maps). The population in the town increased from between 10,000 and 12,000 in 1835 up to 60,000 in 1895 (See Table 2: 1). Survey conducted in 1893 revealed that there were 1,675 stone houses, 14,313 huts and 60 mosques in the town.[205] It can be assumed that such development took toll on marine mangroves and corals as major building materials, which, in turn, likely paved the way for a subsequent impact on fish and the fishing industry. For, fish in the ocean also depended on mangroves and a healthy coral environment. In addition, population expansion and development of the town required clearance of more space for building of houses and roads, which sometimes involved mangrove tree cutting surrounding the town.

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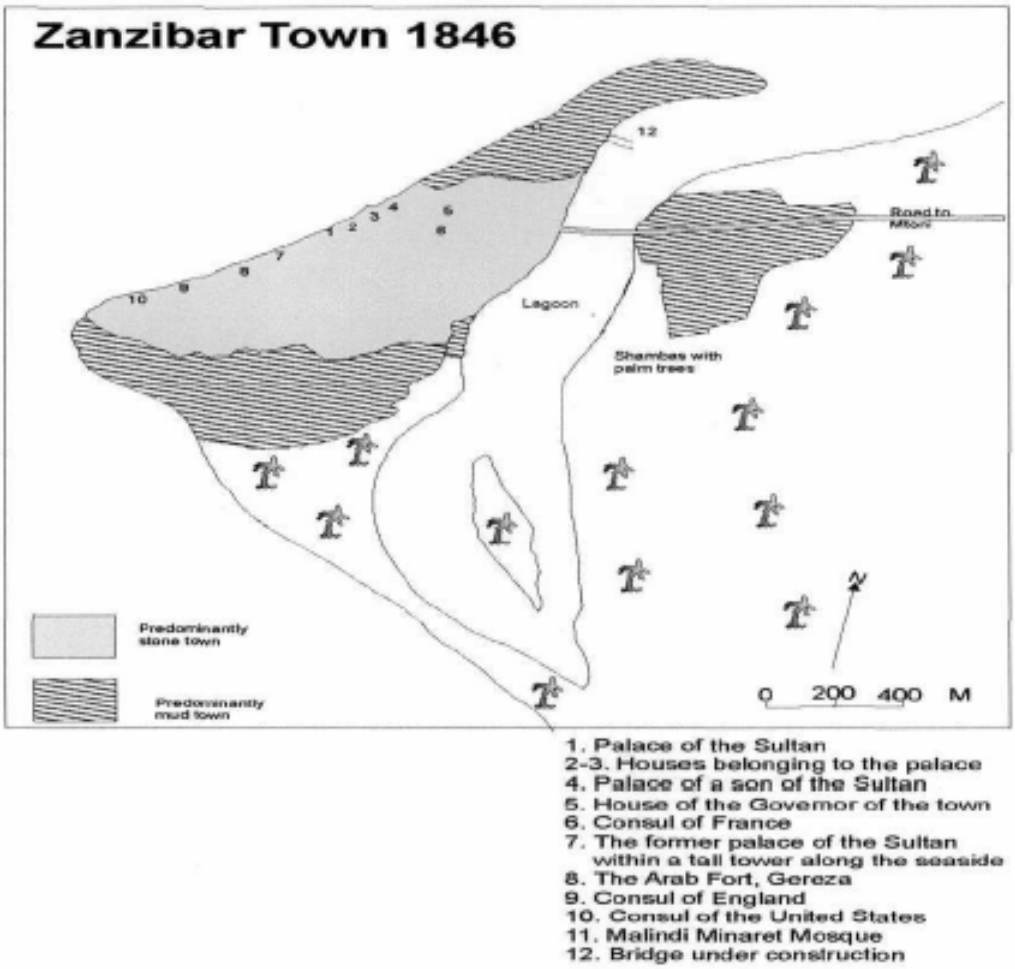
[203] See: Erik Gilbert, *Dhows and the Colonial Economy of Zanzibar*, *1860 – 1970*, (Oxford: James Currey Ltd., 2004), 112; James Hornell, "The Sea-Going "*Mtepe"* and "*Dau"* of the Lamu Archipelago," in *Tanganyika Notes and Records No. 14*, (Dar es salaam: The Government Printer, 1941), 33, 36; and A. E. R. "Correspondence - Mangrove Woods and Its Export," in *Tanganyika Notes and Records No. 12*, (Dar es salaam: The Government Printer, 1941), 69.

[204] Sheriff, *Slaves, Spices and Ivory*, 140

[205] Sheriff, "Outline History", 25 and Abdul Sheriff, *Slaves, Spices and Ivory*, 138



Map 3.2 Zanzibar Town, 1846

Source: Issa, From Stinkibar to Zanzibar, 48.

Mwinyi Mkuu Hassan, who succeeded his mother, Queen Fatuma, on the throne of Zanzibar shortly prior to 1728, is reported as doing "much to clear the bush on the peninsula."[206] Many of the cleared bushes would have probably been mangroves because up until now, the surrounding areas of the city are full of mangroves. In addition, there is circumstantial proof of trees on maps of Zanzibar Town (see Map 3.2 and Map 3.3) that were produced in 1846 and 1895. The maps show that there were many bushes around the town, and it is probable that many among trees were mangroves. The society still remembers the mangrove trees that covered a large part of

[206] Abdul Sheriff, "Outline History", 12.

Kokoni[207] street in Stone Town. This is probably because they were cleared during a relatively recent expansion of the city.[208] Kokoni is one of areas that were adversely affected by population expansion, economic activities and housing in Stone Town in the late nineteenth century as far as cutting of mangrove trees were concerned.[209]

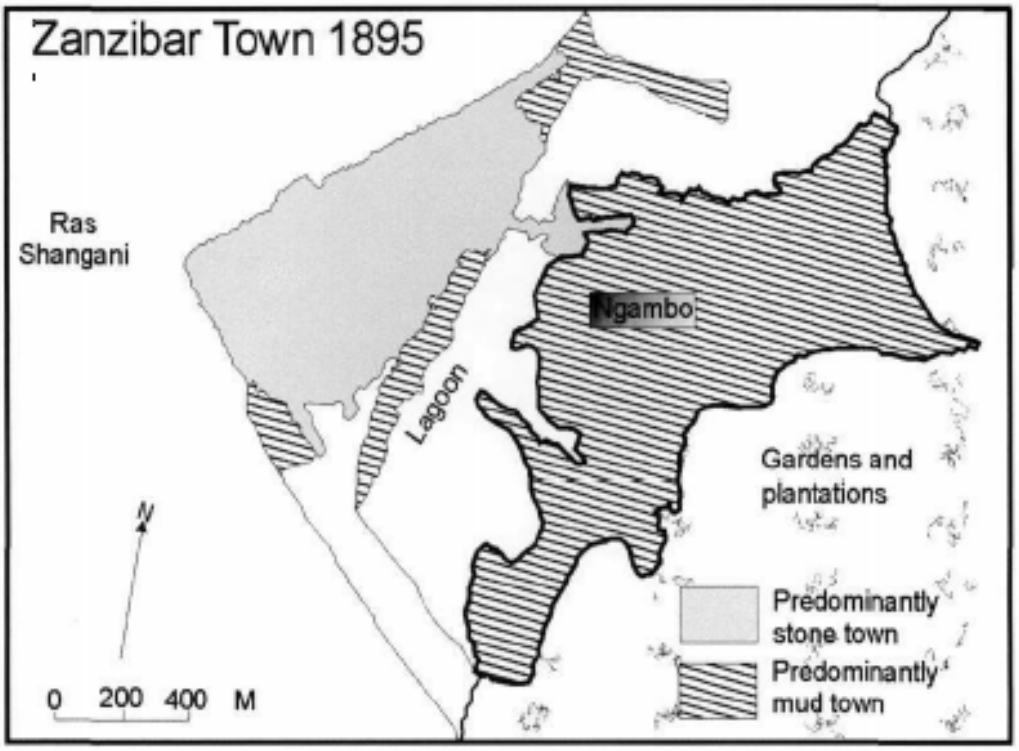
In addition to mangroves that were cleared to provide some space for the city development in Stone town whereby there is little reliable information except for Kokoni area, there is also a creek that people used for different activities before it began to be filled up during the colonial era.[210] The area that some fishermen used for processing dried sharks for sale was located along the creek. The Suri (from Sur in Oman) used parts of Darajani creek for drying fish before it was filled up.

[207] Kokoni is a Swahili word, which means by the mangrove tree(s). This name is still used up till today and symbolises the habitate of mangroves in the area, which were probably cleared in the early twentieth century.

[208] Salum Suleiman Salum, "Reclamation and Development of Darajani Creek Zanzibar, 1915-1960" (Master of Arts (History) diss., University of Dar es Salaam, 2012), 30

[209] Salum, Ibid.

[210] Salum, "Reclamation and Development ", 22 - 32.



Map 3.3 Zanzibar Town, 1895

Source: Issa, From Stinkibar to Zanzibar, 48.

They were experts in the fish drying process. Many Suri, especially sailors, "were like fish living at sea for nearly ten months out of a year."[211] They sailed and conducted trade between different ports in Indian Ocean and the Persian Gulf, benefitting from sufficient and reliable social capital in the places they visited.[212] They worked according to the social and economic environment and while other people in the vicinity used the creek as a dumping place for garbage, the Suri used it positively.

Traditional leather processing industries also used Darajani creek in their activities. Places such as Mapipa ya Ngozi were prominent for the industries, and its name was derived from activities that involved soaking hides with chemicals (mainly a mixture of seawater and lime) in large barrels (*mapipa*). The creek was a favourable place of leather industries' works because the industries used sea water to process

[211] Sheriff, *Dhow*, 60.

[212] Sheriff, *Ibid*., 54 - 60. See also, Sheriff, *Afro-Arab Interaction*, 9 - 13.

leather. The area was close to target buyers of the products, which were mainly traditional sandals (see example in Figure 3.1) and sheath of knives. In order to facilitate transport and communication between Stone Town and N'gambo, while goods from rural areas were also transported to the city, especially farm products and mangrove poles, Sultan Sayyid Said built a bridge across the creek during the initial period of his reign in 1840.[213] At the time, the town was separated by a narrow creek, which stretched from Mnazi Mmoja area up to the area around the current Funguni area. The Sultan constructed the bridge at the place currently known as Darajani.[214] The bridge also underwent several changes during different periods in the nineteenth century.[215] The bridge was also used as a market place for some petty traders. As the city was expanding, the importance of the bridge was also increasing to serve the ever-increasing cosmopolitan society in Zanzibar.

However, the creek, which was largely the area of mangroves, was cleared to provide space for expansion of Zanzibar City, posed some health threats. The area was a threat due to waste disposal and the manner people treated some dead bodies in the island during the nineteenth century. For instance, people used to dispose dead bodies of people who were infected by small pox, which inflicted Zanzibar during the nineteenth century, on Kisiwa-ndui (a small pox island) area in Unguja, formally a small isle within the creek.[216] James Christie noted that some people in the town "simply throw out the dead bodies, without any semblance of burial."[217] Dead bodies of the poor were buried on beaches or other places and little sand was thrown on them just to cover up from view and some body parts even protruded. Slaves were "often laid out to putrefy on the beach."[218] Such practices posed threat to health of society in Unguja

[213] Swahili word literally meaning the other side. It referred to the other side of the Creek.

[214] Salum, Ibid, 32.

[215] Ibid., 32.

[216] Salum, “Reclamation and Development”, 23; and Amina Ameir Issa, "From Stinkibar to Zanzibar: Disease, Medicine and Public Health in Colonial Urban Zanzibar, 1870-1963," Unpublished Doctor of Philosophy Dissertation, University of KwaZulu-Natal, May 2009, 54-6; and Richard F. Burton, *Zanzibar: City, Island, and Coast*, *Vol. I* (London: Tinsley Brothers, 1872), 195.

[217] James Christie, *Cholera Epidemics in East Africa, from 1821 Till 1872*, (London: Macmillan and Co., 1876), 281 & 83.

[218] Christie, *Cholera Epidemics*, 281.

and a major concern was the environment of the creek, especially during the rainy season.

Year	Population
1835 [b]	10-12,000
1846	20-25,000
c.1850	50,000
1857	25-45,000
1860	60,000
1865	40,000
1866	40-50,000
1869	70,000
1876	80-100,000
1885	80,000
1895	60,000

Table 3.1 The Population Estimates of Zanzibar Town, 1835 - 1895 [a]
Source: Adopted from Sheriff, *Slaves, Spices and Ivory in Zanzibar*, 138

[a] According to Sheriff, the population estimates are unreliable but still provide an idea about the trend of population expansion of the city during the nineteenth century, which also denotes infrastructural expansion to cope with the ever-expanding population.

[b] Given that the population estimates were taken from different sources, Francesco Siravo claims that there were 17,000 people in the 1830s.[219] This does not indicate

[219] Siravo, *Zanzibar* , 15

precisely when exactly the population estimate was made and it does not show the source of information.

Extensive construction of Zanzibar Stone Town had two-fold effects: first, the very place chosen to develop the city was surrounded by mangroves, and therefore, large parts the forests were cleared for the purpose. Second, since the major raw materials needed for construction of massive buildings included mangroves and coral stones, the forests in the vicinity and afar were again affected. The mangroves were used for construction as raw materials and as scaffolds to facilitate building works as well as sources of energy for lime production.[220] The lime was then mixed with soil for use as cement in the construction process.

3.3.2 Mangroves Trade and Local Practices

As discussed in the previous section, trade in mangroves on the East African coast is an ancient phenomenon. The trade began as early as the beginning of the Common Era (CE), when the east African communities were slowly transforming their production systems from production for consumption towards production of surplus for trade.[221] Part of such surplus production was especially directed at a different ecological area,[222] which was also easily reachable within their means and facilities of communications. In terms of maritime communication and environment, Arabia and the Gulf region were viable places with different ecological conditions for surplus exchange with Zanzibar and east African coast, in general. Thus, according to Sheriff, the early CE was the period "a surplus of food grains and mangrove poles was exported to the food- and timber-deficient south Arabian coast and Persian Gulf at various times..."[223]

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[220] Sunseri, *Wielding the Axe*, 32; and Gilbert, *Dhow*, 112; and Burton, *Zanzibar,* 241.

[221] Sheriff, *Slaves, Spices and Ivory*, 12 & 21.

[222] Achim von Oppen, *Terms of Trade and Terms of Trust: The History and Context of Pre-colonial Market Production Around the Upper Zambezi and Kasai*, (Münster: Lit Verlag, 1994), 143.

[223] Sheriff, *Slaves, Spices and Ivory*, 12 & 21.

Nevertheless, even if poles were the attached trading item for a long time, the sources rarely mentioned them up to the sixteenth century[224] and especially in the nineteenth century, when visitors documented the pole trade. Nevertheless, the figures were unreliable for proper spatial analysis.[225] That was partly due to the mixed degree of generalisation of information, given that it sometimes contained data for the mangrove poles from the whole of the east African coast thereby rendering it difficult to determine specifically where a certain number of the mangrove poles came from.[226]

Furthermore, it was reported that some vessels carrying the poles were able to bypass the Zanzibar port and therefore, transported them from the east African coast to Arabia, making the exact number of poles difficult to determine. Even when the Sultan of Zanzibar decided to establish poll stations on the mainland to deal with mangrove pole tax in the late-1850s, many poles still passed the stations unnoticed.[227] With such kind of information, it became difficult to differentiate the number of mangrove poles specifically exported from Zanzibar or from other parts of the east African coast.

In addition to exportation of mangrove poles to the Arabian Peninsula and the Persian Gulf areas, they had a significant demand in Zanzibar as well as the mainland of East Africa. All parts of the mangrove tree, were used differently, from the wood, barks and fruits. Different sizes of woods had various utilisations and names. The mangrove poles were used for house constructions, such as rafters (*boriti)*, and small size poles (*fito*). The woods were used as a source of energy for domestic purposes, while they were used in construction for burning lime stones for cementing houses. Moreover, the mangrove woods were also used for making *mtepe* ships, especially at Faza in the Lamu archipelago, where it was documented that about twenty vessels were constructed per year by 1919:

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[224] Ibid.

[225] Sunseri, *Wielding the Ax*, 30.

[226] There were many mangrove poles that were imported to Zanzibar from Tanganyika, especially from Rufiji, the major mangrove swamp on the East African coast, and they were re-exported from Zanzibar to the Arabia and the Gulf coast. See for example: Gilbert, *Dhow*, 21, 31; Sunseri, *Wielding the Ax*, 28, 30 - 33; Sheriff, *Slaves, Spices and Ivory*, 12 & 21; and Burton, *Zanzibar*, 240- 41

[227] Sunseri, *Ibid*., 30.

> The time taken was from two to three months, inclusive of the time occupied in felling the timber in the mangrove swamps...The first step was to engage a competent captain to supervise all operations. Five or six carpenters *(mafundi)* were recruited to procure the necessary mangrove timber, saw it into planks and adze it roughly to shape and size. Theirs was also the duty of boring the holes for the pegs and sewing and the assembling of the planking. Caulking and plank sewing were done by a few sailors engaged in advance.[228]

In addition, mangrove barks were widely used in the process of making *mtepe*. The barks were pounded (See photo 3.1)[229]to make a thick paste, which was then used for caulking the vessel while at the same time sewing it using a coir fibre. Either a mixture of cotton with shark oil or beef fat mixed with lime was sometimes used in the caulking processes.[230] The oil was added as part of binding tools to make the vessel water-proof. It is also useful to know that during that period *mtepe* and other Swahili ocean going vessels were built and joined using pegs, mangrove barks, cotton, shark oil and choirs without involving nails or any metal for durability, sustainability and economic reasons.[231] Indeed, metal joineries such as use of nails are recent creations.[232] The barks were used for tanning purposes, such as in dyeing local sandals, *makobadhi* in Swahili (see Figure 3.1) as well as winnowing baskets.

Moreover, many people in Zanzibar and along the Swahili coast used mangrove poles to hold up mud roofs. They used many thinner poles as cross-poles in building the Swahili houses. Over one thousand cross-poles could go into an average house, while around two hundred poles, sixty support pillars, forty rafters and two-hundred cross-rafters were required to build a Swahili style Zaramo house.[233] Therefore, with such framework of house construction, German foresters estimated that an average of thirty

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[228] Hornell, "Sea-Going M*tepe*"., 31.

[229] The photo shows pounded mangrove barks, which were prepared for processing leather in a local industry in Pemba. However, the same process was used for preparing the mangrove barks paste for application on *mtepe*.

[230] Gilbert, *Dhow*, 22.

[231] See the following: Sheriff, *Dhow*, 35-6, 85 & 88 and Burton, , 74-5.

[232] Sheriff, *Dhow*, 34 & 88-9.

[233] Sunseri, *Wielding the Ax*., 30. See also, Gilbert, Ibid., 116.

hectares of mangrove trees required building a village of sixty six houses.[234] In order to transport the poles, at least over a short distance, people used ox carts (*rikwama*) and, for durability, they made *rikwama* using the mangroves.

Figure 3.1 A Pair of Traditional sandal in Zanzibar (*Makobadhi*)
Source: Field data

Communities, especially in rural areas, used the mangroves for medicinal purposes. Different parts such as shoots, leaves and fruits were used for treatment of different ailments in Zanzibar.[235] For instance, mangrove fruits were used to treat stomach ache. The seed of the fruit was removed and crushed to obtain juice, which was mixed with water and drunk by the patient.[236] Furthermore, the mangrove juice was mixed with sea shells, mangrove leaves, lemon leaves and lemon fruits for treatment of

[234] Sunseri, Ibid., 30.

[235] Aloo, "Marine Resources", 46.

[236] Mzee Suleiman Haji (Njenjenje), interviewed in February 2012 - Jambiani, Unguja; and Bi. Jina Makame Vuai, interviewed in March 2012 - Jambiani, Zanzibar; and Khamis Ali Haji, interviewed in June 2012 – Vitongoji and Chake Chake, Pemba. He is one of members of Zahoro Ali Herbalist Clinic. Its headquarters is at Chake Chake – Pemba, Zanzibar. Mr. Haji is also a member of the organising committee of the Council of Traditional Healers and Alternative Medicine in Zanzibar.

kwashiorkor-related problems.[237] Other marine products are also used in traditional therapeutic practices, including whale oil, ocean water and sand.[238]

Figure 3.2 Pounding mangrove barks to prepare for leather dying in Pemba
(see a wooden mortar and pestle for the pounding work)

[237] Bi. Jina Makame Vuai

[238] Khamis Ali Haji (Kibabu), interviewed in June 2012 – Vitongoji - Pemba. Traditional healing in Zanzibar, like in many other places in Africa has been practiced for centuries and was handed down from generations to generations. Many of the elderly traditional healers got their training from either their parents or grandparents or other elderly members of the extended families; and the same chain can be traced in several generations beyond the twentieth century as Mzee Suleiman, Kamis and Bi. Jina and many other healers who were interviewed admitted during our discussions.

Source: Field data

Utilisation of marine resources in Zanzibar had a twofold effect. One was that many people, other than traders, used marine resources within the islands. So it was a direct from the forest to consumption without making financial gain. Second, traders sold the resources both within Zanzibar and exported other mangroves outside the country, mainly to Arabia and Oman.[239] People gained more benefits or profits especially from export of mangrove poles and other commodities like cloves and copra. A major impact was felt on the use of the marine resources, especially mangroves for building purposes. That was because many people preferred to use their profits on building houses, most of which increased consumption of the mangroves as a major construction material in Zanzibar.

Furthermore, landlord farmers and sultans constructed their houses using mangroves in their plantations and rural areas in addition to those they had in Stone Town. For example, some of the landlords constructed their palaces in Mbweni, Bungi and Mtoni.[240] Since the mangroves were a common material in construction in the period before British colonialism, many people in towns and rural areas constructed houses using the mangroves at different stages of the building process. Therefore, with such trend of events and as far as use of mangroves was concerned, there were two probable circumstances. First, there was small comparable pressure on mangroves from the 1840s; and second, clearance of the natural forests for clove agriculture in both Unguja and Pemba left the Zanzibar community with one major forest for their needs for woods for building and energy purposes. Therefore, the mangrove forests served such purposes. Thus, it is assumed that the trend of events posed a future threat as the population and demand for forest products was also increasing.

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[239] The export trade on mangroves poles from East Africa began since early in the Common Era, when people exported mangroves to Southern Arabia coast and the Persian Gulf regions. It continued up to the second half of the twentieth century when it declined. See for example; Sheriff, *Slaves, Spices and Ivory*, 12 and Erik Gilbert, *Dhows and the Colonial*, 115, 130-33.

[240] See, for example: Burton, *Zanzibar*, 76, 81& 98; and Issa, From Stinkibar to Zanzibar", 47-8.

Figure 3.3 Mangrove poles lying near the Ship-shaped water tank near the Sultan's palace
Source: Field data

3.4 Fisheries in Zanzibar, 1840s-1890

The fishing industry was a very important sector in socio-economic development of Zanzibar. Since the period prior to the coming of the Omani-Arabs, many people depended on fishing for their own subsistence. It lay at the very foundation of Stone Town and early development of Zanzibar in general. The town began as a landing site for the fishers and developed into a fishing village in the twelfth century[241] up to the cosmopolitan city within a Zanzibar commercial empire in the nineteenth century.

For generations, fishing has been one of major activities for many people in Zanzibar. Many people in Jambiani, Makunduchi, Kizimkazi, and Micheweni have used traditional fishing methods and gears such as canoes with outriggers, fishing boats and dhows for generations. They have also used gill nets, drift nets, scoop nets, weirs, hand

[241] Sheriff, "Outline History", 8.

lines and traps.[242] Due to lack of good reliable sources of fresh water for fishing, Zanzibar has relied on marine fishing. People in fishing villages considered sea fishing rights over time as communal property, and so people of the surrounding villages or towns had free access to resources while aliens paid rent.[243]

However, such freedom of access to fishing was limited in some cases and places. For example, although it was free to fish at any part of the ocean, a group of people or a family built *uzio* (a stake or fenced trap) for fishing and covered part of the sea as well as the area around the trap such that it was regarded possessed by the trap owners.[244] That may be regarded as temporary ownership. Other fishers might use *uzio* as partners with comparatively small share of the fish catch.[245] The *uzio* (or *tando* in Pemba) was a popular fishing method in the Islands in the 1840s. In *uzio*, fishermen erected a v-shaped fence (made from mangrove sticks) closer to the coast, facing to the sea. It was a fish trap where the receding tides drew fish to the trap before they were caught in the apex of *uzio* where the pocket (*nyumba*) of the trap was located for collection. Such areas of set traps were known as *viunga* or *viwanja* (plots).[246] Fishermen removed traps from time to time to allow fish to accustom the area before the trap was set again.[247]

In the early-nineteenth century, the town was already an established market for export of dried fish among other commodities, such as mangrove poles, tortoise shells, cowries, bees-wax and food grains. Slaves were also exported from the town to other areas.[248] Some of the slaves dealt with processing of cowry shells.[249] Different types of

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[242] I. H. Feidi, "The Fisheries of Zanzibar: Potential for New Investments" in *NAGA, World Fish Center Quartely*, Volume 28, Number 3 & 4, July - December 2005, 38, http://www.worldfishcenter.org/Naga/na_2356.pdf, accessed: November 30, 2012

[243] Middleton, *Land Tenure,* 28.

[244] Middleton, *Ibid.*, 40.

[245] Middleton, *Ibid*.

[246] Ibid., 28-9; and , W. H. Ingrams, *Zanzibar: Its History and Its People*, (London: Frank Cass and Company Limited, 1967), 299; see also; Prins, *Sailing From Lamu*, 136-37.

[247] ZNA/BA41/2 J. S. Last, *The Economic Fisheries of Zanzibar*, (Zanzibar: The Government Printer, 1928), 3.

[248] Francesco Siravo, *Zanzibar*, 14.

[249] Burton, *Zanzibar*, 206 - 7.

shellfish were obtained in Zanzibar, including mangrove oysters, rock oysters, soft crabs and crayfish mainly, obtained around Chumbe Island close to Unguja Island.[250]

From the 1840s, demand for fish from the city increased and the industry became highly profitable. Moreover, transport facilities that began to develop during that period facilitated the fish supply to the town. All such factors attracted more labour power to the fishing industry and mangrove cutting in some villages such as Chwaka.[251] Therefore, fishing subsequently began to fall under relatively more pressure than the period before.

During the same period or probably before, there was a fish conservation system that resembled to fallow or shifting cultivation. The fishermen used a closing system whereby *mvyale* in cooperation with *wazee* (the elders' council) in a village closed and supervised the area where excessive fishing efforts were perceived. The village closed some fishing areas for up to six months, depending on the extent of the effects. However, Pakenham reported that during the colonial period, youth fishermen began to ignore closing and opening of the fishing places such that they affected the situation.[252] Initially, closing was deliberately undertaken when *maulid*[253] celebrations were approaching and the community wanted to have maximum quantity of fish with larger sizes for use during the festivals.[254] Although there is no evidence, the practice of periodical closing fishing areas gained conservation significance over time. Then later, people began to practice it deliberately for conservation of fish and mangroves.

In addition to supervising closing and opening of fishing areas that were seen to be excessively fished, *Mvyale* was also responsible for working of *uzio* traps. The fishermen consulted *Mvyale* either in completion of the trap or on the eve of the first use of the trap and *Mvyale* received some amount of money, which was known as *ubani*. In case the fishing or trap was near *mzimu* (spirit), then *Mvyale* visited the scene

[250] Ibid, 204 - 5.

[251] Pakenham, *Land Tenure*, 3, 28.

[252] Pakenham, *Land Tenure*, 6

[253] *Maulid* is an Islamic festival for commemorating birth of Prophet Muhammad

[254] Interviews with: Athuman Ali (Abrasi), Pemba - 01.06.2012; Said Khelef Alawi, Pemba, 03.06.2012 and Amour Hassan (Fitirodi), Unguja, 23.03.2012

or sent his or her representative for *ubani* rites. Moreover, the fishermen usually sent to *Mvyale* a present of fish obtained from the trap during the fishing season.

Fishers used different means and techniques of fishing in Zanzibar, including using *michokoo* (Swahili sing. *mchokoo*), which were sharp objects or pointed sticks used mainly for fishing octopus around and within coral caves. In addition, many fishermen used hand lines (*mishipi ya mkono*) and troll lines (*mishipi ya kurambaza*). The troll lines were introduced in Zanzibar by Arabs who used to fish while travelling with their vessels, using monsoon winds from the Arabian Peninsula to East Africa for trading activities.[255] The method was adopted in Zanzibar and fishermen used dugout canoes with outriggers (*ngalawa*) or without outriggers (*mitwumbi*). The fishing methods were commonly used when fishermen were on their way to fishing places or getting back to the landing place and when the sea was calm.[256] Therefore, fishers used lines as an additional fishing method, rather than the main fishing method.

As a matter of checking the fishermen's activities, when the fishers wanted to use beach seines (*juya*-net) from a new base, it was imperative for the fishermen to consult either *mkubwa wa mji* or *mvyale*, who inspected the place, received a fee and offered incense as well as prayers (*kutia ubani*) for the fishers.[257] The community considered that such type of fishing was not good when conducted along the beach and therefore, although it was not prohibited, it was discouraged by adding procedures that were highly related to village management and supervisions. It was common to many fishing methods that were seen unfriendly to society or the ocean environment. Otherwise, many fishing methods were conducted freely without official procedures requiring the authority of *mvyale*. There were two types of *juya* fishing: the first was when fishers dragged from the waters towards land (beach); and the second was when

[255] ZNA/BA41/6 Serikali ya Mapinduzi ya Zanzibar, (hereafter SMZ) "Sera ya Taifa ya Uvuvi Nchini," (Zanzibar, Oktoba, 1985), 13-14.

[256] Ibid.

[257] Pakenham, *Land Tenure*, 8.

the fishermen dragged the net towards their vessels. The first type of fishing was highly discouraged.[258]

Furthermore, fishermen used gill nets (*jarife*) and depending on selection of the fishing sites, there were surface gillnets and bottom gillnets. The gill nets originally came from India and were made of cotton. The fishermen regularly cleaned the nets after fishing and soaked them in a mixture of mangrove barks, lime and water to protect them from insects. In addition, fishermen in areas such as northern Unguja and Pemba as well as southern Unguja used shark nets (*nyavu za sinia*), a type of fishing introduced from Oman. Another type of fishing was use of cast nets (*kimia*).

Use of a portable fish trap or basket fishing trap (*dema*) is one of the ancient fishing methods in Zanzibar. People from Tumbatu island, north of Unguja, were originally popular in using this method. The baskets traps were made from peeled and split small poles of *mtumbika* or *mjoma* trees. Sometimes palm fronds were used to make traps. After being produced, the traps were baited and placed where fishers thought fish were available and could be caught.[259]

There were shellfish collection practices in Zanzibar. They mainly involved collection of cowry shellfish, which underwent the process of separating flesh from the cowries. The shell collectors, mainly slaves, collected cowries and spread them under the sun for the fish (molluscs) to die and decay before being cleaned and packed for export. Part of the cargo of cowries that was exported from Zanzibar to West Africa came from other parts of the East African coast. The cowries were collected during a low tide, as Richard Burton put it:

> Slaves [in Zanzibar coast] still fasten their canoes to several banks in the roadstead, and find in the transparent waters the murex and other prized specimens. The harp-shell and 'double' are found upon the softer sands enveloped in the folds of their owners; thus parasites cannot ruin the beautiful

[258] ZNA/BA41/6, SMZ, "Sera ya Taifa," Ibid., 17.

[259] ZNA/BA41/6, SMZ, "Sera ya Taifa," Ibid., 17; Middleton, *Land Tenure*, 62 & 68; and Pakenham, *Land Tenure*, 29.

> and brilliant hues. ...Common cowrie, is picked up when the tide is out in vast quantities by the coast people, from Ra's Hafun [Somalia] to Mozambique.[260]

Although trade in cowries was much older, the business gained great significance between 1850 and 1869 as traders exported the cowries from Zanzibar to West Africa, where there was a high demand and they were used as medium of exchange. The German enterprise from Hamburg, O'Swald and Company, was a major exporter of the cowries to West Africa.[261] Within a few years after the company had established its agency in Zanzibar, it had a monopoly on the Zanzibar market to the extent that it was taking the O'Swald's ship about twelve days to complete a full cargo. That was contrary to others. For instance, it took around six months for the second runner in the business, Hertz Company, also from Hamburg, to obtain a small cargo. Even in West Africa, the situation was rather negative for Hertz and "one Hertz ship had to return to Hamburg with its cowries cargo unsold."[262] By 1869, the German and French firms of O'Swald, Hertz, Regis, Roux de Fraissinet and Hansing exported a total of 35,854.9 tonnes of cowries from Zanzibar whereby O'Swald accounted for 19,691.2 tonnes.[263] Moreover, O'Swald and Company recorded great success and "between 1850 and 1878 it shipped 27,000 tons of them. It established its agency in 1849, and by 1857 it had thirteen vessels involved in the trade."[264]

When one looks at the profit margin for the cowries traders gained from Zanzibar compared to the situation in the Maldives, there was a significant difference. Although there were differences in quality and types of the cowries, there was a big difference between purchasing price and selling price in the two countries (see Table 3.2). For instance, traders made a gross profit of 1,100 percent for cowries from Zanzibar compared to 125 percent from the Maldives. This is one of the reasons that led fishermen and collectors to benefit little from the activities in Zanzibar for many years.

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[260] Burton, *Zanzibar*, 206 - 7.

[261] See: Sheriff, *Slaves, Spices and Ivory*, 99; Christiane Bird, *The Sultan's Shadow: One Family's Rule at the Crossroads of East and West* (New York: Random House Inc., 2010), 110 and Jan Hogendorn and Marion Johnson, *The Shell Money of the Slave Trade* (London: Cambridge University Press, 1986), 75

[262] Hogendorn and Johnson, *Ibid*., 74

[263] Ibid., 75.

[264] Sheriff. *Ibid*.

Table 3.2 Cowries from Maldives and Zanzibar to West Africa, 1844

	Number of shells per cwt.	Buying price per cwt. $	Selling price per cwt. $	Gross profit per cwt.
Maldives cowries (Cypraea moneta)	45,000 - 48,000	8 - 9	18	100 - 125%
Zanzibar cowries (Cypraea annulus)	18,000 - 20,000	0.75	8 - 9	967- 1,100%

Source: Jan Hogendorn and Marion Johnson (1986: 73).

3.5 The Omani Sultanate in Zanzibar before British Colonialism

In 1828, Seyyid Said Sultan, the founder of the Omani Sultanate in Zanzibar, started constructing his first palace at Mtoni in Zanzibar whereby he ordered his furniture and some other belongings from Oman to be shifted to the palace. That marks the beginning of Sultan's interest in Zanzibar as his capital. This is significant as far as marine resources were concerned because the *de facto* capital status and expansion of the economy of Zanzibar had a major impact on natural resources.

Although M. Redha Bhacker rejects the idea that Seyyid Said moved his capital from Muscat to Zanzibar in 1840 by contending that he only made longer stays in Zanzibar during that period. Nonetheless, the argument may be self-defeating since a longer stay could be one of the factors in making Zanzibar a capital, while other reasons could be the entire administrative and decision machinery that was present in Zanzibar. Important decisions for running the Sultanate were from Zanzibar from that period onwards. However, Bhacker made no conclusive arguments as to how an administrator could pay a visit to a place and spend ten years making all major decisions and activities from a place he visited for such a prolonged period.

However, Emily Ruete (1844 - 1924), born as Sayidda Salme Said Sultan, had different opinions and feelings about her father concerning Zanzibar including administration of the Sultanate issue. In her memoirs, she stated that, "I was about nine

years old when my father determined to visit his old empire of Oman, on a tour of inspection, as was his wont in the course of every three to four years, my eldest brother, Tueni [Thuein] (incorrectly called Sueni at times) acting as regent and head of the family at Mesket [Muscat]... Day after day and weeks after weeks passed away without my father's return..."[265] The implication from Salme is that Sayyid Said bin Sultan resided in Zanzibar and only paid a visit to Muscat. His last visit to Oman lasted from May 1854 up to October 1856. He died on route to Zanzibar on October 19, 1856.[266]

Furthermore, major foreign countries that had a diplomatic relationship with the Sultanate had consulates in Zanzibar.[267] Such diplomatic representations not only contributed to substantiating the Zanzibar *de facto* capital status, but also contributed to transforming the economy and use of marine resources, especially mangroves. The diplomats represented their countries' economic interests.[268] The represented countries benefited from trading relations with Zanzibar, especially in goods such as mangrove barks and cowries. For instance, in 1841, Captain Atkins Hamerton, who was the first British representative in Zanzibar, moved from Muscat to Zanzibar.[269] Hamerton had established an office in Muscat and he moved his office to Zanzibar and thus, signified a shift of capital and importance of the city, at least in terms of administration. He became an important advisor to Sultan Sayyid Said as well as to the second Sultan of Zanzibar, Sayyid Majid bin Said. Many other representatives from different countries in Zanzibar followed later. Other people who migrated from Oman to Zanzibar during that

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[265] Emily Ruete, *Memoirs of an Arabian Princess from Zanzibar,* (Zanzibar: The Gallery Publications, 1998), *69* & 75.

[266] See Bhacker, *Trade and Empire*, 93, Ruete, *Memoirs*, 75 - 78 and Issa bin Nasser Al-Ismaily, *Will Zanzibar Regain Her Past Prosperity?* (Muscat, 2015), 62.

[267] See: Abdallah R. Mkumbukwa, *Socio-economic Change and Disease: the Spread of Malaria and its Control in Zanzibar - Tanzania, 1915 - 2000*, (Saarbrücken: LAP Lambert Academic Publishing GmbH), 27, 32 - 33; and Al-Ismaily, Ibid., 62.

[268] Eric Neumayer, *Geography, Power and Ideology: Diplomatic Representation in a Spatial, Unequal and Divided World: Research Paper in Environmental and Spatial analysis No. 122*, (London: London School of Economics and Political Science, 2007), 5; see also, Patrick Krajewski, *Kautschuk, Quarantäne, Krieg: Dhauhandel in Ostafrika 1880 - 1914*, (Berlin: Klaus Schwarz Verlag Berlin, 2006), 69.

[269] Siravo, *Zanzibar*, 14

time included Indians who had resided in Oman for a long time[270] and they became one of driving forces in the island's financial sector.

Effective and firm integration of Zanzibar with the external economy - which also transformed use of marine resource in the islands - began during the late-eighteenth century. During that period, the economy of Zanzibar was integrated into the western Indian Ocean rim.[271] At the time, the economy was mainly based on trading and plantations. Prosperity of both trade (through the Indian Ocean) and plantations of cloves contributed to influence on use of marine resources of fish and mangroves poles. Although trade was mainly based on slaves, ivory and spices, it also involved export of mangrove poles to the South Arabian coast. After legal abolition of slave trade in Zanzibar in 1873, the islands concentrated their economic efforts on clove plantations and trading of commodities other than slaves. There were three significant export commodities, namely, mangrove poles, dried fish and cloves.[272]

As the Zanzibar islands became further integrated into a capitalist economic system in the nineteenth century, the integration extended beyond the Indian Ocean region to include other areas of Europe and America. Therefore, there was an increment in magnitude of trade and geographical area of the economy. For instance, during the first phase of the integration into the western Indian Ocean region, trade in mangrove only involved mangrove poles to the Persian Gulf region. However, during the later phase of further integration in the nineteenth century, other items as well as areas of trade were discovered in relation to mangrove trees, with mangrove barks from Zanzibar exported to Europe and America.

Further and 'closer integration' of Zanzibar into the capitalist economic world, which later affected use of marine resources in Zanzibar, occurred in 1886 and 1890, marked by Anglo-German Agreements. In the first Anglo-German Agreement in 1886, the Sultan of Zanzibar retained ten miles of the mainland coastal strip, from Kipini in

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[270] Erik Gilbert, "Coastal East Africa and the Western Indian Ocean: Long-Distance Trade, Empire, Migration, and Regional Unity, 1750 - 1970" in *The History Teacher*, Vol. 36. No. 1, November, 2002, 25. http://www.jstor.org/stable/1512492, Accessed: 9 August 2012

[271] Gilbert, *Dhow*, 8.

[272] Gilbert, Ibid., 112 & 124–8; see also: Sheriff, "The Peasantry", 112.

Kenya southwards to Ruvuma River in southern Mainland Tanzania (then Tanganyika).[273] Therefore, Zanzibar relatively continued to enjoy the mainland part of marine resources, such as mangroves and fish, except for coastal ports, which were leased to the Germans.[274] In relation to that part of the coast, colonial powers conceded that the Sultan had spheres of influence in some parts of east African mainland and he effectively occupied the coast, and then adopted an average of ten miles for the whole coastline.[275] That was probably arranged to appease Sultan of Zanzibar for a while and then strategically grab the rest in steps.[276] The ten-mile strip provided a circumstantial basis that left the interior part of east Africa free for European appropriation.

The ten-mile coastal strip was significant in the history of Zanzibar and its marine resource use and conservation in many ways. First, the area included the major mangrove swamp in the east African region, the Rufiji delta. Secondly, the most knowledgeable and professional mangrove cutters and *mtepe* builders, Wagunya, were living in the Kenya portion of the strip. Moreover, the strip also harboured major ports in the east African coast.

In 1888, Sultan Khalifa bin Said, succeeded the throne of his brother Barghash bin Said. He knew little of the administration since he had been imprisoned and was not involved in the administration. Therefore, he offered to the German East Africa Company (Deutsch-Ostafrikanische Gesellschaft - DOAG) the right to collect taxes and duties on the coast of Mainland Tanzania (Tanganyika). The German government threatened the Sultan that it would withhold recognising his government in case he

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[273] See the following: John M. Mwaruvie, "The Ten Miles Coastal strip: An Examination of the Intricate Nature of Land Question at Kenyan Coast," *International Journal of Humanities and Social Science*, Vol. 1 No. 20; December 2011, 176-7; and James R. Brennan "Lowering the Sultan's Flag: Sovereignty and decolonization in Coastal Kenya," *Comparative Studies in Society and History*, Vol. 59 Issue 4 October 2008, 831.

[274] Sunseri, *Wielding the Ax*., 22.

[275] For detailed accounts about ten-mile strip and other parts of the mainland see, Al-Ismaily, *Will Zanzibar Regain.*, 69-71, 75-6, & 82.

[276] For instance, Germany took over the Tanganyika part of the ten-mile strip in 1890 while another part of the strip in Mombasa was 'officially' integrated to Kenya in 1963. This was after a series of bilateral agreements between the Sultans of Zanzibar and the British colonial administrations from 1895 to 1963; see Mwaruvie, Ibid., 1776 & 177.

hesitated to sign the treaty. Sultan Khalifa gave the DOAG a fifty-year lease of the coast and removed all his customs agents.[277] Sunseri analysed the situation as follows:

> Germans first intruded into the mangrove economy in 1888 when the sultan of Zanzibar granted a treaty concession to the German East Africa Company (DOAG) to collect tolls and administer the sixteen-kilometer wide strip. The treaty allowed the company to use coastal trees for ship repair, construction, and administration, occupy coastal ports in order to increase tolls and prosecute mangrove smuggling. The ensuing DOAG occupation of the Rufiji Delta, the biggest source of mangroves for Indian Ocean commerce, in addition to smaller ports, threatened the African side of the mangrove business...[278]

However, the DOAG agents were harsh compared to the sultan's agents who were socially well established. Some agents of the Sultan were intermarried with families of local chiefs. The DOAG agents arrogated rights of the chiefs over land and forests. They offended local customs and removed flags of the sultan in some places on the coast.[279] Such situation disturbed the local people's trend in using the mangrove forests because they used the forests even for daily household consumptions like charcoal and firewood. According to the agreement, the Sultan himself had the right to use part of the mangrove forests in Rufiji delta and he was allocated one hundred *corja* (a corja is twenty pieces) of firewood, for which he paid a nominal fee of 36 *pesas* per *corja*. Even in such contractual issue, the German agents seemed dissatisfied and

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[277] Sunseri, *Wielding the Ax*, 22; Sunseri noted that the German consul in Zanzibar exerted pressure on "the new sultan, Khalifa bin Said" to lease the area to the DOAG. The lease agreement was one of the major events as other parties took advantage of the changes in Zanzibar to initiate and pressurise their political and economic interests, including, the British protection in 1890, all the way to the revolution and the union between Tanganyika and Zanzibar both in 1964. See also: Robert Nunez Lyne, *Zanzibar in Contemporary Times: A Short History of the Southern East African the Nineteenth Century*, (Zanzibar: Gallery Publications, 2001), 132; and Arne Perras, *Carl Peters and German Imperialism: A Political Biography, 1856 - 1918*, (Oxford: Oxford University Press, 2004), 125, and Patrick Krajewski, *Kautschuk, Quarantäne, Krieg*, 71-73.

[278] Sunseri, Ibid., 27-8; See also the following: F. B. Pearce, *Zanzibar: The Island Metropolis of Eastern Africa*, (London: Frank Cass and Company Limited, 1967), 139; and Hans G. Schabel, "Tanganyika Forestry under German Colonial Administration, 1891-1919," in *Forest and Conservation History, Vol. 34, No. 3*, A Special Issue on International Forest History, (July, 1990), 130-141 and 135.

[279] Ibid., 22.

sometimes they attempted to control dhow captains who were sent by the sultan and gave him low quality woods, which he complained.[280]

In July 1890, the British and Germans signed the Anglo-German Agreement, also known as the Heligoland-Zanzibar Treaty.[281] In the agreement, the Germans accepted giving up their interests to control Zanzibar in exchange for Heligoland Island in northern Germany. The Heligoland-Zanzibar Treaty was one of major losses in the history of Zanzibar. From then Zanzibar was separated from Tanganyika and continued to be politically as well as economically weakened. The treaty further detracted from Zanzibar, the ten-mile coastal strip in Tanganyika. Subsequently, Germany bought the coastal strip in Tanganyika, which was rich in marine resources and agreed to pay 4,000,000 Marks. However, the money was not paid to the Sultan and instead, "the sum was lodged with the British Government on behalf of the Sultan of Zanzibar, and the interest on the sum in question (£200,000[282]) is [was supposed to be] paid annually into the Zanzibar treasury."[283] Under the agreement, Mombasa was temporarily and figuratively retained as part of Zanzibar until 1895 when the British agreed to lease Mombasa for annual payment of £17,000.[284]

From 1890 the Kenya Coast - which was part of the ten-mile coastal strip - was administered by the British as East Africa Protectorate (EAP), up to 1920, when it was annexed into Kenya colony. The coast retained its name EAP and thus, the British in Kenya administered the Kenya Colony and the EAP together, known as the Colony and Protectorate of Kenya. The EAP remained part of Kenya towards independence in 1963, when arrangements were made for the two parts to be independent as one Kenya.[285] Therefore, the result of the two Anglo-German Agreements in 1886 and 1890

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[280] Ibid.

[281] For more discussion see, Al-Ismaily, *Will Zanzibar Regain*., 82-84.

[282] However, although the British forced the Sultan to accept this amount of money, which he complained was very low; the British Foreign Office gave the money to the IBEACO shareholders instead of him. See for example: William Cunningham Bissell, *Urban Design, Chaos, and Colonial Power in Zanzibar*, (Bloomington: Indiana University Press, 2011), 80 & 337.

[283] Pearce, *Island Metropolis*, 139.

[284] Mwaruvie, "The Ten Miles Coastal strip", 176-9.

[285] Mwaruvie, "The Ten Miles Coastal strip", 176-9.

was a complete alienation of the Zanzibar share of the mainland coastal areas of Tanganyika and Kenya. Both areas carried major mangrove forests as well as a skilled work force that dealt with mangrove cutting and construction of fishing boats.

At the end of the nineteenth century, Zanzibar became a British Protectorate. In essence, the British established the colonial administration in Zanzibar. It was culmination of growing activities and influence of the United States of America (USA), Great Britain and other European powers in the Indian Ocean and Zanzibar, in particular. The growth went in parallel with diminishing political and economic power as well as autonomy of Sultans of Zanzibar.[286] The process started during the first half of the nineteenth century. For instance, the USA signed a commercial treaty with Sultan Seyyid Said in 1833, followed by Great Britain and France in 1839 and 1844, respectively. They subsequently established consulates in Zanzibar after the treaties to protect their respective interests in the area.[287] The USA opened their consulate in 1837, before Great Britain that followed in 1841 and France in 1844. Afterwards, Portugal, the Netherlands, Belgium and Italy followed.[288] Furthermore, the Hanseatic States of Bremen, Hamburg and Lübeck signed a commercial treaty with Zanzibar in 1859.[289] Accordingly, Zanzibar became a British Protectorate from November 4th, 1890.

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[286] J. R. Mlahagwa, "The Decline of the Landlords, 1873 - 1963," in Abdul Sheriff and Ed Ferguson (eds), *Zanzibar Under Colonial Rule* (London: James Currey, 1991) pp.14-5; See also: J. Forbes Munro, *Africa and the International Economy, 1800 - 1960: An Introduction to the Modern Economic History of Africa South of Sahara* (New Jersey: J. M. Dent & Sons Ltd., 1976), 53-55,and 57-77; Robert I. Rotberg, *A Political History of Tropical Africa*, (New York: Horcourt, Brace & World, Inc., 1965), 231-233; Norman R. Bennett, *A History of the Arab State of Zanzibar*, (London: Methuen & Co Ltd., 1978), 126-27; and Heinz Schneppen, "Zanzibar and the Germans: A Special Relationship 1844 - 1966", Ocasional Papers Number 10, (Dar es salaam: National Museums of Tanzania, 1998), 4-6; & A. Becker, "A New Sultan Succeeds to the Throne in Zanzibar: Our Special Audience with Him," (Excerpts from *Aus Deutsch Ost Afrikas Sturm-und Drangperiode*) in *Tanganyika Notes and Records*, No. 61, (Arusha: East African Printers, 1963) 147-9, 54.

[287] See the following: Harkishan Bhagat and Haroub Othman, "Colonialism and Class Formation in Zanzibar," in *Utafiti: Journal of the Faculty of Arts and Social Science, Volume III, Number 1*, (Dar es Salaam: University of Dar es Salaam Press, 1978), 197; Zinnat Bader, "The Contradictions of Merchant Capital, 1840-1939," in Abdul Sheriff and Ed Ferguson, *Zanzibar Under Colonial Rule*, Ibid., 168-9; and Mlahagwa, *Ibid*.

[288] Mkumbukwa, *Socio-economic Change*, 32.

[289] Schneppen, "Zanzibar and the Germans", 47. ; & Bakari, *Democratisation*, 47.

3.3 Conclusion

In this chapter, discussion is on history of Zanzibar prior to British colonialism. The chapter presents about the beginning of Zanzibar from a fishing village to subsequent development of a city-state. The major aim was to discuss the historical development of Zanzibar in connection with use of marine resources such as fish and mangroves, from the period of the Sultanate up to immediately before British colonial rule in 1890.

Agriculture was among major economic activities in Zanzibar and different land tenure systems guided use of the resources over time. The *mvyale* (or *mzale*) supervised land ownership and land use in different areas. In addition, different people such as proprietors and strangers had different land ownership as well as use rights according to their status. However, introduction and development of cloves around 1840s greatly transformed the land tenure system in Zanzibar. From that period onwards, clove plantations took over land that people previously used for food production. In addition, clove plantations 'invaded' the forests, which were among fertile land areas in Zanzibar. Therefore, people who depended on subsistence agriculture as well as forests for wood had to find alternatives and the major one encompassed mangrove forests.

From 1835, Zanzibar city was expanding and thus, there was accelerated demand for building materials such as mangrove poles and lime, both of which increased pressure upon the forests. However, expansion of clove plantations also began to reduce forest areas around the same period, which added more pressure on the mangrove forests. The fishing industry, which is generally disadvantaged due to the narrow continental shelf of Zanzibar and east Africa, came under pressure due to expansion of the city, with marine resources rapidly commoditised during that period. However, given the relatively low population during that period, the resulting pressure on the environment was still comparably small.

Expansion of the city of Zanzibar instigated increased demand for food products from rural areas and mainly fish from fishing villages. Fishing was becoming a more profitable venture than agriculture and thus, more people engaged in fishing. The trend

started to add pressure on fish resources and posed a future threat if it had to continue unchecked among society.

The *mvyale*, who was advised by the *Wazee* or *Wakubwa wa mtaa*, was also actively responsible for management of marine resources and used a system that resembled the land tenure system as well as the fallow system in agriculture. The *mvyale* initiated and controlled a closing period system on both mangrove forests and the fishing sector. Although the starting point of the tradition remains unclear, the *mvyale* supervised opening and closing periods in mangrove cutting and fishing, especially on *vilindi* in different areas in Zanzibar, initially to obtain plenty of larger fish for the *maulid* festivals, before it was later generally applied for the purpose of conservation of both mangroves and fish.

In the next chapter, the presentation is on analysis of introduction and development of the British colonial economy in Zanzibar together with its influence on use as well as conservation of marine resources. In addition, discussion is on the way people reacted to colonial economic measures that affected marine resources, which were not only vital for survival of coastal communities such as Zanzibar, but also were embedded in their culture.

CHAPTER FOUR

UTILISATION AND CONSERVATION OF MANGROVES AND FISH IN THE ZANZIBAR PROTECTORATE, 1890-1960s

Bandamaji... was the focal point of village life in the old days, for here stood the chief meeting place and council chamber, which gave its name to the locality... Time was when the Watu wanne used to resort every morning to the banda-la-mji for half an hour or so and seat there together, each busy on some craft such as the making of a fish-trap or line, or the plaiting of a hut or basket.290

European imperialism was also inseparable from the history of global environmental change. Metropolitan countries sought raw materials of all kinds, from timber and furs to rubber and oil. They established plantations that transformed island ecologies.[291]

4.1 Introduction

Use and conservation of marine resources in Zanzibar during the British colonial period can be studied within a broader colonial exploitation of natural resources. British colonialism in the name of protection began in 1890 and underwent several administrative as well as economic transformations, many of which affected the way marine resources of mangroves and fish were used and conserved. Abolition of slavery and its legal status between 1897 and 1907 affected the economy together with the position of the landlords. Such effects together with an increasing population and urbanisation in the 1930s accelerated use of mangroves and thus, affected their conservation. The forests were overcut during the Second World War and they never recovered to their original status.

The fishing industry, which is related to the mangrove forests as breeding and feeding grounds, influences on wellbeing of the fish as well as that of fishers including fish users. A large number of fish is fished around or within the mangroves. The fish

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[290] BA24/5 R. H. W. Pakenham, *Land Tenure Among the Wahadimu at Chwaka, Zanzibar Island*, Zanzibar: Government Printer, 1947, 5.

[291] William Beinart and Lotte Hughes, *Environment and Empire*, (Oxford: Oxford University Press, 2007), 1.

industry was also affected by colonial economic activities. Research institutions were established in Zanzibar and East Africa for production of marine scientific knowledge that was used for better control including systematic exploitation of marine resource (fish) in Zanzibar. Consequently, concentration of fishing efforts and marine researches on the coast resulted in structural devastation of fishing in Zanzibar. This chapter provides discussion on population, urbanisation and commercialisation of resources together with structure and attitude of administration in general as well as their implications for resource use and conservation in Zanzibar.

4.2 Phase One: Early Colonial Period, 1890-1933

4.2.1 Mangroves in Zanzibar during the Colonial Period

4.2.1.1 The Colonial Economy and Mangroves: An Overview

On November 4th, 1890, Zanzibar was officially declared a British Protectorate and the process of establishing a colonial administration and economic arrangements began. The major function was to set up a colonial economy that would suit interests and demands of the British colonial system, which aimed at obtaining industrial raw materials in a highly effective way, securing markets for industrial manufactured goods from Europe as well as minimising and financing operational costs for administration of the colony.[292] However, in places with a relative lack of minerals like Zanzibar, the option was always intensification of cash crop agriculture. Therefore, the colonial government in Zanzibar regulated clove and coconut agriculture for export of cloves and copra.[293] Trading activities during the early colonial period also depended on mangrove poles and later in 1930s, another item – mangrove bark – became a significant export item.[294] Therefore, during the colonial era, mangrove poles and mangrove barks were among significant trading items in Zanzibar side by side with

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[292] See for example the following: ZNA/AU7/42 A. L. Griffith, *Working Scheme for the Mangroves of the Zanzibar Protectorate*, (Zanzibar: Government Printer, 1950), summary, 6, 7, 10 & 15); and Paul Andres DeGeorges and Brian Kevin Reilly, *A Critical Evaluation of Conservation and Development in Sub-Saharan Africa, Book 1,* New York: The Edwin Mellen Press. 267.

[293] J. L. Mlahagwa, "The Decline of the Landlords, 1873 – 1963" in Abdul Sheriff and Ed Ferguson (eds.) *Zanzibar Under Colonial Rule* (London: James Currey, 1991), 153

[294] Erik O. Gilbert, *Dhows and the Colonial Economy of Zanzibar, 1860 – 1970* (Oxford: James Currey Limited, 2004) pp. 112 & 124 – 8. See also: Abdul Sheriff, "The Peasantry Under Imperialism, 1873 - 1963" in Abdul Sheriff and Ed Ferguson (eds.) *Zanzibar Under Colonial Rule* (London: James Currey, 1991), 112

cloves and copra. The mangrove forests were placed under the Department of Agriculture.

Zanzibar's agricultural economy before the colonial era had developed and was based on slave labour. British colonialism led to stagnation in economic operations, which, in turn, affected use of mangroves in Zanzibar. For instance, abolition of slavery in 1897, which was followed by abolition of the legal status of slavery in Zanzibar in 1907, disrupted economic prosperity during the early years of British colonial rule in the islands.[295] Abolition had dual impacts on the community of Zanzibar. Firstly, they signalled social freedom to slave community and many slaves applied to the Zanzibar Protectorate Government for freedom from their former owners who were subsequently entitled to financial compensation for freed slaves. Secondly, the abolition weakened the economic position of plantation owners, many of whom depended on slave labour. Therefore, many plantations were either abandoned or produced under capacity, owing to abolition that led to shortage of labour. It meant that farmers were suffering from losses because the cloves were not fully harvested and many cloves rot in the plantations.[296] That had an impact on use of mangroves because many people stopped building new houses during that period, especially in Stone Town where wealthy traders and farmers constructed their houses and used mangrove poles. However, many houses still needed constant repair and regular replacement of the poles or *boriti*[297] used in their building and thus, there was a reduced demand.[298]

Secondly, since dhows were major transporters of mangrove poles from Zanzibar, their number shrunk from the early years of the British colonialism. That could be considered as one of signs of decline in export of mangrove poles during the period. For example, the number of registered dhows in Zanzibar declined from 397 in

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[295] Jacques Depelchin, "The Transition from Slavery 1873 – 1914" in Abdul Sheriff and Ed Ferguson (eds.) *Zanzibar Under Colonial Rule* (London: James Currey, 1991), 24 - 25

[296] Jacques Depelchin, "The Transition from Slavery 1873 – 1914", 25

[297] *Boriti* is a Swahili name for rafter, beam or thick pole (usually of the mangrove) that is used for building roofs.

[298] Discussion with research partners.

1907 to 323 in 1910. That was caused by competition from government introduced steamers and the declining position of Zanzibar as an entrepôt.[299]

Also around the same period, the British prohibited construction of mud buildings in Zanzibar town, which used coconut palm thatch for roofing. The buildings needed more mangrove poles for construction than corrugated iron sheets that were encouraged by the British. Although corrugated irons were heavy as well as strong and thus, required more *boriti* of mangroves for support, they did not use mangrove poles for building. Use of the corrugated iron sheets seemed to counterbalance utilisation of the mangrove in the island during that period. Therefore, use of mangroves was minimal, partly due to the declining economy of people in the islands and the British restrictions on construction of mud houses, which used more poles than stone buildings that used fewer mangrove poles. Except for ceilings and roofs in building the stone houses, the mud huts used poles (*fito*) in the buildings' walls and their roofs. At the same time, the population was expanding, which increased the demand for mangrove poles and placed increasing pressure upon mangrove swamps, which the British tried to control.

The colonial economic arrangements and transformations during the early years in Zanzibar, which caused shrinkage of the economy, also resulted in lesser use of the mangrove forests. The economy of Zanzibar was not stabilised and clove farmers suffered the consequences such that many lost their farms due to unpaid mortgages. Hence, the colonial government introduced the Land Alienation Decree of 1935 to save the farmers[300] as well as the clove economy, which was declining because farms that were taken by the traders after farmers' failure to pay for their mortgages deteriorated. They deteriorated because traders, who forfeited them, were less interested in the farms and consequently, they neglected plantations. Significance of the decree was to control

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[299] Erik O. Gilbert, *Dhows and the Colonial Economy of Zanzibar*, 79.

[300] Salim Rashid Abdulla, "Institutional Developments in Land Administration in Zanzibar", http://www.fig.net/pub/fig2006/ppt/ts22/ts22_02_abdulla_ppt_0289.pdf accessed on 21.03.2010 and J. L. Mlahagwa, "The Decline of the Landlords, 1873 – 1963," 158

and limit transfer of land ownership through the Land Alienation Board.[301] Furthermore, cloves from Zanzibar were facing stiff competition from other clove producers in Madagascar and the number of landlords was declining as opposed to African peasants, whose numbers were increasing.[302] The situation never recovered and subsequently, it was one of the contributing factors for some clove farmers to gradually turn into mangrove poles and mangrove barks business as it was the case in the 1940s.[303]

4.2.1.2 Mangroves and Initial Decrees for Land Administration

There were several land administration laws, policies and arrangements established in Zanzibar during the colonial period. They aimed at increasing sustainable land productivity as well as systematically and easily controlling use of resources in Zanzibar. While some of them had indirect effects on mangrove forests, others were specifically introduced to manage use of mangrove forests. Hence, they had a direct influence on use and conservations of forests.

General arrangements in land management started with establishment of the Land Survey Section within the Public Works Department in the early-1900s. Subsequently, in 1909, the government introduced the "Land Acquisition Decree" for the purpose of securing space for public services.[304] Later on, the colonial government established the "Land Survey Decree" of 1912 to administer and regulate all survey activities in the country, which started earlier than 1912. All such decrees and arrangements paved way for highly concrete policies and laws that would guide governance of mangroves in Zanzibar during the British colonial era.

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[301] Salim Rashid Abdulla, "Institutional Developments in land Administartion in Zanzibar" and J. L. Mlahagwa, "The Decline of the Landlords, 1873 – 1963," 158

[302] J. L. Mlahagwa, "The Decline of the Landlords, 1873 – 1963," 160

[303] Interview with Mzee Kombo Ali Kombo on September 2011 at Chakechake, Pemba. See also ZNA/AU7/42 Mangrove Industry: Mangrove Working Scheme, extract from the Legislative Council on answers to questions asked by a Member Ali Shariff Musa on 25 October 1958

[304] Salim Rashid Abdulla, "Institutional Developments in Land Administration in Zanzibar"

4.2.2 Fishing Industry during Early Colonial Period

4.2.2.1 The Fishing Practices

Fishery was an important economic activity in Zanzibar during the colonial era. Many people depended on fishing for subsistence and animal protein. The local community dominated the fishing sector, which was also dominated by artisanal and inshore fishing.[305]

Recall, the fishing Industry in Zanzibar is directly related to the mangrove forests. During the colonial period, administration of the fishing industry was put together with the forests in the Department of Agriculture. More than 90 percent of all fishing activities in Zanzibar were and still are conducted around mangroves, and the same forests are breeding as well as feeding grounds for many fish species.[306] Many fishing villages in the islands are close to mangroves and use the trees in their fishing activities, such as making fishing traps, dhow masts and push poles.[307] Therefore, fishing together with the mangroves was significant in socio-economic activities of many people in the islands.

The indirect relationship between fishing and mangroves was that people used the mangroves to manufacture different household furniture, for house building and they sold mangrove products. Therefore, mangroves contributed to their subsistence. In due regard mangroves contributed to reduce pressure on fishing activities by providing possible alternative employment and income to the fishing communities. Although the two resources were administered in the same department during the British colonial era in Zanzibar, they got varied attention and weight from the government, probably due to different contributions to the colonial economy. Indeed, the mangroves had the upper

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[305] Cecil von Bonde, "Report on a Preliminary Survey of the Marine Fisheries of the Zanzibar Protectorate" (Zanzibar: The Government Printer, 1929), 4, ZNA/AB 46/23 Zanzibar Fishing Industry: Fisheries Research Scheme, 12

[306] Jude Peter Shunula, "Towards Sustainable Utilization of Mangrove Resources in Zanzibar: A Brief Review," Edited by Heidi Wittmer and Zien-Elabdin Hassan. *ACP – EU Fisheries Research Report Number 10. Proceedings of the INCO-DEV International Workshop on Policy Options for the Sustainable Use of Coral Reefs and Associated Ecosystems Mombasa, Kenya, 19-22 June 2000.* (Brussels: ACP-EU Fisheries Research Initiative, 2001), 137; See also: Jude Peter Shunula, "Public Awareness, Key to Mangrove Management and Conservation: The Case of Zanzibar." in *Trees* (Springer-Verlag) 16, no. 2-3 (March 2002)

[307] Jude Peter Shunula, "Towards Sustainable Utilization of Mangrove Resources in Zanzibar," 137

hand compared to fishing in terms of internal revenue and foreign exchange earnings from exports of mangrove poles and barks. Therefore, mangroves had more attention from the colonial government than the fishing industry.

Concentration and dependency of inshore fishing in Zanzibar and East African littoral waters signify that very little had been exploited in the high seas over a long period of time. Majda Zumer confirmed in 1971 that:

> ...the West Indian Ocean [which include Zanzibar and East African coast] remains as probably one of the most unexplored spaces of the hydrosphere...The most notable feature of Tanzania's coastline [which included coast of Zanzibar] is its lack of a true continental shelf. The reefs are found in a narrow belt close to the shore...[308]

Therefore, all such factors significantly hindered offshore fishing efforts in Zanzibar since the pre-colonial era. In addition, Mzee Haroub Mtungo from Jambiani village said that:

> ...fishing in a deep sea is hazardous and it was just like looking for trouble. My father trained me to fish and I have been fishing for more than fifty years now... But to my knowledge and experience we were not encouraged in deep Sea fishing because it was not an effective type of fishing because up to this time one could possibly go fishing for three up to four days getting nothing and sometimes we get very little to divide among ourselves [the fishermen]."[309]

The retired fishermen admitted their little engagement with deep sea fishing due to technical problems such as lack of powerful fishing vessels that could withstand the ocean environment and a good reward in terms of a good fish catch. Therefore, they

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[308] Majda Zumer, *Natural Resources Research in East Africa: A Report on Research Services, development and Organization of research Activity in East Africa*, *Bulletin No.12* (Stockholm: Swedish natural Science Research Council, 1971), 12. For further discussion see also, Peninah Aloo, "Marine Resources" in Jan Hoorweg, Dick Foeken and R. A. Obudho Eds., *Kenya Coast Handbook: Culture, Resources and Development in the East African Littoral,* (London: Transaction Publishers, 2000), 48

[309] Haroub Mtungo, interview at Jambiani village in Zanzibar April 27, 2012

have been conducting inshore fishing for many years, which provides the fishermen in Zanzibar with better rewards.

Research efforts concentrated on inshore as opposed to offshore areas, as von Bonde admitted in his study on fishing conducted in Zanzibar in 1928 in examining many areas in the vicinity of the coast but not for the offshore areas. Indeed, von Bonde stated that, "No attempt at trawling off the coast of Zanzibar was made, owing to the great depth of water. Within about three miles off the coast a depth of over 150 fathoms (about 270 metres) is encountered, and no survey of the water has as yet been made."[310] However, such bias of selecting inshore areas for research continued up until the post-revolution period, and it was not only the case for Zanzibar but also for the whole east African region.[311]

Different actors have contributed to influencing such development trend in the marine industry in Zanzibar, including fishers, fish traders (including but not limited to wholesalers, retailers as well as auctioneers), fish consumers (mainly fish buyers and users) and fishery researchers. All such actors have affected demand and supply of fish in the area in different ways.

4.2.2.2 Initial Research and its Implications

The first major study on development of the fishery industry was conducted in Zanzibar by Dr. Cecil von Bonde in 1928. He examined different methods used for fishing, processing and marketing in the marine fishery industry in Zanzibar in order to understand local fishing methods and techniques so as to suggest ways of improvement. Furthermore, the study was geared towards advancing the industry to commercial fishery, and to improve yet maintain the prevailed fishing methods. Another aim was to

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[310] Cecil von Bonde, "Report on a Preliminary Survey of the Marine Fisheries of the Zanzibar Protectorate" (Zanzibar: The Government Printer, 1929), 4, ZNA/AB 46/23 Zanzibar Fishing Industry: Fisheries Research Scheme,

[311] See for example: Majda Zumer, *Natural Resources Researchin East Africa*, Stockholm: Swedish Natural Science Research Council, 1971), 12; Narriman S. Jiddawi and Marcus C. Öhman, "Marine Fisheries in Tanzania," *A Journal of the Human Environment, Volume 31, Issue 7*, (2002), 519, http://www.bioone.org/doi/full/10.1579/0044-7447-31.7.518 access: June 25, 2013

improve fish curing methods and suggest other possible fish processing techniques for better marketing of fish and fish products.[312]

Along the same line there emerged an issue of equilibrium of demand and supply of products. Major concern was how to better dispose of expected flood of supply of fish in case of the improved fishing methods. Two viable solutions were offered. The first was to stop imported dried fish (the Sharks - *Papa* and Kingfish - *Nguru*) from Aden as well as Arabia and replace with fresh fish from within Zanzibar. However, it appears that von Bonde was unclear as to why people were eating dried fish before he arrived at the conclusion to replace the dried to fresh fish as far as importation and consumption of dried fish were concerned. He presumed that the local people in Zanzibar only ate dried fish because of the cheaper price, and therefore, the higher supply of fresh fish there would result into lower price, making it easy for people to switch from eating dried fish to fresh fish. Such evidence suggests that there were two groups of dried fish eaters: first, there were those who ate dried fish because it was cheaper than fresh products; and second, other people consumed dried fish for the peculiar taste resulting from the way in which they were processed.

Furthermore, it was suggested that to better utilise the fish resources, the government should open up fish processing industries that would deal with fish as well as fish products and by-products. The industries would ensure effective use of the products that were expected to increase without environmental and economic problems.[313]

In his report, von Bonde made two contradictory statements. One is that after he visited a Zanzibar market and several fishing centres, he was convinced that supply of fish was sufficient for local demands and an increment in supply would upset the situation. This seems to contradict with the issue of importation of ‘cheap’ dried fish

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[312] Cecil von Bonde, "Report on a Preliminary Survey of the Marine Fisheries of the Zanzibar Protectorate" (Zanzibar: The Government Printer, 1929), 2, Zanzibar National Archives Zanzibar National Archives ((hereafter, ZNA))AB 46/23, AB 46/23, Zanzibar Fishing Industry: Fisheries Research Scheme, Cecil von Bonde, "Report on a Preliminary Survey of the Marine Fisheries of the Zanzibar Protectorate" (Zanzibar: The Government Printer, 1929), 2, ((hereafter, AB 46/23, von Bonde report))

[313] ZNA/AB46/23 Zanzibar Fishing Industry: Fisheries Research Scheme, Cecil von Bonde, A Preliminary Survey of the Marine Fisheries of Zanzibar

from Arabia. If the idea was to service the poor because of the higher price of fresh fish, as the report seems to suggest, which again would be settled with higher supply of fresh fish, then it shows that fish was in short supply in the area. As von Bonde argued:

> …the present is well catered for, so as far as this is concerned, it appears as though an increased activity in fishing would tend to swamp the markets. …a large amount of dried fish is imported principally from Aden and Arabia. Having had an opportunity to examine these imports, which are chiefly for the consumption of natives, I am convinced of the fact that the dried products are unwholesome for human consumption, and recommend that they should be replaced by fresh fish.[314]

However, this prompts questions of determination of what and how the local community had to consume fish. Who is determining and under what conditions? As one of the impacts of research is to influence policy formulation, in terms of the questions of food consumptions as far as dried fish was concerned, was it a question for a food and nutrition specialist to determine whether the food was 'suitable for human consumption' or not? Aside from nutritional value, food is also about cultural standards[315] and attention to food taste, which is also culturally embedded. Therefore, although the imported dried Shark and Kingfish were cheap in price and mostly preferred by the local poor people, the fish were also popularly consumed by other coastal Swahili communities in Zanzibar. As an elder Swahili woman argued that, "*Papa* and *Nguru* are delicious, easy and quick to prepare with different cooking styles...they need a short time of preparation and thus we preferred the fish due to those qualities."[316]

Quite different opinions regarding food and nutrition versus tastes and preferences were also pointed out by the Director of Agriculture in Zanzibar in 1952. He

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[314] ZNA/AB46/23 Zanzibar Fishing Industry: Fisheries Research Scheme, Cecil von Bonde, Ibid., 2 and 3.

[315] Melissa Graboyes, "Good Food, Ridiculous Diets, and a Well Fed Swahili: British Approaches to Food in Colonial Zanzibari Institutions," Working Papers in African Studies No. 262 (Boston: African Studies Center – Boston University, 2009), 11-12; See also a correspondence from the Director of Agriculture to Chief Secretary of the Zanzibar Protectorate ZNA/AJ13/2 Medical Department: Nutrition Improvement of Zanzibar Protectorate, Volume III, November 19, 1952

[316] Bi. Mwanajuma Ali Salum, intervies with the researcher, Kizimkazi - Zanzibar, April 19, 2012

commented that the "inhabitants of these [Zanzibar] islands are very fussy as regards to the flavour of rice [and other food]..."[317] Therefore, apart from nutritional values of the food item, one has to bear in mind a number of other factors, such as tests and preference. However, this does not rule out that people paid little consideration to nutritional issues, but rather that the two went together. The Director further reported - albeit without mentioning Shark and Kingfish - that the work of salting and drying of fish had begun and was monitored by the fisheries officer in Zanzibar. That was after an investigation into the local process of fish preservation in the islands.[318]

Colonial research works on marine fisheries failed to achieve their stated goals, and therefore, retarded development as it was stated. The major role of fishery researches during the initial phase of the colonial era was to identify, analyse and document key areas for development of the fishing industry in the country so as to boost the fish catch and proper processing of the products. The researches had to clearly show potential areas and ways to achieve success in implementation of the recommendations. For instance, this was why a call was made for establishment of commercial or off-shore fisheries and use of powered fishing vessels right from the beginning of the research works during the early period of British colonial administration in Zanzibar. It was also advised that the government should find ways to improve fish processing methods and establish industries that would enable use of fish products and by-products. For example, von Bonde recommended establishment of fertilizer industries in order to better utilise fish by-products. However, it took several years for the government to begin implementing recommendations. It seems that advice concerning the manner to proceed and process the implementation of advised issues was beyond the scope of the study.

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[317] Correspondence from the Director of Agriculture to Chief Secretary of the Zanzibar Protectorate ZNA/AJ13/2 Medical Department: Nutrition Improvement of Zanzibar Protectorate, Volume III, November 19, 1952

[318] Correspondence from the Director of Agriculture to Chief Secretary of the Zanzibar Protectorate ZNA/AJ13/2 Medical Department: Nutrition Improvement of Zanzibar Protectorate, Volume III, November 19, 1952

However, although many colonial officials were hesitant in approving the work[319] of von Bonde and one may agree with some views that the work was so limited to be used as a baseline for fisheries information in the area, although the work was significant for a number of reasons. First, apart from being the first relatively extensive survey during the colonial era in Zanzibar, the work had been used as a starting point for research on fisheries on East African coast. Indeed, for over nineteen years from its publication in 1929 up to 1951, there was no study of its kind in East Africa.[320] Second, other works that followed, including comments from those who despised the work of von Bonde, proceed along the same line of disinterests in deep sea fisheries research in East Africa with reference to von Bonde's report. Indeed, reports and fisheries proposals during the colonial period referred to the same work undertaken by Cecil von Bonde in 1928.

4.3 Phase Two: Middle Colonial Period, 1933-1950

4.3.1 The Mangroves

4.3.1.1 Change of Mangrove Vegetation, 1930-1950

According to Dr. A. L. Griffith, the then Forest Officer in Zanzibar, there were seven main species of mangrove trees in the Protectorate of Zanzibar: *Rhizophora mucronata (Mkoko or Mgando); Bruguiera gymnorhiza (Msisi, Msinzi, Mchonga in Pemba, Muyi in Zanzibar); Ceriops candolleana (Mkandaa mwekundu); Sonneratia acida (Mpera in Pemba, Mlilana in Zanzibar); Avicennia officinalis (Mchu); Carapa obovata (Mkomafi, Mtonga);* and *Heritiera littoralis (Msikundazi)*.[321] The dominant mangrove species were *Rizophora mucronata* and *Bruguiera gymnorhiza* (see Tables 3:1, 3:2 and 3:3). They occupied a major part of mangrove forests in islands and they were widely distributed in Zanzibar. In 1930, the overall spatial coverage of the two mangrove species was estimated at more than 50 percent of mangrove forests in both

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[319] See, for example: Kenya Colony, "Proposed Research Unit with Shore Base at Shimoni - Summary" Z.N.A./AB.46/23 Zanzibar Fishing Industry: Fisheries Research Scheme, 1948.,

[320] See the following: East Africa High Commission, "Application for a Grant from the Research Allocation of the Colonial Development and Welfare Fund 1945" September 13, 1948, Z.N.A./AB.46/23 Zanzibar Fishing Industry: Fisheries Research Scheme, (365B) and F. Williams, "Preliminary Survey of the Pelagic Fishes of East Africa," *Colonial Office Fishery Publications No. 8,* (London: Her Majesty's Stationery Office, 1956), 3.

[321] ZNA/AU7/42 A. L. Griffith, *Working Scheme for the Mangroves*., 4

Unguja and Pemba. The two species were also considered highly valuable due to their utility as the major source of bark production for export to American and European markets. Moreover, the quality of the trees available for mangrove barks was commercially good, meeting the standards established by the colonial government in both Unguja and Pemba. But it was found that after the Second World War from 1945, the minimum of 8 inches diameter standard[322] of the *Rhizophora* and *Bruguiera* trees, which was the condition for bark stripping before the War was no longer available.

Disappearance of the standard 8 inches diameter of mangroves was irreversible. Therefore, it became necessary to reduce the standard measurement for bark stripping, and the minimum of 6 inches diameter was fixed.[323] Although that was considered a temporary measure for a five-year period, taking into account recovery period for mangrove trees, the temporal nature was unrealistic. According to Griffith,[324] it requires about 15 years to raise 2 inches of a 6-inch diameter mangrove into 8 inches diameter. Therefore, the practice continued for the entire colonial period[325] up to independence, when it was completely forbidden to utilise mangroves for bark stripping as an inappropriate use of the resource.[326]

Setting of a 6 inches minimum diameter of the trees for bark peeling, which was not commercially available in many places in the islands, provided a lesson to be learned. That is, conditions and regulations for utilisation of the mangroves were practically disregarded by actors, including colonial officials such as forest officers[327]

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[322] The tree of that size was technically regarded as ripe, mature and therefore ready for the harvest of the bark for consumption and was estimated to produce the equivalent of about 45 kilogrammes of fresh barks or about 23 kilogrammes of the dried bark. See: Griffith, *Working Scheme for the Mangroves*., p. 15

[323] ZNA/AU7/42 A. L. Griffith, *Working Scheme for the Mangroves*, p. 10

[324] ZNA/AU7/42 A. L. Griffith, *Working Scheme for the Mangroves*, p. 13

[325] ZNA/AU7/49...Correspondence the Forest officer to Mr. I. G. Raval, 1962 (a mangrove bark exporter)

[326] Thabit S. Masoud and Robert G. Wild, "Sustainable Use and Conservation Management of Mangroves in Zanzibar, Tanzania," in Marta Vannucci (ed.), *Mangrove Management and Conservation: Present and Future* Tokyo: United Nation University Press, 2004, p. 283

[327] For instance, the Government declared Charawe village, which is a part of Chwaka Bay, closed for mangroves cutting. Nevertheless, Griffith described the area as "heavily worked for poles" in the past (the period from 1939 to 1949) and had number of the dead mangroves probably because of bark stripping without cutting down the trees and remove from the forests for other uses such as poles. See: Griffith, *Working Scheme for the Mangroves*, 30

and forest guards as well as communities such as the mangrove traders, mangrove cutters and mangrove transporters. Therefore, that tendency resulted in a miserable situation whereby recovery of the forests to the former status became impractical because it would have taken many years, which the colonial government was not prepared to accept for two reasons. Firstly, the colonial government in Zanzibar needed cash and the mangrove business was one of the major sources of funds in the protectorate. Secondly, the colonial government wanted to protect and maintain the prevailed mangrove bark markets and therefore, the government continued to supply the commodities.

Additionally, it would have been difficult to control the community members involved in the business and the mangroves were part of their culture and subsistence, just like other types of economic activities such as agriculture and fishing. That was the case because natural forests, which were in western parts of both Unguja and Pemba, were already destroyed by expansion of clove plantations from the 1840s. Furthermore, some areas such as Kichenge Creek in Pemba, the largest of all mangrove swamps in Zanzibar, were almost inaccessible by the colonial authority, and inhabitants of Micheweni had been cutting the mangroves for many years. It is uncertain whether it was strategically planned by mangrove cutters not to cut the trees around the creek, or due to natural environmental circumstances, or even both factors, but areas around the Kichenge Creek were almost impossible for government vessels to reach and control mangrove cutting.[328]

Furthermore, it was observed that Pemba Island was more negatively affected by use of the resources than its sister island of Unguja, which also had fewer mangrove forests. During that time, the colonial government divided Unguja and Pemba into three mangrove felling series, one in Unguja and two in Pemba, for easy mangrove forest management.[329] In 1949, mangrove forests in Pemba covered about 75 percent of the mangroves in Zanzibar and they had a poor coverage and quality of the trees for bark business. Change in quality status of the mangroves in Pemba was a result of a ten-year

[328] Gilbert, *Dhows and the Colonial Economy*, 120.

[329] This discussion will be dealt in depth later in section 4.2.1.4 The colonial administration of Mangroves.

period of excess use of the resources in the area, since the eruption of the Second World War in 1939. For example, the felling series[330] in Unguja had about 81 percent of the *Rhizophora* trees between 5.1 and 6.4 inches diameter and 7.5 percent of the above 6.4 inches diameter, while the remaining 1.95 percent was probably for smaller sized trees. In contrast, the two Pemba felling series had far less comparable percentages. The North District felling series in Pemba had trees of about 45 percent for trees between 5.1 and 6.4 inches diameter and only about 3 percent for over 6.4 inches together with about 52 percent of the *Rhizophora* below 5.1 inches. On the South district felling series, Pemba had 18 percent of the 5.1 to 6.4 inches diameters of *Rhizophora* and had no trees above the 6.4 inches diameter.[331] Had the case of deterioration of resources been vice versa, given the same conditions between the two islands, then it would have been possible to continue utilising the resources sustainably without altering the diameter measure. However, the entire trend implies that there was a greater concentration in use of resources in Pemba during the 1840s to the extent that it required excess labour force as Mzee Kombo remembers when he was working on the mangrove forests during the 1940s:

> …during that time we acted as if the mangroves had no restrictions at all and around our village of Misooni the cutters would come to ask whether we [boys] were interested in the mangrove bark stripping or not…. We used to strip the barks and we were paid some amount of money [he could not remember the exact amount] per one tree. We were many boys and we were just enjoying the job as well as the payment we received. We also used to load the dried mangrove barks into the jute sacks for a token money or sweets.[332]

However, due to the regenerative nature of the mangroves, the spatial distribution of the mangroves in Pemba and Unguja remained the same, apart from the fact that the trees were heavily exploited over the years. Thus, what changed was the

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[330] These were the division of forests plots that were arranged for cutting and bark peeling activities.

[331] Griffith, *Working Scheme for the Mangroves*, 35-39.

[332] Interview with Mzee Kombo Ali Kombo on September 2011 at Chakechake, Pemba.

severely deteriorated quality of the forests in terms of number of the trees that had the appropriate size required for the bark peeling and consumption, especially in Pemba.[333]

Moreover, reduction of the required tree size to be cut for bark consumption shows that the intention of the British to conserve the resources for sustainable utilisation was in question. Firstly, it took around two years for the Griffith recommendations to start being implemented after the Director of Agriculture had reminded and insisted on recommendations and continual deterioration of the mangrove forests in Zanzibar.[334] Secondly, it was difficult to find an adequate size of the trees for the bark trade even after size reduction. Thirdly, it required close supervision and control so that people would not cut undersized trees. Accordingly, the government had to be stricter about the domestic consumption of the mangroves, which had to be directed to non-bark trees and dead mangroves, that is to say, trees that had been stripped off their barks and left in the forest. Nonetheless, there was inadequate number of forest guards[335] who could be useful in supervising activities. Therefore, the whole business was in trouble.

Therefore, reduction from 8 to 6 inches diameter of the mangroves for bark exploitation from 1950 was not ecologically sensitive, but highly economically or monetarily biased because the colonial administration wanted to continue gaining much-needed revenue from the trade. In addition, the government wanted to keep its bark markets in America and Europe with a relatively stable supply of the products.[336] Tendency of allowing people to continue exploiting the already damaged resources was a relatively short-lived advantage[337] and that the colonial agriculture and forests experts

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[333] ZNA/AU7/49…. and ZNA/AU7/42 A. L. Griffith, *Working Scheme for the Mangroves*., 12 and 18

[334] ZNA/AU7/42 Mangrove Industry: Working Scheme – Correspondence from Director of Agriculture to the Chief secretary

[335] ZNA/AU7/42 Mangrove Industry: Working Scheme – Correspondence from Director of Agriculture to the Chief Secretary, 1952; see also ZNA/AU7/49 Correspondence from the Forest Officer to the District Commissioner, Pemba, 1962

[336] ZNA/AU7/42 A. L. Griffith, *Working Scheme for the Mangroves*., 10 and 15

[337] Paul Andres DeGeorges and Brian Kevin Reilly, *A Critical Evaluation of Conservation and Development*., *Book 1*, 268

knew that if it continued to allow the activities, then the resources (the mangrove forests) would deter to an un-repairable condition for years to come.[338]

[338] ZNA/AU7/42 A. L. Griffith, *Working Scheme for the Mangroves*., 35 -39)

Table 4.1 Distribution of mangrove species in Unguja working circle

		Rh.	**Br.**	**Ce.**	**Ca.**	**Av.**	**So.**	**He.**
Chwaka Bay	Mapopwe	40%	45%	10%	Ca. & Av. 5%			
	Charawe	20%	25%	40%	Ca +Av 10%		5%	
	Michamvi, Ukongoroni and Kinani	25%	50%	20%	Ca. & So. 5%		See Ca.	
Kisakasaka	Kisakasaka	80%	5%	Ce.&Av. 5%	Ca. & So. 10%	See Ce.	See Ca.	
	Kiwani	60%	Br. 10%	Ce. 10	5%	5%	10%	
Unguja Ukuu	Unguja Ukuu	40%	20%		Ca. & Av. 10%		30%	
	Muungoni	30%	30%	10%		10%	20%	
Makoba Bay	Makoba	15%	20%		Ca. & So. 5%	Av. 60%	See Ca.	
	Pangani	5%	50%	Ce&Ca 10%		30%	5%	
	Mwanda	15%	40%	Ce&Ca 10%		20%	5%	
Nyanjale		This area was considered small and estimation was not made						
Kigunda		70%	5%	Ce. & So. 10%		5%	See Ce.	

Source: R. H. W. Pakenham, (1957)
Keys: Rh - Rhizophora Br – Bruguiera Ce – Ceriops So – Sonneratia Av – Avicennia Ca – Carapa He – heritiera
A – Available in a relatively small number and not estimated to percentage

Table 4.2 Distributions of mangrove species in the northern district of Pemba working circle

		Rh.	**Br.**	**Ce.**	**Ca.**	**Av.**	**So.**	**He.**
Micheweni		50%	20%	A		15%	15%	
Wingwi		25%	10%	A		A	40%	
Shengejuu	Shengejuu	30%	15%	A	A		45%	
	Kiuyu	55%	20%	A			A	
	Mchangamdogo	35%	17%	A	A		40%	
	Kojani	20%	10%	A		A	30%	
Tumbe		45%	10%	20%	A	20%		A
Msuka		25%	15%			10%	A	
Gando		50%	25%	10%	A			A
Wete		25%	10%	A	A	A	25%	
Pembeni		40%	10%	Ce. & Ca. 10%		15%	25%	

Source: R. H. W. Pakenham, (1957)
Keys: Rh - Rhizophora Br – Bruguiera Ce – Ceriops So – Sonneratia Av – Avicennia Ca – Carapa He – heritiera
A – Available in a relatively small number and not estimated to percentage

Table 4.3 Distributions of mangrove species in the Southern district of Pemba working circle

		Rh.	**Br.**	**Ce.**	**Ca.**	**Av.**	**So.**	**He.**
Pujini		40%	20%	Ce. & So. 30%	Ca. & Av 30%	See Ce.		
Mwambe-Fufuni	Fufuni	20%	5%	Ce. & Av. 10%		See Ce.	60%	
Mkoani		45%	5%	15%	5%		30%	
Matumbini Islands		60%	15%	Ce. & Ca. 5%		Av. & So. 20%		
Chake		Rh.&Br.30%				X	X	

Source: R. H. W. Pakenham, (1957)
Keys: Rh - Rhizophora Br – Bruguiera Ce – Ceriops So – Sonneratia Av – Avicennia Ca – Carapa He – heritiera
A – Available in a relatively small number and not estimated to percentage; X – Dominant but not estimated in percentage.

Mangrove poles that were used in Zanzibar were obtained from large and small swamps. Large swamps were mainly along the coast of mainland Tanzania (then Tanganyika) and the largest was the Rufiji delta. Small swamps were in Unguja (Zanzibar) and Pemba islands. The largest of the small swamps was Kichenge Creek in Micheweni, northern Pemba, which had about three square miles of mangroves.[339]

In terms of colonial regulation and control over use of mangroves, the Kichenge Creek was almost out of control. The colonial state could not effectively control Kichenge because it was situated in shallow waters and could only be reached by *mitepe* of Bajuni "on a high tide."[340] Thus, that could be a reason mangroves in the swamp were overcut and degraded. The swamp became less productive within a few years. Professional cutters in the area were Bajuni from Lamu,[341] currently, in Kenya. Zanzibar, which had a relatively small share of mangrove forests in east Africa, compared to Kenya and Tanganyika, overtook them during the inter-war period in terms of export of mangrove resources, especially mangrove barks.[342] Although some poles were from Tanganyika and re-exported from Zanzibar, given the smaller size of the mangrove forests of Zanzibar, pressure exerted upon them in terms of both poles and barks was too much. The situation resulted in depletion of the resources to the extent that it alarmed the colonial authority in the island. The government was subsequently forced to set-up laws and regulations to control the situation.

4.3.1.2 Trend of Policy Making After 1933

Then there were "Land Alienation Decree" of 1935, followed by establishment of the "Department of Surveying and Registration" in 1936 and "Land Acquisition (Assessment for Compensation) Decree" of 1949.[343] However, although the said decrees and arrangements dealt with land management issues in Zanzibar, they had little and only indirect influence on use and conservation of mangrove resources.

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[339] Gilbert, *Dhows and the Colonial Economy*, 119

[340] *Ibid*., 120

[341] *Ibid*., 119

[342] *Ibid*., 125

[343] Ibid.

There were decrees that specifically dealt with mangroves in the country, such as the "Wood Cutting Decree" introduced in 1945. Although some people were negatively affected and complained about implementation of the decree, generally, it had a remarkable natural environmental effect as far as recovery of the badly affected mangroves was concerned. One of the major challenges in managing forests and other natural resources has always been to strike a balance between use and conservation for sustainability of the resources and the surrounding societies as well as their culture. In some areas in Zanzibar, there was degradation of mangrove resources to the extent that the forests were in danger if no significant steps were taken. Under the decree, some areas were declared closed to mangrove cutting for a specified period in order to allow growth and recovery of the trees. That mainly applied to areas that were adversely affected by mangrove poles and bark trading activities. According to the decree, cutting of poles was allowed for the local community to fulfil their pressing domestic demands for poles in other areas that were not declared closed. Furthermore, areas could be open for trading purposes, only after close scrutiny and issuance of a permit to traders.[344]

In principle, implementations of this decree have two implications: first, it shows that it was the beginning of the colonial policy of social exclusionism from their natural resources in Zanzibar; and second, it indicates that implementation and practises of the decree reflected that the colonial government was getting back to the former traditional conservation practise of closing and opening the mangrove forests areas. But later on from 1950, the government went far by completely excluding communities from use of the resources in some areas. As previously discussed (see Chapter 3), the practise was evident prior to British colonial period and it ceased to be practised when management of the forest was assumed by the British for the early period of the 1910s.

Theoretically, the decree involved three key issues. First, it took care of the environment and ensured that there was no degradation of mangrove or forest resources in general. Second, the decree took care of necessary steps for recovery of trees in case of areas where there was already an excess exploitation of the resources. Third, the decree ensured that important local requirements of elements such as poles for

[344] ZNA/AU7/42 Mangroves Industry – Working Scheme

construction purposes were met. Nonetheless, it was only possible in areas where mangrove forests were not declared closed. Otherwise, it was impossible. According to the Decree, it was made necessary for any one cutting poles for trading purpose to be issued a permit. But in practising the decree, there were several challenges. Many nearby forest areas were closed and the surrounding community had to suffer the consequences. They went a far distance to meet their forests related requirements. Second, the decree overlooked the local traditional and customary demands related to the environments, which were primarily declared as being taken care of. Therefore, application of the decree sometimes caused frictions between the local community and the colonial government officials.[345]

4.3.1.3 Utilisation of Mangroves, Urbanisation and Population Pressure

The mangroves have long been used in Zanzibar in different forms and activities according to their size and demands. They have been mainly used as building materials because they are resistant to rotting agencies such as termites and rain water.[346] In the building sector, the larger mangroves were poles or pillars of between 4.7 and 8 inches diameters, which were used for construction of Swahili houses, predominantly to support the mud-ceiling.[347] Other mangroves of about 1.5 inches or less were also utilized as building sticks[348] to support the Swahili mud-walls. The sticks were also used to construct fish traps and fences.[349] Furthermore, the mangrove poles have been used extensively as scaffolding in construction of large buildings. Besides, there are several other uses of the trees; for instance, the trees' products have been used as medicine. Mangrove fruits have been used to treat stomach pains in villages such as Vitongoji, Makunduchi and Jambiani.[350] Mangrove barks have been used for tanning of local leather goods and baskets such as winnowing baskets. Moreover, mangroves have

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[345] ZNA/AU7/42 Mangroves Industry – Working Scheme

[346] Abdul Sheriff, *Dhow Cultures of the Indian Ocean: Cosmopolitanism, Commerce and Islam,* London: C. Hurts and Co. (Publishers) Limited, 32 and BA24/5 R. H. W. Pakenham, *Land Tenure Among the Wahadimu*, 28

[347] Sheriff, *Dhow Cultures of the Indian Ocean*, 32

[348] Sheriff, *Dhow Cultures of the Indian Ocean*, 32

[349] BA24/5 R. H. W. Pakenham, *Land Tenure Among the Wahadimu*, 28

[350] Interview with Mzee Suleiman Haji (Njenje) on April 2012 at Jambiani, Unguja. Also Interview with Mwalim Rajab on May 2012, Chakechake, Pemba

been used as a source of energy (firewood and charcoal) as well as for building animal carts and fishing traps.[351] Despite their small quantity in usage, the mangroves were also used for constructing parts of the dhows, especially masts and push poles.

Local communities in Zanzibar were allowed to utilize forest resources according to their regular requirements, which meant to cater for their domestic consumption, such as firewood for cooking and lime burning as well as poles and timber for building their houses.[352] However, since there was no precise boundary or defining terms concerning how much was 'the regular requirement of the local communities,' it was discovered that some people made business out of it. That seemed to accelerate establishment of a Forests Reserves Decree in 1950[353] to place some mangrove forests entirely under government control and further restrict the local community from consuming the forest resources in the islands.

[351] See the following: BA24/5 R. H. W. Pakenham, *Land Tenure Among the Wahadimu*, 28; Thabit S. Masoud and Robert G. Wild, "Sustainable Use and Conservation Management of Mangroves in Zanzibar, Tanzania," in Marta Vannucci (ed.), *Mangrove Management*, 282;

[352] ZNA/AU7/42 A. L. Griffith, *Working Scheme for the Mangroves*, 6

[353] Zanzibar Protectorate, *A Decree to Provide for the Establishment, Protection and Management of Forest Reserves*, (Zanzibar: The Government Printer, 1950)

Figure 4.1 A local bus transporting mangrove poles from the rural area in Unguja
Source: Pakenham, (1947)

As previously discussed, wealthy people in Zanzibar built many large houses in Zanzibar Stone Town, which was the capital and major town in the islands. They constructed the houses side by side with other common people in Zanzibar. The town began to grow rapidly during the rule of Sultan Seyyid Said from the 1840s.[354] Apart from economic stagnation that Zanzibar faced after transformations brought about by the British colonial government from the 1890s, the number of people living in urban areas increased over time, together with the general population (see Table 3.1). This indicates an increase in demand for social services such as housing, which, in turn, had implications for use of resources including building materials such as mangrove poles for domestic houses in both urban and rural areas.

A colonial government survey conducted in 1893 indicated that there were 1,506 mansions or stone buildings, compared to 5,179 huts in Zanzibar town.[355] Subsequently, economic changes had the effect of "reducing the number of landlords

[354] John Middleton, *Land Tenure in Zanzibar*, (London: Her Majesty's Stationery Office, 1961), 12 & 14

[355] William Cunningham Bissell, *Urban Design, Chaos and Colonial Power in Zanzibar*, (Bloomington: Indiana University Press, 2011), 65

and increasing the number of African peasant smallholders. Increasingly, landlords were reduced to becoming smallholders and permanent residents of the towns..."[356] Again, that pattern accelerated the urbanisation process and expansion of Stone Town. In the early-1930s, the colonial government through its Town Planning Board tried to strictly control construction of houses in Stone Town and Ng'ambo by using an elaborate Master Plan. But the situation was difficult to control, including the master plan itself, and few years later in 1938, the whole control programme was abandoned and the ban against mud houses (as discussed before) was declared unlawful.[357] Urbanisation of communities in Zanzibar increased gradually whereby out of a total population of 149,575 on Unguja Island in 1948, about 28 percent (42,362) were living in Zanzibar town. In Pemba Island, urbanisation was relatively slow and there were three different townships of Wete, Chekechake and Mkoani. Thus, out of the total population of 114,587, there were only 7,389 urban residents.[358] Urbanisation had increased by 1958 whereby 35 percent of people lived in Stone Town and 12 percent of Pemba population lived in townships.[359] As a result, development of urban communities in the islands propelled demand for more houses, many of which required many mangroves and coral stones as building materials thereby jeopardised these resources.

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[356] J. L. Mlahagwa, "The Decline of the Landlords, 1873 – 1963," 160

[357] See the following: William Cunningham Bissell, *Urban Design, Chaos and Colonial Power.*, 261-2, 290; Garth Andrew Myers, *Verandahs of Power: Colonialism and Space in Urban Africa*, (Syracuse: Syracuse University Press, 2003), 87 - 8; and Garth Andrew Myers, "Sticks and Stones: Colonialism and Zanzibari Housing," in *Africa: Journal of the International African Institute, Volume 67, Number 2*, (Cambridge University Press, 1997), 252 - 3.

[358] ZNA/BA 34/4 *Notes on Census of the Zanzibar Protectorate 1948* (Zanzibar: The Government Printers, 1953), 3 - 4

[359] J. G. C. Blacker, "Population Growth and Differential Fertility in Zanzibar Protectorate" in *Population Studies, Vol. 15, No. 3* http://www.jstor.org/stable/2172728 Accessed June, 2013

Table 4.4 Zanzibar Population Censuses during the British Colonial Period

Year	1910	1921/1924	1931	1948	1958
Unguja	114,069	128,099	137,741	149,575	165,253
Pemba	83,130	88,691	97,687	114,587	133,858
Total Population	**197,199**	**216,790**	**235,428**	**264,162**	**299,111**

Source: J. G. C. Blacker, "Population Growth and Differential Fertility in Zanzibar Protectorate" p. 259

4.3.1.4 Ecological Impact of Mangrove Utilisation: The Question of Degradation, 1939 - 1949

The aspect of degradation of resources was common during the colonial era. Mangrove degradation increased during the colonial period as opposed to the pre-colonial era for several reasons. First, introduction and expansion of foreign markets for mangrove barks in the 1930s not only contributed to degradation of mangroves in Zanzibar, but also misuse of resources. That was the case because some mangrove bark dealers simply peeled off mangrove barks and left standing as well as naked trees to perish. Furthermore, mangrove cutters sometimes slashed the trees and peeled off the barks and left the logs in the forests. The trees, which could have been used for other purposes such as poles and firewood, were just left decomposing in the forest. Secondly, there was a relative expansion of the population during the colonial era, which resulted in an increasing demand for building houses and consequently, building materials such as mangrove poles in Zanzibar. Thirdly, there was an increment in mangrove trading activities owing to expansion in local and foreign markets, mainly due to increasing demand in the Persian Gulf region.

During the colonial period, most parts of arable land in Zanzibar were used for cash crop plantations of cloves and coconuts. The trend left people, most of whom depended on subsistence economy, without sufficient land for growing food crops. Therefore, mangroves became one of the “cash crops” that attracted and enabled people in the islands to subsist economically, namely, traders and mangrove cutters.

Meanwhile, others were employed in the mangrove sector as captains and seamen in dhows in transporting mangrove poles and other products to and from the Gulf region. Furthermore, deterioration of the clove economy, especially before the Second World War, pushed some people who were primarily clove growers into the mangrove business, which contributed to increasing pressure on the forests. All the said factors accelerated use of mangrove forest resources in Zanzibar during the colonial period.

However, one could imagine that an increase in demand for mangrove products in Zanzibar and other parts of the world could have been counterbalanced by importation of the products from large mangrove swamps of Mombasa in Kenya and Rufiji in Mainland Tanzania, which were re-exported to the Gulf region. Nonetheless, importation and re-exportation of products from Kenya and Mainland Tanzania was the case since the pre-colonial era and there was maintenance of sustainable growth of mangrove forests as they were found during the early years of British colonialism. Sustainable mangrove forest growth was one of the bases that prompted colonial forest officials to set-up standards specific for exploitation of mangrove trees, which later determined the extent of exploitation and degradation of resources when the same standards were not met.

The colonial government in Zanzibar set standards in mangrove forests utilisation, mainly for bark stripping. The standards were those brought about ideas of devastation of mangrove forests. During the period prior to the Second World War, the colonial government set a regulation that mangrove trees with diameter of eight inches and above should be felled for mangrove barks.[360] It was the condition for all mangrove dealers. However, after the Second World War, it was observed that there were almost no mangrove trees that were measurement for bark exploitation, owing to unsystematic and unregulated mangrove exploitation during the war. Subsequently, in 1949, A. L. Griffith suggested in his mangrove working scheme that measurements should be reduced to over five or six inches diameter.[361]

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[360] ZNA/AU7/42 *Working Scheme for the Mangroves*., pp. 1, 10 and 17; see also ZNA/AU7/42 (43A) p.1 & 2

[361] ZNA/AU7/42 *Working Scheme for the Mangroves*., p.1 & 10

However, when Griffith suggested setting a new reduced diameter of over five or six inches, it was discovered that trees of that size were still very rare.[362] Nonetheless, according to Griffith, the colonial government had to continue with exploitation of mangrove products, despite the fact that the forests were in poor condition. One of the reasons towards the move was that the colonial government had a pressing demand for revenue from the mangrove sector. It was also prompted by the need to maintain lucrative mangrove markets of Europe and America, while another reason was to preserve employment of skilled labour in the sector.[363] The first two were the basic factors behind the colonial government's continuation of bark stripping, despite the devastating situation of the forests in Zanzibar in the late-1940s and early-1950s. Therefore, the colonial government was forced to continue with exploitation of mangrove forest produce during that period, while systematically and closely controlling it to fulfil major two issues, namely, sustainable markets and revenue as well as recuperation of the forests. However, the forests never recovered from effects of degradation to the state of the pre-colonial and early colonial period.

4.3.1.5 Colonial Administration of Mangroves

Under administrative arrangements, the colonial government considered mangrove forests as part of agriculture and it placed them in the Department of Agriculture, which was under the Director of Agriculture. In the Department, there were two sections of Forestry and Agriculture, which were under Forestry Officers and Agriculture Officers, respectively.[364] At the bottom, there were forest guards in both Unguja and Pemba. Lastly, there was a general community that included cutters, agents, transporters and mangrove sellers.

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[362] ZNA/AU7/42 *Working Scheme for the Mangroves*., p. 10

[363] ZNA/AU7/42 *Working Scheme for the Mangroves*., p. 1 & 10

[364] ZNA/AU7/42 Mangrove Industry: Mangrove Working Scheme

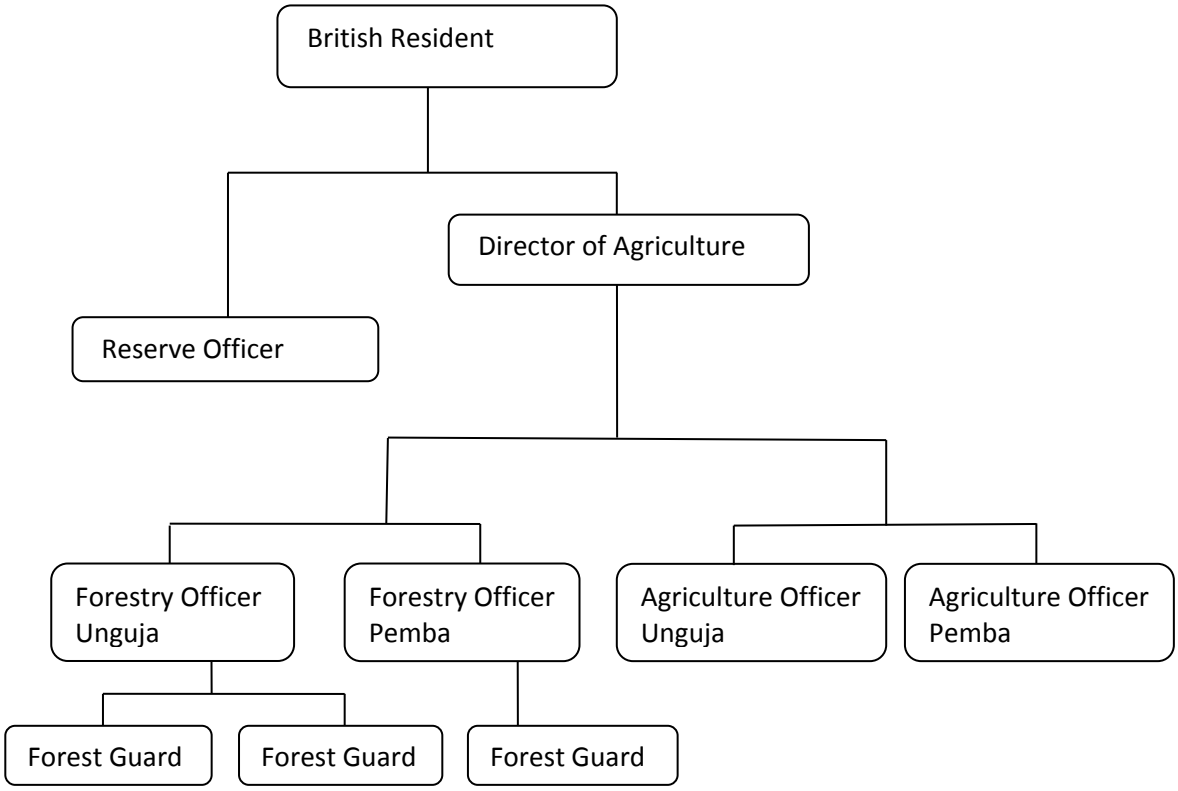

Figure 4.2 The hierarchical order of the forests management in Zanzibar during the colonial period

Source: Compiled from different sources from ZNA.

The Department of Agriculture was responsible for overseeing development and sustainability of mangrove forests in terms of forest development together with economic benefits derived from them. For instance, the Forestry Officer had to survey and asses conditions of the mangroves before advising the Director of Agriculture to process issuance of permits for mangrove harvesting and concession.[365] The British Resident in Zanzibar had authority to issue the mangrove concession to dealers or contractors such as "Ghaui and Company Limited" based in Tanga and "Smith, Mackenzie and Company Limited" based in Mombasa, with branches in Nairobi, Lamu, Kampala, Zanzibar, Dar es Salaam, Tanga, Lindi, Mikindani and Mtwara. However, he sometimes delegated authority to his subordinates.

Nevertheless, for reasons that are not apparent, the forests staff allocation was relatively contrary to magnitude of forest coverage in colonial Zanzibar as far as the mangrove sector between Pemba and Unguja islands was concerned. While Unguja had a relatively small area of mangrove forest – 10,000 acres - being the headquarters of the Agriculture Department, it had many forests officials and had one trained forest guard. Pemba, which had three times as much area of mangrove forests compared to that of Unguja, had relatively few forests officials and had two untrained forests guards. There was a need for Pemba to have more than one forest guards, while the forests guards in Pemba should have also been trained like their counterparts in Unguja to ensure better maintenance of the forests. Therefore, it is likely that such shortcomings in the forest management of Pemba Island contributed to deterioration of the forests during the Second World War period compared to forests in Unguja, as presented later.

4.3.2 Fisheries and Initial Transformations

During the colonial period, mainly, from the 1930s, the demand for fish in Zanzibar and East Africa, in general, was relatively higher than fishermen could offer from the sea. Therefore, additional fish supply was obtained through either imports of fish from outside the East African region or obtained from lakes, mostly Lake Victoria. For that reason, fish were not only sourced from Zanzibar rather, fish were also obtained from Mombasa in Kenya and other areas such as Kisumu and Mainland Tanzania regions surrounding Lake Victoria. There were two major sources of fish,

[365] ZNA/AU7/42 Mangrove Industry: Mangrove Working Scheme

namely, Lake Victoria and the Indian Ocean. Fresh water fish, especially Tilapia, had shown signs of depletion.[366] Accordingly, the colonial government sought ways to control the situation. The first option was to restrict fishing in Lake Victoria to allow for a recovery period. However, that was immediately considered an unwise option since it would accelerate more fishing in the Indian Ocean, which also needed a kind of control after thorough study. Therefore, although there were increased fishing efforts on the inland waters of Lake Victoria, especially on part of Kenya, the colonial government thought about ways to control the situation without destroying the balance between marine and fresh water fisheries, which was still under control at the time.[367]

Before 1939, there was a relatively low demand for fish on the coast of east Africa in general. However, it seems that the demand was never met since there was an ever-increasing importation of fish from Aden and Arabia.[368] Subsequently, when the war erupted, the demand for fish increased enormously, mainly from the army stationed near the coast of Mombasa.[369] After the Second World War, the colonial governments in East Africa observed a general shortage of fish in the countries of Kenya, Mainland Tanzania and Zanzibar. In addition, they noted that there was an increasing demand for fish and fish products, which did not cope with production.[370] A number of factors contributed to the problems, including increased demand for animal protein to feed soldiers during the war. Given that large part of animal protein was obtained from fish, soldiers received a large share. Also, apart from the fact that Zanzibar was reported to have a better position in terms of knowledge and skills of local fishermen in the country, there were relatively poor fishing technology and skills applied by the local communities in fishing in East African littoral waters. The better fishing technology could have enabled the offshore fishery to achieve a better catch.[371]

While there was a British fishing company that contributed to the fish catch, the catch was nonetheless, insufficient. That was partly due to the fact that a large portion

[366] ZNA/AB46/23 Zanzibar Fishing Industry: Fisheries Research Scheme

[367] ZNA/AB46/23 Zanzibar Fishing Industry: Fisheries Research Scheme

[368] ZNA/AB46/23 Zanzibar Fishing Industry: Fisheries Research Scheme

[369] Proposed Research Unit with Shore Base at Shimoni: Present Position of the Sea Fisheries, ZNA/AB46/23 Zanzibar Fishing Industry: Fisheries Research Scheme

[370] ZNA/AB46/23 Zanzibar Fishing Industry: Fisheries Research Scheme

[371] Proposed Research Unit with Shore Base at Shimoni: Present Position of the Sea Fisheries, ZNA/AB46/23 Zanzibar Fishing Industry: Fisheries Research Scheme

of fish was not going to the local community in Zanzibar but to vessels that called at ports of Mombasa and Zanzibar. Apart from poor fishing methods, another factor that contributed to decreased in fish catch in the area encompassed signs of a structural degradation of fisheries resources in Zanzibar during the colonial period,[372] partly owing to concentration of inshore fishing efforts, as opposed to large scale or offshore fishing. The British colonial administration did not encourage offshore fishing.[373] Majority of inshore fish are related to sea grass and coral related fish, which have a slow rate of breeding as well as growth. They also have relatively slow movements, especially during their adulthood[374] that made it easy for fishermen to catch them. Therefore, with these characteristics together with concentrated fishing efforts and adding that other fishermen used destructive fishing methods in the area, the result was likely to be low fish catch and comparably small sized fish.[375]

However, one would logically think that trend of importation of dried fish would have checked and counter balanced the local demand for fish in Zanzibar and other surrounding parts as far as fish demand was concerned. However, that was not the case, because apart from fish importation, there was also a rising demand for fish, which went simultaneously with diminishing quantity of fish catch in the area.[376]

Large amounts of dried fish were imported from Arabia, especially from Yemen and Oman. For example, the total of fish imports in Zanzibar in 1927 was about 561 tons, whereas Kenya imported about 700 tons from Arabia. Kenya also obtained supply of fish from Lake Victoria to supplement the demand.[377]

Such shortage of marine fish supply was caused by a number of reasons, including the declining number of fishing vessels. Accordingly, the fish catch also

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[372] See; Proposed Research Unit with Shore Base at Shimoni, 8.

[373] C. C. Johnston, "Correspondence - East African Fisheries" in *The Tanganyika Standard*, 11.07.1949.

[374] Proposed Research Unit with Shore Base at Shimoni.

[375] See the following: S. Mangi and T.R. McClanahan, "The effect of a Marine Protected area and the Exclusion of Beach seines on Coral reef fisheries," in Jan Hoorweg and Nyawira Muthiga (eds), *Recent Advances in Coastal Ecology: Studies from Kenya*, (Leiden: African Studies Centre), 2003, 172 and Proposed Research Unit with Shore Base at Shimoni, 8.

[376] Proposed Research Unit with Shore Base at Shimoni, 8.

[377] See for example: Erik Gilbert, *Dhows and the Colonial Economy of Zanzibar, 1860 – 1970*, (Oxford: James Currey Ltd., 2004), 52; Cecil von Bonde, A Preliminary Survey of the Marine Fisheries of Zanzibar, 3; Kenya Colony, "Proposed Research Unit with Shore base at Shimoni - Summary" Z.N.A./AB.46/23 Zanzibar Fishing Industry: Fisheries Research Scheme, 1948.

declined probably because there was no significant improvement of fishing vessels (dug-out canoes and dhows) and other fishing gears (like hand lines, beach seines, gillnets, cast-nets, basket traps and fixed stake traps). For instance, the number of fishing crafts in the coast of Kenya declined from 2000 in 1939 to 900 in 1948.[378] Likewise, the total amount of fish obtained per annum was 340 tons, of which 220 tons came from the local African fishermen and 120 tons from a European fishing company. As mentioned before, at around the same period there was a sharp increment in demand for fish to feed the Navy and Air Force stationed near the coast of East Africa, who demanded large amounts of fish. Furthermore, feeding a large number of plantation labourers contributed to a higher demand for fish. For instance, there was higher demand for fish from Amboni Sisal Estates in Tanga.

However, the east African coast is relatively disadvantaged as far as artisanal fishery (which is the mainstay of the local fishing communities) is concerned[379] and consequently, has limited availability of marine resources compared to other coastal areas such as the Seychelles and the Arabian Peninsula whereby dried fish (the Sharks - *papa* and Kingfish - *Nguru* in Kiswahili)[380] were imported.[381] Therefore, with such short supply of fish in the area, the price also crept up, which was commercially advantageous to fish sellers as opposed to fishermen. Artisanal fishermen sold their products to fish traders, who processed the fish to sell to consumers, while some of them sold the fish to other large traders. However, the law required fishers to sell their products through the government designated markets.[382]

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[378] Kenya Colony, "Proposed Research Unit with Shore base at Shimoni - Summary" Z.N.A./AB.46/23 Zanzibar Fishing Industry: Fisheries Research Scheme, 1948.

[379] Peninah Aloo, "Marine Resources" in Jan Hoorweg, Dick Foeken and R. A. Obudho Eds., *Kenya Coast Handbook: Culture, Resources and Development in the East African Littoral,* (London: Transaction Publishers, 2000), 48

[380] Swahili words for the Shark and Kingfish, respectively, which are very important dried fish in the east African coast, popularly known as *'Papa na Nguru.'*

[381] See the following: Sheriff, *Dhow Cultures of the Indian Ocean*, 33, 45, and Abdul Sheriff, "Slave Trade and Its Fallout in the Persian Gulf" in Gwyn Campbell (ed.), *Abolition and its Aftermath in Indian Ocean Africa and Asia*, (London: Routledge - Taylor and Francis, 2005), 98.

[382] See the following: Cecil von Bonde, A Preliminary Survey of the Marine Fisheries of Zanzibar, 12; and Tjalling Dijkstra, "Food Marketing" in Jan Hoorweg, Dick Foeken and R. A. Obudho Eds., *Kenya Coast Handbook: Culture, Resources and Development in the East African Littoral,* (London: Transaction Publishers, 2000), 205

4.4 Phase Three: Late Colonial Period, 1950-1963

4.4.1 Mangrove Conservation

4.4.1.1 Colonial Control

In 1950, the colonial government in Zanzibar enacted the "Forest Reserves Decree." Under the decree, the British Resident in Zanzibar was empowered to declare any part of public land a forest reserve.[383] That was the first regulation that involved establishing reserve areas in Zanzibar. Under the decree, all socio-economic activities were prohibited in reserved forests. The decree specified that without a written permission from the British Resident, new buildings were not allowed to be constructed in the areas. Furthermore, people were not allowed to remove any forest produce from the declared forest reserve without permission.[384] According to the decree, the forest produce included bark, earth, fibres, firewood, fruits, galls, seeds, slabs, trees, wattles, wax, gums, honey, latex, leaves, wattles, litter, poles, resin, rubber, sap, slabs and other forest produce that the British Resident could declare through the *Gazette*. However, according to the "Forest Reserve Decree of 1950," it was ruled that the "Wood Cutting Decree of 1945" should not be applied in any constituted forest reserve.[385]

Later on in 1955, the colonial government enacted a number of rules that further concretised management of the designated forest reserves in Zanzibar, namely, the forest reserves rules. Although the rules and decrees mentioned forests in general, the term was almost synonymous with mangroves. Therefore, in essence, they were meant for the mangrove forests. Indeed, almost all of the forest reserves during the colonial era were mangroves.

4.4.1.2 Local Knowledge and Experience

The indigenous community in Zanzibar used the mangrove forests on shifting or rotational bases. The villagers from Charawe in Unguja were prominent for using the shifting method for generations. However, changes in socio-economic organisation during the colonial period resulted in transformations in use and conservation of the mangrove resources in Zanzibar. The traditional method of mangrove exploitation was

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[383] ZNA/AU7/42 A Decree to Provide for the Establishment, Protection and Management of Forest Reserves, No. 12 1950, p. 35

[384] ZNA/AU7/42 A Decree to Provide for the Establishment, Protection and Management of Forest Reserves, No. 12 1950, pp. 35 & 40

[385] Ibid.

entirely transformed during the British colonial era. The former method was ignored during the colonial period and people consumed the resources driven by money or profit-making, namely, profit maximisation, which resulted in degradation of the resources.

The socioeconomic transformation also contributed to accelerating the changing attitudes among people in the community concerning use and conservation of the resources. The villagers began a maximum utilisation of the resources whenever they had an opportunity. Examples of such dramatic turn of attitude were evident during the war period (in the early-1940s), when the colonial government was reluctant to control resource use and people used the opportunity to maximise exploitation of resources, especially the mangrove bark. Furthermore, some people in areas of Unguja, such as Bwejuu and Charawe Shehias[386] decided to abandon their former traditional pattern of use and conservation of forest resources at Kinani forest in Zanzibar.[387] Traditionally, the villagers used the forest resources on rotational bases and they shared the resources,[388] but both were abandoned by community members in the villages. For instance, Ameir Tajo, who was a member of the Legislative Council in Zanzibar, complained in the meeting of the council that villagers of Bwejuu did not receive their share of royalties from mangroves cut in Kinani forest from 1948 to 1955.[389] That represented denial of the villagers to share the benefits from the resources, especially with villagers from other villages.

Establishment of the forest reserve, introduced in 1950, involved total prohibition of people to interact with the forest. Even collection of fruits and herbs was made illegal in some of the areas. In areas that were declared closed mangrove forests, free social and wildlife interaction was not allowed. Moreover, there was no free utilisation of the resources in mangrove forest reserves as had been traditionally enjoyed during the pre-colonial era. That was contrary to traditional utilisation of the

[386] Shehia is an administrative division below the district and just above the village level. It is headed by Sheha and it may consist of one to several villages.

[387] ZNA/AU7/42 Mangroves Industry – Working Scheme (The Executive council Note No 46 of October 2, 1957)

[388] John Middleton, *Land Tenure in Zanzibar*, 21, 26, 27, 37, 41 & 42

[389] ZNA/AU7/42 Mangroves Industry – Working Scheme (The Executive council Note No 46 of October 2, 1957)

resources in the country. Indeed, that increased misunderstanding between colonial forest officials and local communities.

4.4.2 Colonial Administration and Research on the Fishing Industry

4.4.2.1 Institutionalisation of Research Activities in the 1940s

In the 1940s, marine fishing industry entered into a phase of institutionalising research activities in Zanzibar and the east African region. Institutionalisation ideas began during the Second World War in 1941 with the Colonial Office and the Colonial Fisheries Advisory Committee (CFAC) in London. They collaborated to establish the East African Regional Fisheries Research Institute.[390] The umbrella institution was subdivided into two branches, one on marine and one on inland or fresh water fisheries, for easier management and operations. It was seen to be important to stimulate marine fisheries in order to reduce the quantity of fish supply from inland. One of the areas where there was heavy fishing in Lake Victoria was in Kavirondo Gulf in Kisumu, Kenya.[391]

The colonial government set up the Shimoni fishery centre in Mombasa, Kenya, where fishermen sold their products wholesale and re-sold the fish in Mombasa as well as Nairobi. Major buyers from the centre were the British Navy and hotels. Therefore, apart from fishery and research activities, the centre acted as a stimulus for indigenous fishermen in areas around Mombasa. The same types of fisheries centres were planned to be established in Pemba, Unguja, Dar es Salaam and Tanga.[392] Establishment of the centres was part of a process towards establishing the East African Fisheries Organisation, which would deal with fisheries research in the area. Therefore, in order to quickly realise such an end, E. B. Worthington, a Scientific Secretary to the East African High Commission, advised delay of fisheries research projects until a proper fisheries research organisation in East Africa could be established.[393]

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[390] E. B. Worthington, "East African Fisheries Provisional Memorandum," April 1944, Z.N.A./ AB 46/ 23 Zanzibar Fishing Industry: Fisheries Research Scheme, (183B)

[391] See the following: E. B. Worthington, "East African Fisheries Provisional Memorandum," April 1944, Z.N.A./AB.46/23 Zanzibar Fishing Industry: Fisheries Research Scheme, (183B); and Kenya Colony, "Proposed Research Unit with Shore base at Shimoni - Summary" ZNA, AB 46/……, 1948

[392] E. B. Worthington, "Marine Fishery of the East African Coast," April 27, 1945, Z.N.A./AB.46/23 Zanzibar Fishing Industry: Fisheries Research Scheme, (210A)

[393] See for example: E. B. Worthington, "Marine Fishery of the East African Coast," April 27, 1945, Z.N.A./AB.46/23 Zanzibar Fishing Industry: Fisheries Research Scheme, (210A); and Helen Tilley,

The colonial institutions for research were set up in British colonies such as Zanzibar, Tanganyika, Kenya and Seychelles to establish scientific knowledge that could enable effective exploitation of natural resources in Africa.[394] Therefore, in order for the colonial government in Zanzibar and other east African colonial states to reap fish and other marine resources profitably, it had to establish its strong research institutions and avoid any unnecessary competitions. In 1944, the Department of Fisheries of South Africa suggested collaboration with authorities in East Africa on marine fisheries research projects.[395] Worthington was quick to reject the ideas. He clarified that the proposal was geared to benefit the South African fishing industry and would be of minimal benefits to the industry in East Africa.[396] He insisted on the idea of establishing an independent fishery research organisation in East Africa for the regional development, before the subsequent possibility to establish a strong and equally productive interregional cooperation between East and South African regions.[397]

In addition, it could be argued that the British seemed to have been preparing Zanzibar as a market for good supply of fish products from Seychelles. The British strategically encouraged and supported the colonial government in the Seychelles in shark fishing development from the 1920s,[398] while at the same time adopting 'a go slow strategy' for the Zanzibar fishing industry, and hence, created ample fish supply

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"African Environment and Environmental Sciences: The African Research Survey, Ecological Paradigms and British Colonial Development, 1920 - 1940," in William Beinart and JoAnn McGregor, edds. *Social History and African Environments,* (Oxford: James Currey, 2003), 114

[394] John M. MacKenzie , "Introduction" in John M. MacKenzie (ed.), *Imperialism and the Natural World*, (Manchester: Manchester University Press, 1990), 11 & Michael Worboys, "The Imperial Institute: The State and the Development of the Natural Resources of the Colonial Empire, 1887 - 1923" in John M. MacKenzie (ed.), *Imperialism and the Natural World*, (Manchester: Manchester University Press, 1990), 165

[395] Dr. Cecil von Bonde who made a survey of the marine fisheries of the East African coast (Kenya and Zanzibar) in 1927 and he was Government Marine Biologist and Director of the Fisheries and Marine Biological Survey of the Union of South Africa. He was in the same position when the government proposed fishery cooperation with Zanzibar.

[396] E. B. Worthington, "Marine Fishery of the East African Coast," April 27, 1945, Z.N.A./AB.46/23 Zanzibar Fishing Industry: Fisheries Research Scheme, (210A)

[397] Probably this is the reason that made the Colonial Office in London to accept the collaboration of the Nyasaland (Malawi) Government with the South African Government around the same period. See; ZNA/AB46/23, Zanzibar Fishing Industry: Fisheries Research Scheme, - Colonial Office, *Production of Fish in the Colonial Empire,* (London: His Majesty's Stationery Office, 1949), 8.

[398] John Nevill, Jan Robinson, Florian Giroux, and Marlene Isidore, *Seychelles National Plan of Action for the Conservation and Management of Sharks*, (Victoria: Seychelles Fishing Authority, 2007), 15. See also: ZNA/AB49/88 Three-Mile Limit and Fishing in Inter-territorial waters, (correspondence from the Director of Agriculture to Chief Secretary in Zanzibar) September 15, 1950 and ZNA/AB46/23, Colonial Office, *Production of Fish*, 4, 7.

from Seychelles to Zanzibar and east Africa as a whole.[399] That can be seen in the trend in marine research works in east Africa, which always conducted after the research activities in the Seychelles, as was the case in 1929 and in 1954.[400] Zanzibar was one of major sources of market for fish (dried sharks) from the Seychelles until in 1964. [401]

Therefore, while all arrangements and debates on the organisational setting and development of marine research activities in the east African region proceeded, it was also seen as economically easy and profitable for the British to invest more in the fishing industry in Seychelles than Zanzibar. Zanzibar seemed geographically and economically a challenge. Therefore, it could be observed that the British, who colonised both Zanzibar and Seychelles, conducted fishing research activities in both islands, albeit in different research areas (inshore for Zanzibar and offshore or deep sea for Seychelles) and with different consequential follow-ups. The British had relative speed in use of engine powered fishing boats in Seychelles[402] as opposed to Zanzibar. Additionally, in the mid-1950s, Seychelles went for industrial fishing,[403] while Zanzibar introduced engine powered fishing boats.[404]

Introduction and use of powered engines in fishing vessels in the 1950s represented another major transformation in marine fisheries in Zanzibar. With respect to this issue, the British colonial officials again had divergent ideas concerning how to proceed. While some officials were keen on the technology, others, including the Administrative Secretary, Director of Agriculture and the Fisheries Officer in Zanzibar, seemed to oppose introduction of powered engine fishing boats to local fishermen. For example, they prohibited fishers with powered vessels from Tanga (Mainland Tanzania)

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[399] See, Jan Hoorweg, Barasa Wangira and Allan Degen, *Artisanal Fishers on the Kenyan Coast: Household Livelihoods and Marine Resource Management*, (Leiden: Koninklijke Brill NV, 2009) 1-2.

[400] See: Cecil von Bonde, A Preliminary Survey of the Marine Fisheries of Zanzibar, and

[401] Nevill, et al., *Seychelles National Plan of Action*, 15 - 16

[402] Ibid., 15.

[403] Ibid.

[404] See correspondences from Director of Agriculture to Chief Secretary - 15 September, 1950, Director of Agriculture to Administrative Secretary - 29 September 1950, ZNA/AB/49/88 The Three-Mile Limit and Fishing in Inter-territorial Waters; Also "The Tanganyika Standard" of 11 July 1949 - a daily newspaper based in Tanganyika Territory, ZNA/AB/46/23 Zanzibar Fishing Industry: Fisheries Research Scheme

and Malindi (Kenya) to fish in Zanzibar waters.[405] In Zanzibar, introduction of powered engine boats to fishermen started from 1954. In 1960, the colonial government introduced a loan programme for the powered engine boats to the fishermen.[406] Nonetheless, it was seen as an unnecessarily expensive venture for the fishermen. Some members of the Legislative Council opposed the programme by arguing that people needed more agricultural intervention than the powered engines programme. Thus, the level and manner in which change in fishing technology was spread and applied was very little on part of the local communities in the islands of Zanzibar. Many local fishing vessels in Zanzibar continued to operate without powered engines during the colonial period. Rather, the engines were mainly used in government-owned fishing boats.

While Kenya proposed Shimoni Centre for marine fisheries research work and initiated a discussion with Mainland Tanzania and Zanzibar on collaboration, the two considered developing their own separate entity to be based in Zanzibar. The debate between colonial officials was based on two grounds. Firstly, for Zanzibar to benefit more on the research scheme, it was considered necessary for the headquarters of the project to be in Zanzibar. Secondly, the Kenya-initiated programme did not cover the whole littoral of Mainland Tanzania and therefore, it could not benefit equally. The area from Mafia Island southwards up to the border between Mainland Tanzania and Mozambique was not covered.[407] Therefore, Mainland Tanzania and Zanzibar were not ready to participate in the scheme and opted to apply for establishment of an identical project based in Zanzibar.[408]

During that time of application for the schemes, the East African Freshwater Fisheries Research Organisation (EAFFRO), which had its headquarters in Jinja in Uganda, was already set up. The EAFFRO was established in 1947 to undertake fishery

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[405] Correspondences from Director of Agriculture to Chief Secretary - 15 September, 1950, Director of Agriculture to Administrative Secretary - 29 September 1950, ZNA/AB/49/88 The Three-Mile Limit and Fishing in Inter-territorial Waters; "The Tanganyika Standard" of 11 July 1949; and ZNA/AB/46/23 Zanzibar Fishing Industry: Fisheries Research Scheme

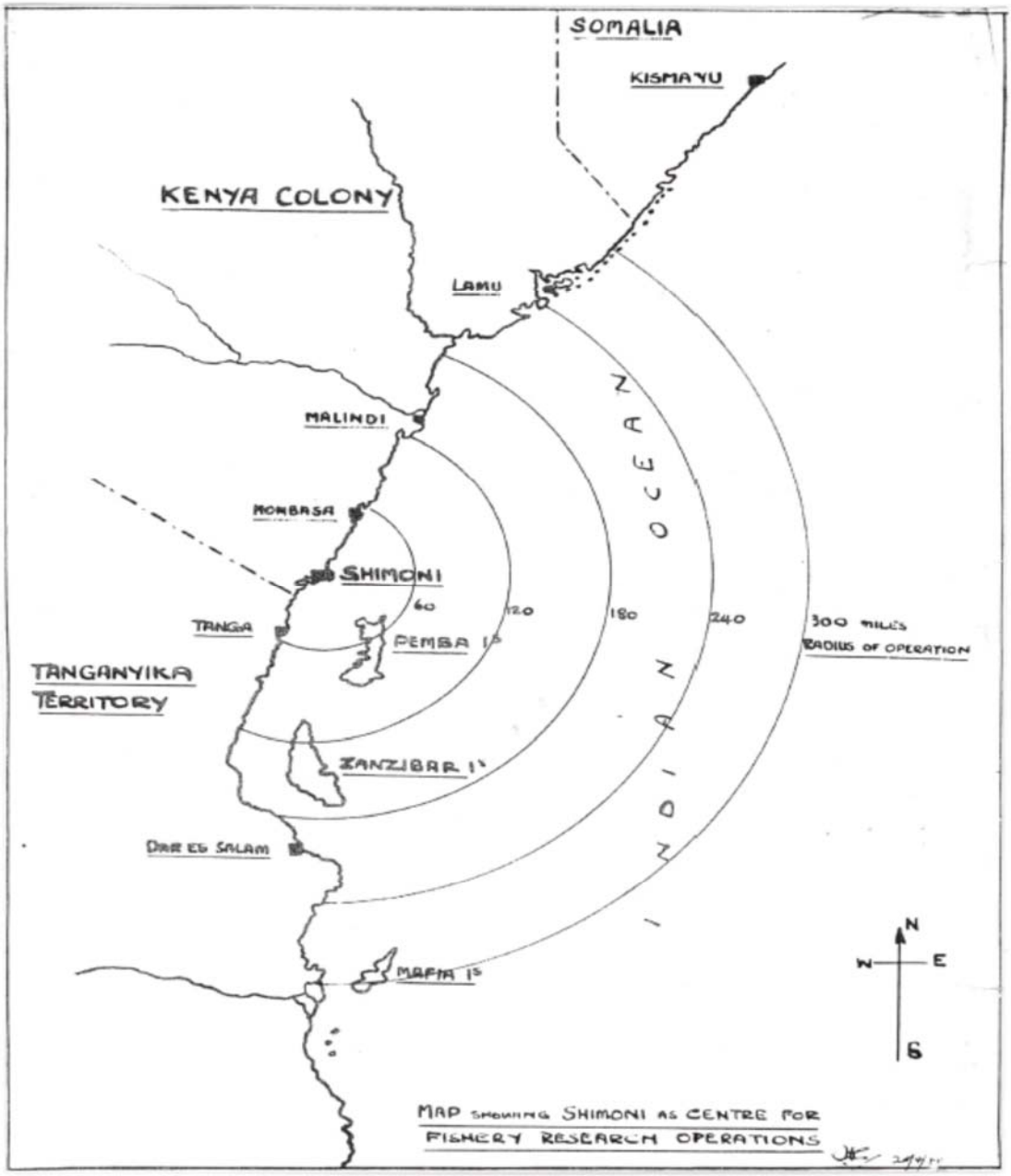
[406] ZNA/AH40/2 Ministry of Finance and Development - Development of Fishing Industry in Zanzibar - 21 July, 1961

[407] See figure 3.3 on page 47.

[408] Correspondence from the Secretary of State for the Colonies to the British Resident at Zanzibar, November 3, 1948, "Fisheries Development," Z.N.A./AB.46/23 Zanzibar Fishing Industry: Fisheries Research Scheme, (383)

surveys on five Lakes Victoria, Rukwa, Rudolf, Kitangiri and Naivasha. There is no apparent reason the administration omitted the two major lakes of Tanganyika and Nyasa. It is likely that the lakes were regarded as being located out the east African region. Although there were considerable influences from the marine fishery research conducted on the coast of Mauritius and Seychelles, establishment and operations of the EAFFRO inspired efforts on the East African littoral.[409] Establishment of an institutional framework to regulate regional marine fishing activities and research in East Africa was an important move for development of the industry in the area.

[409] Kenya Colony, "Proposed Research Unit with Shore Base at Shimoni - Summary" Z.N.A./AB.46/23 Zanzibar Fishing Industry: Fisheries Research Scheme,, 1948



Map 4. 1 Shimoni Fishey Research Centre Showing theCoverage Area

Source: ZNA/AB46/2 Zanzibar Fishing Industry (Private) / Kenya Colony: Proposed Research unit with Show Base at Shimoni

Marine research activities began with two different bases. The Zanzibar based Fisheries Research Scheme was planned to begin from July 1948 up to December 1955, whereas the Shimoni Research Unit was planned to start for an initial phase of five years from 1948. Two years later, the new established East African Marine Fisheries Research Organisation (EAMFRO) took over both schemes. The member states also agreed to establish the Inter-territorial Development Investigation on Marine Fisheries (IDIMF) to coordinate operations of the two schemes. Moreover, it was agreed that the

IDIMF would later be part of the East Africa Fisheries Research Organisation (EAFRO), which was under the East Africa High Commission (EAHC). However, after consultations between colonial government officials, including the EAHC, it was decided to establish EAMFRO and all the research schemes became part of it[410] and EAFRO had to change into EAFFRO.[411]

While marine fishery and research works were organised as well as conducted within the newly established EAMFRO, another government institution – the Prisons Department – began fishing activities in 1951 in order to offset the high cost of purchasing beef for the departmental consumption. The fishing experiments began by catching fish using fish traps, which proved very successful.[412] In the same year, the experienced staff and prisoners in the department manufactured a small fishing boat (*Ngarawa*), which led the department to save more than three thousands shillings per annum. The department then proposed purchase of a larger fishing boat as well as establishing a permanent station at Fumba in order to easily facilitate fishery and establish more fishery related works such as seaweed collection and production of manure and soap from fish wastes.[413]

When the proposal reached the Legislative Council, Seyyid Seif bin Hamoud, Sheikh Ameir Tajo and Sheikh Rashid bin Hamad from the Finance Committee, demanded further explanation from the Superintendent of the Prisons. Their concern was about possibility of accidents that may occur and therefore, increase cost to the government.[414] The Superintendent answered that "the risk to the boatmen would be

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[410] East Africa High Commission, "Application for A Grant From the Research Allocation of the Colonial Development and Welfare Fund 1945" Z.N.A./AB.46/23 Zanzibar Fishing Industry: Fisheries Research Scheme, 365(B)

[411] Majda Zumer, *Natural Resources Research in East Africa: A Report on Research Services, development and Organization of research Activity in East Africa*, *Bulletin No.12* (Stockholm: Swedish natural Science Research Council, 1971), 12; The EAMFRO and EAFFRO operated until when the East African community ended in 1977. Then the former member states established their own individual marine and freshwater fisheries research organizations. Institute of Marine Sciences (IMS) was established under the University of Dar es salaam in 1978 for Tanzania and Kenya established Kenya Marine and Fisheries Research Institute (KMFRI) in 1980.

[412] Correspondence from the Superintendent of Prisons to the Chief Secretary of Zanzibar Government, ZNA/AB61/83 Prison Fishing Industry, November 25, 1952

[413] Correspondence from the Superintendent of Prisons to the Chief Secretary of Zanzibar Government, ZNA/AB61/83 Prison Fishing Industry, June 25, 1953

[414] Extract from Minutes of meeting of the Finance Committee of the Legislative Council of Zanzibar held on July 13, 1953, ZNA/AB61/83 Prison Fishing Industry, July 25, 1953

considerably less than most occupations [in the Department]... by virtue of the fact that only the skilled persons in fishing and seamanship will be allowed on the boat."[415] He further exemplified works such as climbing a coconut tree of about sixty to one hundred feet high, working in the waist deep swamp at Kizimbani and felling trees as more liable to accidents compared to fishing using experienced personnel. The proposal was granted and the boat was purchased.[416]

In 1954, the Fisheries Officer in Zanzibar proposed that the fishing boat of the Prisons Department should be equipped with a powered engine. He also advised that the boat could be installed with experimental multiple trolling lines, beginning with two lines. That was because all local fishing boats had been using only trolling a single line and without a powered engine. Therefore, the Fisheries Officer proposed modification of the Prisons local fishing boat to fix the engine as well as lines and, if successful, the same could be extended to local fishermen in the islands. The exercise was also aimed at increasing the fish catch of the Prisons Department and further offset the cost of prisoners' subsistence.[417] In due regard, the EAMFRO researched marine fisheries, mainly concentrating on the scientific understanding of marine fisheries, whereas the Prisons Department seemed to be highly of a socially practical pattern and declared to experiment on marine fisheries to extend knowledge and skills to the community. Nonetheless, the basic objective was to cut down colonial expenditure in the department and therefore, ease its administration and control.[418]

There were two ways in which the Prisons Department could disseminate fisheries knowledge and skills to people of Zanzibar. First, the prisoners who returned to society after completing their prison services period, having acquired skills of dealing with and servicing the powered engine fishing vessel, could have been

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[415] Correspondence from the Superintendent of Prisons to the Chief Secretary of Zanzibar Government, ZNA/AB61/83 Prison Fishing Industry, July 30, 1953

[416] See the following: Correspondence from the Superintendent of Prisons to the Chief Secretary of Zanzibar Government, ZNA/AB61/83 Prison Fishing Industry, July 30, 1953; and Extract from Minutes of meeting of the Finance Committee of the Legislative Council of Zanzibar held on August 15, 1953, ZNA/AB61/83 Prison Fishing Industry, September 7, 1953

[417] See the following: Correspondence from the Director of Agriculture to the Chief Secretary of the Government of Zanzibar, ZNA/AB61/83 Prison Fishing Industry, March 6, 1954; and Correspondence from the Chief Secretary to the Superintendent of Prisons of Zanzibar Government, ZNA/AB61/83 Prison Fishing Industry, April 4, 1954.

[418] Ibid.

instrumental in extending the knowledge to the community and industry. Second, the Prisons officers who were serving in the fishing boat after it was equipped with powered engine as well as multiple trolling lines worked with members of the fishing communities as experts with practical experience. However, available data do not show exactly how many prisoners participated in fishing at the department, terms and period of their service and where they lived after serving the prisons period to ascertain actual benefits from the exercise, if any. Secondly, even the process of disseminating powered engines faced challenges and opposition from the community and mainly prominent within government spheres.

The period from the 1950s marked the beginning of transformation and experimentation of powered fishing vessels in the islands of Zanzibar. Therefore, apart from the powered fishing vessel that was operating in the Prisons Department, there were two other fishing vessels, namely, Motor Vessel Research (see Figure: 4.4 page 140) and Fishing Boat (F. B.) Forerunner. The former was owned by the EAMFRO and the latter was working with the Fisheries Section of the Department of Agriculture operating in the Marine Fisheries Development Scheme. All these showed some hope for development of the fishing industry in Zanzibar.

On part of the F. B. Forerunner, there was one phenomenon on operation and running expenditure concerned, which contributed to hinder the expected development of fishing industry in Zanzibar. In May 1954, the F. B. Forerunner stopped to conduct its normal fishery duties and was sent to Pemba "on special duty"[419] for that month. However, in July, it was again ordered to go to Pemba for the same duty, albeit for an unspecified period, with the cost to be charged in the Fisheries Scheme. It was also proposed that the F. B. Forerunner should return to (Unguja) Zanzibar at the end of each month, when crew members were about to receive their salaries to retain crews' family members in Unguja and avoid transferring them to Pemba.[420]

Practically speaking, this implied an increase in running costs due to the need to return to Unguja simply to avoid families' transfers, while the boat also underwent

[419] Correspondence from the director of Agriculture to the Chief Secretary on June 30, 1954, ZNA/AB45/136 Forerunner Running Expenses

[420] Correspondence from the director of Agriculture to the Chief Secretary on July 5, 1954, ZNA/AB45/136 Forerunner Running Expenses

regular maintenance and services in Unguja. However, the primary objective, according to the Director of Agriculture, was to keep the family in place. Moreover, working for the special duty instead of fishing obligations indicates that the colonial government diverted use of its properties towards functions for which they were not essentially assigned. This signifies irresponsibility and lack of transparency in the colonial Government operations, which affected development of the fishing sector in Zanzibar. Furthermore, it could have been possible to get crews who were based in Pemba to avoid unnecessary and costly monthly returning of the vessel to Unguja. Moreover, it indicates that while the budget was allocated to service the fishing sector, it was diverted to other unspecified responsibilities.

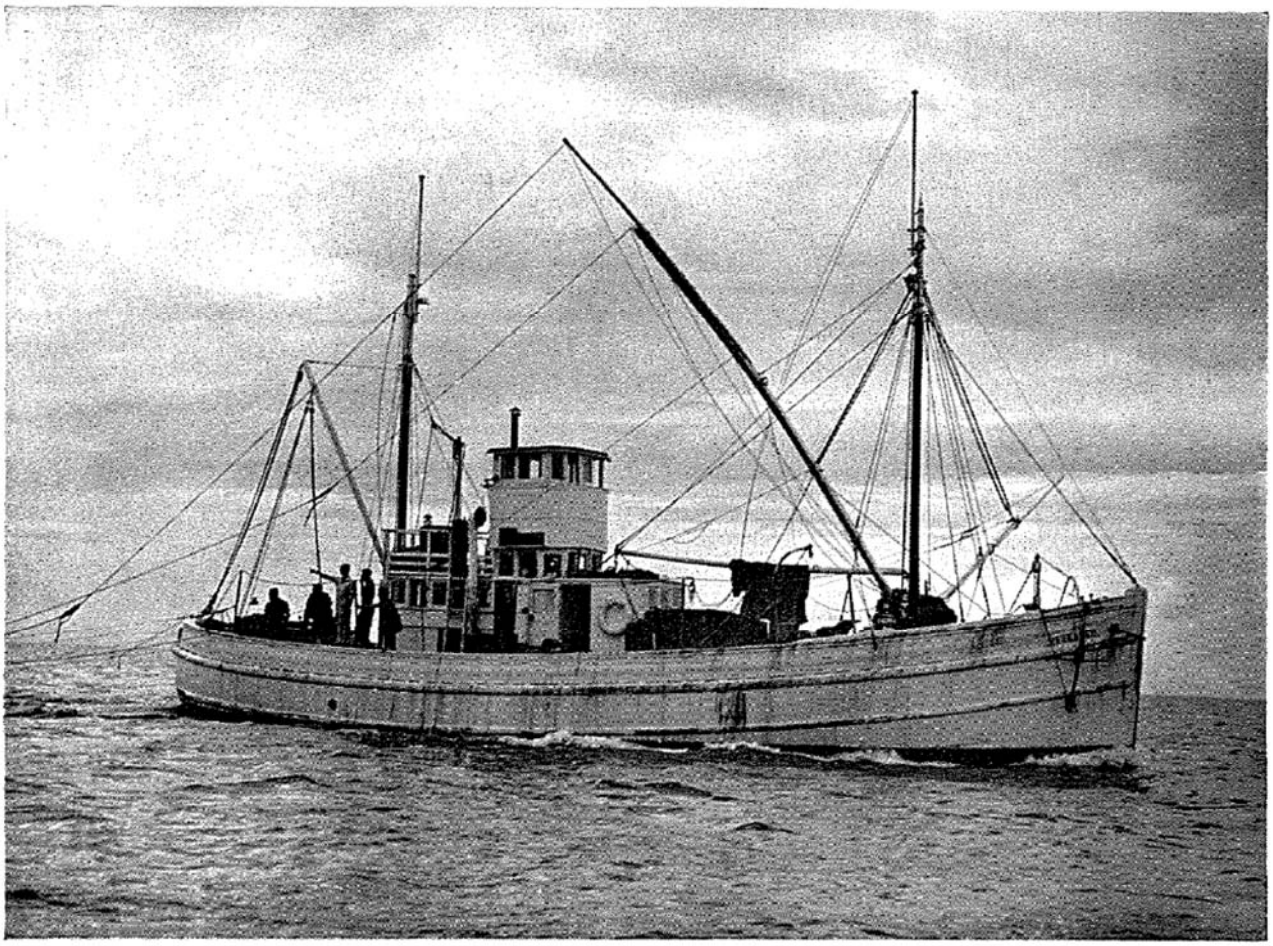

Figure 4.3 M. V. Research

Source: F. Williams, *Preliminary Survey of the Pelagic Fishes of East Africa*, London: Her Majesty's Stationery Office, 1956, 35

4.4.2.2 Research and Local Community Interface

Generally, there was missing of a direct linkage between research conducted and the local societies in Zanzibar during the colonial era, which created a gap between the

claimed colonial research objectives and the practical outcome in societies. Marine Research in Zanzibar began at the end of the third decade of the twentieth century during the British colonial period. The basic idea was to understand the local and traditional fishing methods including devices and means through which the methods could be improved or modified, in collaboration with the community, to increase fish catch in Zanzibar and other parts of the Indian Ocean. It means that there was a significant tie between marine research and the local community, without forgetting that Zanzibar was not only within a larger family of the East African littoral but also within the large and extensive "family" of the Indian Ocean world, which had been interconnected by dhows and monsoons for centuries.[421] Another factor behind the research was to study migration patterns to understand seasonal distribution of the fish.[422] Moreover, the aim was maximisation catches in order to improve wellbeing of the communities in terms of income and food nutrition. However, that was far from success in colonial Zanzibar.

The trend shows that initial studies on marine fisheries such as the work of von Bonde integrated both fishing as well as marketing of fish and fish products, which provided a direct linkage, applicability and hence, practical value of the research to community of fishers. That could have been a good way forward. However, it seems that later studies deviated from the path and tended to pay more attention to the fishing side than processing and marketing of the commodity in society. Furthermore, major concentration was focused on scientific research in terms of fish species and the type of food they ate, fish migration patterns and seasonal availability of different types of fish. That was colonial knowledge production, which was guided by economic benefits of researchers as knowledge producers and it shows the role of science in exploitation of marine resources (fish) and maintaining imperial power.[423] The studies tended to overlook the human side of the fisheries sector in terms of examining ways that could accelerate positive change in fishing and processing to improve fish catch and socio-

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[421] For further discussion on the this interconnectedness see: Abdul Sheriff, *Dhow Cultures of the Indian Ocean: Cosmopolitanism, Commerce and Islam*, (London: C. Hurst and Company Ltd., 2010, xiii – xv, 1-12, 20 (see for example the almost the same pronounciation of mansoon in different areas and languages; *msimu* in Swahili, *mawsim* in Arabic, *mosum* among the Iranians and Indians and *mossim* for the Malays)

[422] F. Williams, "Preliminary Survey of the Pelagic Fishes of East Africa," *Colonial Office Fishery Publications No. 8,* (London: Her Majesty's Stationery Office, 1956), 46.

[423] John M. MacKenzie (ed.), *Imperialism and the Natural World*, 3 & 11

economic productivity in Zanzibar. Therefore, fishers have long been using traditional fishing methods and traditional fish processing with improvements from their own initiatives, while one would have expected transformation from extensive studies that were conducted during the colonial era.

A missing linkage between mangroves and fisheries research during the colonial period contributed to deterioration of both resources in Zanzibar. The marine fisheries studies of 1929 and others from 1951 to 1954 did not deal with the relationship between fisheries and the mangrove to understand the extent to which adverse changes in the mangrove forest cover affected the fisheries sector. Moreover, that was also the case with the mangrove forests research conducted after the Second World War. The forests were researched in isolation from the fish, many of which live or breed around the swamps. In that sense, destruction of the mangrove trees had an impact on the breeding and availability of fish, which, in turn, affected the fishers and the community. Therefore, research works based on the mangrove-fishery interrelation were vital and could have prompted the colonial government of Zanzibar to establish policies that would have led to mangrove conservation in conjunction with fish conservation, since there are many fish species that depend on healthy mangrove forests.[424]

The colonial government of Zanzibar initiated research-related activities that were labour intensive yet became unproductive and short-lived. For instance, in 1952, the government established fishery data collection programme whereby the data collectors were required to record all catches, the type of vessels used as well as number of fishers involved in the major fish landing locations in Zanzibar coastal villages.[425] Nevertheless, the programme discontinued in 1954, mainly because it was observed that there were inappropriate collections of data from the targeted landing sites.[426]

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[424] Peninah Aloo, "Marine Resources" in Jan Hoorweg, Dick Foeken and R. A. Obudho Eds., *Kenya Coast Handbook: Culture, Resources and Development in the East African Littoral,* (London: Transaction Publishers, 2000), 46

[425] Ali H. Kombo, "Deficiencies in the Past Method of Zanzibar Fisheries Data Statistics and Prospects of the proposed Plan" in Narriman S. Jiddawi and Richard D. Stanley, eds., *Fisheries Stock Assessment in the Traditional Fishery Sector: The Informational Needs. Proceedings of the National Workshop on the Artisanal Fisheries Sector, Zanzibar. September 22 - 24, 1997, Zanzibar, Tanzania* (Vancouver: Canadian International Development Agency,1999), 26

[426] Ali H. Kombo, Deficiencies in the Past Methods of Fisheries, 26

Moreover, there was a general mistrust of the fishers to the colonial government, which prompted the fishers to avoid releasing necessary information for proper recording. Some fishermen thought that the records would lead to closer supervision and more control of their fishing activities.[427] Therefore, it is possible that the fishermen did not cooperate with the recorders as it was required or expected, which led to programme termination. In addition, the fishermen did not fully cooperate with the colonial government data recorders because they suspected that the project intended to introduce more taxes on fish and fishing activities, with fishermen noting that:

> We were worried that if the colonial government gets to know the actual amount of fish we get, then the officers would recommend their bosses to impose more tax upon the little we fish…this would be another big burden up on us to carry.[428]

All such factors hindered the programme and the government plan ended in 1954. The tendency of denying or deliberately hiding some information and providing false details to people such as data collectors, contributed to incorrect judgment and analysis, which could lead to inappropriate solutions to genuine problems for the fishers and the general societies.

Although von Bonde research was conducted in a short period of time and had little coverage and therefore, considered unreliable as a baseline in the fishing sector, it still raised significant issues to follow up and implementation. The colonial government of Zanzibar commissioned the work. However, the fishing industry in Zanzibar was faced by hesitations and delays in implementations of the findings and recommendations made by researchers. It took a long period for the colonial government institutions to analyse and make decisions or at least formulate a guiding policy for effective implementation of research recommendations. For instance, although von Bonde's report was published in 1929, it took several years to begin implementing the recommendations of the study. The same ideas were implemented in the 1940s when the government started to institutionalise marine fisheries research activities in Zanzibar and East Africa as a whole.

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[427] Interviews with: Amour Hassan (Fitirodi) Amour Hassan (Fitirodi), Jambiani, Unguja - 23.03.2012, Khamis Abdalla Kombo, 04.06.2012 and Abubakar Mohamed Ngali, Pemba, 03.06.2012

[428] Interview with Juma Ali (pseudonym), Jambiani, April 25, 2012

One of the advantages of the artisanal fishery is provision of employment, with the fisheries as a major employer for the local community, of whom the majority are either fishermen[429] or engaged in other fishery-related activities such as canoe or dhow building and fish trading. In 1944, when a number of soldiers were returning from the Second World War, government officials saw that the fishery industry would be fit for employing the ex-servicemen. For instance, the Board for the Re-Settlement of Returned Ex-Servicemen reported in 1944 that the fishery was "an industry...which besides providing a most nutritious food, also held considerable scope for employment in view of its numerous ramifications..."[430] Therefore, the report suggested that due to advantages of the industry, the fishing sector should be researched more closely than it had been studied prior to that period. In addition, studies should show the way in which fishing could better benefit the ex-servicemen and society as a whole. However, that never happened and the servicemen had to look after themselves and struggle for employment.

4.5 Conclusion

Since pre-colonial times, marine resources, especially mangroves and fish, have been vital for socio-economic welfare of Zanzibar. The trend of use of resources changed at different times in history. Starting with the mangroves, they were significantly used for domestic purposes and trade. Transformations in the colonial economic and administrative arrangements in the 1890s such as abolition of slavery in 1897 together with abolition of the slave status in 1907 affected the Zanzibar clove-dependent economy. Moreover, the abolitions also affected owners of clove plantations and created a fragmentation of landholdings. The landholders were then made peasants and town dwellers, as opposed to previously when they had large tracts of farmland and held houses in plantations or rural areas as well as urban areas. Consequently, the peasants, many of whom decided to be permanent urban dwellers, contributed to the increased population of Zanzibar city. Therefore, expansion of the population of Zanzibar city added more pressure on use of the mangrove resources due to higher

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[429] Peninah Aloo, "Marine Resources" in Jan Hoorweg, Dick Foeken and R. A. Obudho Eds., *Kenya Coast Handbook: Culture, Resources and Development in the East African Littoral,* (London: Transaction Publishers, 2000), 48

[430] Extract from the minutes of the meeting of the Board for the Re-Settlement of Returned Ex-Servicemen held on May 10, 1944, in Zanzibar ZNA/AB46/15 Ex-Servicemen: Employment in Fishing Industry

demand for the raw material for house building, which damaged the mangrove forests as many trees were cut in a relatively short time for sufficient recovery.

Mangrove poles that had been exported to Arabia already in the pre-colonial era continued to be important exports during the colonial period. The mangrove barks that were mainly used locally were a significant item for export trade from the 1930s. During the Second World War, the forests in Unguja and Pemba were degraded to the extent that from 1949, there were no longer sufficient materials for viable mangrove bark export. However, the British colonial government in Zanzibar reduced the standard measure for peeling off mangrove barks in order to continue with the business and thus, avoided losing their prevailed markets, while continuing to earn much-needed foreign currency. All these factors placed the forests at ecological risk due to their degradation in Unguja and Pemba. Again, due to the relationship between the forests and the fish, many of which either bred or lived around the mangrove trees, even the fish were consequently placed under danger in Zanzibar and the east African coast.

From 1890, economic policies of the colonial government and that guided use as well as conservation of the mangroves from the 1930s onwards transformed the local attitudes towards the forests. People changed because they felt they had lost ownership and control of the resources. Moreover, socio-economic transformations had accelerated the demand for the resources. First, after the colonial government's intervention and control over the forests through establishment of forest reserves and introduction of conservation rules for mangroves between 1950 and 1955, the community felt that it had lost control of their once-owned forests. Therefore, the community began to utilise them, partly in protests against government intervention, whenever they had the opportunity. Second, there were changes in socio-economic set up during the colonial era, including abolition of slavery, increase in population and increased urbanisation, which propelled internal demands for mangroves, increased the urge to trade and export more mangrove products and thus, increased pressure on use of marine resources.

In terms of the fishing industry, ideas of the Zanzibar colonial government officials concerning how to go about marine fisheries were not homogenous regarding marine fisheries research practices during the British colonial era. For example, the colonial officials differed on issues of nature and establishments of the marine fisheries

organisation, and whether to have one regional or more marine fisheries scheme in the East African littoral. The debate within the colonial governments in East African and officials in London contributed to a delay in establishing the East African marine research programmes for almost a decade, from the inception of the idea to start an organisation up to the actual set up of the Organisation. As a result, two schemes were established in 1948, followed by an overall East African Marine Fisheries Research Organisation in 1950.

As far as the researchers were concerned, the marine fisheries research during the colonial period was more oriented towards colonial economic gains of the researchers' home countries than it was for the local communities in Zanzibar and East Africa as a whole. It was a kind of economic patriotism on part of the researchers. For instance, when Cecil von Bonde from South Africa conducted a survey of marine fisheries in 1928, he recommended as a solution for effective deep-sea fisheries whereby the government had to purchase a strong fishing vessel from South Africa. The same happened with the British colonial officials and researchers' suggestions, recommending for a strong European standard boat to be locally constructed in Zanzibar. They insisted that the government had to employ a European boat builder trained in England for that work. However, they did not provide strong objections to recommendations given by von Bonde in 1928, which was a kind of implementation of his suggestions.

One of the aims of the colonial research organisations was creation of scientific knowledge that would enable colonial control and continued exploitation of African resources. Therefore, the research conducted by von Bonde and those under the EAMFRO in 1951 laid the basis for unfavourable consequences for concentrated fishing efforts on the inshore. Consequently, one of the major impacts of biases was continuous concentration of fishing knowledge as well as increased fishing efforts in the inshore areas. First, it caused degradation of the marine environment and fish stock as well as diminishing returns for the fishermen. Second, it created room for outsiders, especially from the Seychelles, to get good fish markets in Zanzibar. Third, it created vacuum in the offshore fishing, with the area later occupied by foreign fishing fleets operating illegally (the issue is further discussed in Chapter 5).

Furthermore, as the researchers were eager to understand biological aspects of marine life in the region, such as understanding fish species, type of food they ate, breeding behaviour as well as migration patterns of the fish, all contributed to a lack of understanding of social aspects of the East African marine fishing. Therefore, issues such as traditional fishing methods, marketing, processing and distribution of the fish - despite already being little considered in von Bonde's research report - were not given priority in subsequent studies. Hence, research trend created a gap between the researchers' activities and usefulness of research results, on one hand, and the local demand and expectations for development of fishing, on the other.

While colonial authorities perceived the local and traditional fishing and fish processing methods as poor and underdeveloped, they did relatively little to deal with and redress the situation in Zanzibar, aside from conducting marine fisheries research on the area. In this manner, marine research seemed to serve colonisers' interests more than those of the local communities, who depended on the development of marine fishing activities. That was mainly because local inhabitants saw little use of research activities. Furthermore, it also contributed to the seemingly local perception on marine fisheries research in Zanzibar that research activities were partly a means for dominating their field and undermining their income of marine fishing. Ultimately, the local communities tried to avoid participation in some activities that were related to fishing research.

The colonial government's tendency to divert the basic duties pre-planned for its resources led to inefficiency in the arranged programmes, resulting in misallocation and misuse of resources. For example, the government's long owned fishing vessel F. B. Forerunner, which was assigned to operate in fishing and research under the Fisheries Scheme based in Unguja, instead, worked for unspecified 'special duty' in Pemba. Nonetheless, the expenditure was still charged to fishing and research entity. That hindered achievement of timely and realistic fisheries research results in Zanzibar and therefore, limited marine fisheries development in the area in the specified period of time allocated for the first phase of the Fisheries Scheme.

In the next chapter, presentation is on discussion of changes in use and conservation of mangroves and fishing resources after Zanzibar independence and the Revolution of 1964. The chapter further provides analysis on issues such as

nationalisation of properties and various policy reforms that influenced marine environments and societies that have depended on marine resources in Zanzibar.

CHAPTER FIVE

TRANSFORMATION OF USE AND CONSERVATION OF MARINE RESOURCES IN ZANZIBAR AFTER THE 1964 REVOLUTION

5.1. Introduction

The history of the marine environment in Zanzibar, during the post-revolution period is a history of socialist control and its change towards liberal policy management. After the revolution of Zanzibar in 1964, use and conservation of marine resources began to be shaped by socialist ideas of managing resources - both natural and human. In that period, the country was trying to build a socialist society and came up with socialist policies, some of which were in fact modifications of already introduced colonial policies. For example, from 1965, the Revolutionary Government of Zanzibar (RGZ) tried to reorganise cooperative societies. Later on in the 1970s, the cooperatives were more political than economic and they were made to be one of the five mass organisations of the ruling party of Tanzania, Chama Cha Mapinduzi (CCM). The system ceased with introduction of the multiparty system in 1995. During the whole period, the RGZ tried to manage marine resources, including fish and mangroves, with more restrictions against foreign trade. Therefore, while the government established some new control measures in resources such as mangroves, some community members disregarded them and even pursued illegal forms of use, which turned into counterproductive and ecologically damaging patterns. Moreover, the RGZ nationalised major means of the economy, such as land, industries and commercial firms. Many of the nationalised entities functioned poorly.

In the 1980s, government policies began to take different directions. Together with worldwide changes that began during that period, including changes in the socialist world, Zanzibar began to introduce new sets of policies and regulations that involved local communities together with international organisations in managing marine resources. The new liberalisation policies included introduction of "Marine Protected Areas" (MPAs) in Zanzibar that were to be managed by the government in collaboration with local communities and international organisations such as the World Wide Fund for Nature (WWF) and the Finnish International Development Agency (FINNIDA).

Therefore, the aim of this chapter is to provide analysis of transformations in use and conservation of marine resources, mainly with regard to mangroves and fish, and the way these resources were affected by changes in policy formation and management over the post-revolution period from 1964 to 2000s.

5.2 Nationalisation and Marine Resources, 1964-1980s

After Zanzibar's Independence in December 1963 and the Revolution of January 1964, there followed drastic changes in policies governing economic relations and environmental management issues. The first among the policies was nationalisation of land and other properties such as buildings and industries. Such changes had certain effects on use and conservation of marine resource. For example, importation of dried fish and export of mangrove poles as well as barks were restricted. During the initial period of the post-independence era, from 1964 to 1980, some policies of the colonial era were carried forth, while others were changed.

5.2.1. Changing Policies, Marketing Strategies and Utilisation of Mangroves and Fish, 1964–1980

The Zanzibar Revolution of 1964 brought significant transformations in social, political and economic aspects in the country. In the economic sphere, soon after the revolution, especially in 1965, the RGZ issued a decree for nationalisation of all major means of the economy. To that end, the RGZ started nationalisation of land, and confiscated as well as reallocated some private properties. The RGZ nationalised farms and business enterprises, including some shops, and industries.[431] For example, a Greek fishery firm that had previously worked in partnership with the Zanzibar Protectorate Government was nationalised immediately after revolution in 1964.[432] Since the RGZ put all fishing activities under the Department of Fisheries,[433] the department took over activities of the company.

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[431] See, for example: Helen-Louise Hunter, *Zanzibar: The Hundred days Revolution*, (California: Greenwood Publishing Group, 2010), 59, 64, 71; Garth Andrew Myers, "Reconstructing Ng'ambo: Town Planning and Development on the Other Side of Zanzibar," (Unpublished PhD dissertation - University of California, 1993), 336-7, 340-42, 346-50, 385-6; and Raymond F. Hopkins, *Political Roles in a New State: Tanzania's First Decade*, (New haven: Yale University Press, 1971), 10-11.

[432] ZNA/BA41/6 Serikali ya Mapinduzi ya Zanzibar, (hereafter SMZ) "Sera ya Taifa ya Uvuvi Nchini," (Zanzibar, Oktoba, 1985), 3.

[433] Sam Maghimbi, *Cooperatives in Zanzibar: Decline and Renaissance - Coop-Africa: Working Paper No. 17*, (Dar es salaam: International Labour Organisation, 2010), 5-6.

The Revolutionary Government of Zanzibar decided to put more efforts into better ways of exploiting marine resources. The government wanted to build an economy that was not only dependent on agricultural products such as cloves and coconuts but also marine products, especially fish.[434] With that idea in mind, the first strategy of the RGZ was to train local fishermen in different ways and methods of marine fishing. Second, the government aimed at building the capacity of its institutions and of artisanal fishermen. Therefore, a number of initiatives began immediately. For example, in 1965, the RGZ sent seventy young fishermen for training to the German Democratic Republic (GDR).[435] Moreover, in 1966, in efforts to advance the fishing sector in Zanzibar, the RGZ received six fishing vessels as aid from the GDR. The major purpose was to strengthen the Zanzibar Fishing Corporation (ZAFICO)[436] and people's welfare.

As artisanal fishery continued to dominate the fishing sector in Zanzibar and the RGZ realised the importance of education for development of the society in Zanzibar, the RGZ introduced productive skills in the school curricula. In 1978, the government established fisheries, agriculture and crafts as subjects in secondary education. The idea was to inculcate the skills to the students so as to enable them to participate effectively in national economic programmes. Nevertheless, the programme met many challenges. First, there were not sufficient skilled teachers for the courses. Secondly, many schools had not sufficient laboratory equipment and workshops to run the productive skills programmes that were introduced. The schools under these programmes were considered to be too expensive to continue and therefore, the programmes did not last long. The government reconverted the specially designated schools to general secondary schools.[437]

Meanwhile, there was an analogy with British colonial programmes with regard to fishing, which had been carried out with less success already during the colonial era.

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[434] SMZ, "Sera ya Taifa ya Uvuvi," Ibid.

[435] Ibid.

[436] ZAFICO was introduced after nationalisation of the Zanzibar Fisheries Development Corporation (ZAFIDECO), which was introduced in 1962 as a joint venture between a Greek fishermen and the government of Zanzibar. ZAFICO worked in fishing, processing and distribution of fish and fishing products.

[437] ZNA/BA/41/8, Revolutionary Government of Zanzibar, "The Artisanal Fishing Training Centre in Zanzibar: Proposal," 2.

That was introduction of a data recording system right at the landing sites. In 1974, just like in 1952, the RGZ employed more than eighty people for recording fish landing in both Unguja and Pemba. The objective was to get important information such as type of vessels used, number of fishers involved, number as well as type of fish catches and time involved, for the purpose of making significant decisions for development of traditional fishing in the country. But given the situation where the government was strict in that period to the extent that it probably contributed to make some fishermen move away from Zanzibar to mainland Tanzania where they considered being a less strict in fishing environment,[438] the procedure and the data had little reliability. Nevertheless, after a few years, the programme began to weaken and in the period of 1978-81, few landing sites were attended to, and eventually, the programme was discontinued.[439] Factors that contributed to the failure of this programme included lack of a sufficient budget from the government[440] and although poor cooperation from some of the fishermen was not reported but it could also have contributed to the failure.

A major challenge for some of these fishing activities after the revolution was lack of coordination, which sometimes created high cost expenditure to the government. For example, in 1967, the RGZ ordered two ships for fishing from the GDR, but the vessels failed to operate because they were unsuitable for the fishing environment of Zanzibar.[441]

In addition, in later years, between 1973 and 1976, the government of Zanzibar tried to look for foreign aid in partnership or for foreign private investments from fishing companies in order to boost artisanal fishing and introduce commercial offshore fishing in Zanzibar. Nevertheless, some of the efforts failed because of either negligence, procrastination or for other unapparent reasons. For example, in 1973, former Yugoslavia proposed to the RGZ a fishing aid (loan) of Tanzania Shillings 50,000,000.00 to establish industrial fishing in Zanzibar.[442] The government never signed the proposal. It seems that some fishing companies shunned official partnerships and preferred private or individual fishing projects with less control and monitoring by

[438] Maghimbi, *Cooperatives in Zanzibar*, 6 and 16.

[439] Ibid.

[440] Ibid.

[441] SMZ, "Sera ya Taifa ya Uvuvi," 3.

[442] SMZ, "Sera ya Taifa ya Uvuvi," Ibid., 4-5.

the government authorities. During that period, the RGZ was also reluctant to go ahead with private establishments that wanted complete autonomy from the government because the government was trying to build a socialist country like Cuba and China.[443]

However, in addition to efforts for developing the fishing industry, the government of Zanzibar, though without any definite policy but with definite intentions, hindered importation of fish from outside. For example, the Seychelles, which throughout the British colonial period had been important suppliers of sharks, was prevented from 1964 from pursuing that business in Zanzibar.[444] In addition, there was a significant reduction of the dhow fleet to and from the Arabian and the Gulf region from 1964, which had been major sources of dried fish and shark to Zanzibar. Such reduction of fleets that were used to carry the fish product suggests a reduction in importation of fish as well. Therefore, such reductions of fish from outside suggest that in order for a prevailed consumption of fish in Zanzibar to continue, there should have been alternative sources within the country. This means probably the amount of fishing had increased in Zanzibar as substitute for the imported fish that had stopped. It could also mean that the amount of fish that people ate in Zanzibar had decreased during that time. Therefore, the demand for fish went down to cover the reduced supply from outside. Another possibility could be smuggling of fish from outside Zanzibar as replacement of fish from Arabia and Seychelles. Unfortunately, there is lack conclusive evidence of exact extent of change in fishing and consumptions during that period, which could directly be linked to cessation of fish importation in Zanzibar.

As far as fish marketing in Zanzibar was concerned, the RGZ retained the same market structures, which had existed under British colonial rule. For example, after landing their fish catches, the fishermen were required to sell their products in the government designated markets. But at that time, after the revolution what had changed was the question of the state price control. The government took total control of both wholesale and retail trades from 1964. In that case, the RGZ controlled fishing, fishermen as well as the fish market and price. The RGZ encouraged and registered

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[443] See; Hunter, *Zanzibar*, 70-72, 79 & 86, and Garth A. Myers, "Making the Socialist City of Zanzibar," *The Geographical Review*, Volume 84, Number 4, (October, 1994), 451. http://www.questia.com/library/journal/1G1-18013863/making-the-socialist-city-of-zanzibar Accessed: 23 November 2013

[444] John Nevill, Jan Robinson, Florian Giroux, and Marlene Isidore, *Seychelles National Plan of Action for the Conservation and Management of Sharks*, (Victoria: Seychelles Fishing Authority, 2007), 16.

many cooperative societies, which soon became sources of fraud of money and misuse of power, partly because they were established under wrong basis that included racial and ideological differences.[445] Thus, in 1967, the government dissolved all cooperative societies. In addition, the government disbanded the Department of Cooperatives and relocated the staff to other departments.[446]

Later on, the RGZ issued a government decrees Number 4 and Number 5 of 1976, re-introduced, and registered a number of fishery cooperatives. That time around, the government placed registration of societies and supervision under the Department of Fisheries. The government encouraged establishment of fishery cooperatives, which were set-up with a top-down approach. The fishery cooperatives were drawn from small fishing groups of artisanal fishermen and were forced to sell their catches to the government-established stalls at a fixed price.[447] In due regard, the government viewed that cooperatives were a viable way of controlling different economic sectors such as fishing, marketing, agriculture and forestry. That was observed later in 1986, when Chama Cha Mapinduzi (CCM) and its the two governments, RGZ and the Government of the United Republic of Tanzania, decided to merge apexes of the cooperative societies of Zanzibar and Mainland Tanzania into one of the five mass organisations of the ruling CCM party, the Cooperative Union of Tanzania (CUT).[448] That merger signalled culmination of political control of the fishing and other cooperative societies. In that sense, for one to be a member of cooperative society, it was compulsory for the one to adhere to the ideology and membership of the CCM. But some of the fishermen

[445] However, the CUT ended in 1995 after the introduction of the multiparty system and CCM left the cooperative unions free of political affiliation and obligations. Then two organisations were established, the Tanzania Federation of Cooperatives (TFC) for the mainland and the Cooperative Union of Zanzibar (CUZA). See: Maghimbi, *Cooperatives in Zanzibar*, 5 & 8; and Jovin A. Banturaki, "Tanzania Cooperatives: Their Role in Socio-economic Development," paper presented at a conference on "Perspectives for Co-operatives in East Africa," held at Kampala, Uganda, October 2-3, 2012, 13. Source: http://www.fes-Uganda.org/media/documents/Cooperatives/Perspectives_on_Cooperatives_in_East_Africa_-Jovin_A_Banturaki.pdf

[446] Maghimbi, Ibid.

[447] Maghimbi, Ibid.

[448] Maghimbi, Ibid., 8. The merger ended with the introduction of multiparty system in the 1990s, when the cooperatives were left to operate independent of political affiliation and control.

were not members of cooperative societies and some of them joined the societies for their social safety including political identification[449].

Table 5.1 Fishing Statistics for Unguja and Pemba, 1965-1985

Year	Cost (Value) of Fishing Equipments	No. of Fishers	No. of vessels
1965	-	10,720	5,739
1970	-	13,720	780
1975	-	3,963	959
1978	298,040	6,257	1,389
1979	494,025	8,865	3,270
1980	385,790	10,420	4,810
1981	1,935,204	14,592	4,900
1982	700,000	17,000	5,112
1985	4,000,000	20,000	6,000

Source: SMZ, Sera ya Taifa ya Uvuvi, 48

The government strictness on fishing and marketing control affected the fishermen, and as a result, "in 1975 and 1976, it was observed that some fishermen were taking fish to Dar es Salaam and Tanga markets on the mainland in order to avoid the government fixed prices in Zanzibar."[450] Moreover, fishermen began to be sceptical on government initiatives on fishing cooperatives that was another way for the government to have more control over the fishermen and their activities. It indicates that the fishermen decided to show passive resistance to the government policy and in order to make the government to initiate some policy changes. The fishermen shunned and deserted the cooperative societies. Some fishermen even decided to relocate themselves from Zanzibar to other places on mainland Tanzania, such as Bagamoyo, Dar es Salaam and Tanga where fishing including markets were relatively less strict than in Zanzibar.[451] As a result, the recorded number of fishermen declined from 13,720 in 1970 to 3,963 in 1975 for both Unguja and Pemba, whereas the number of fishing vessels increased in the same period from 780 to 959 in 1970 and 1975, respectively

[449] Interview with Bakar Salum Shaaban, (Pseudonyms), Pemba 28.05.2012

[450] Maghimbi, *Cooperatives in Zanzibar*, 16.

[451] Maghimbi, Ibid., 6.

(see Table 5.1). But as informed that first, some of the fishermen avoided the cooperative societies where it could have been easy for their information to be recorded; second, some fishermen avoided the stringent fish markets in Zanzibar; and third, given the system of collecting the fishing information where the recorders were stationed in some (not all) of the landing sites and abandoning other sites, probably unrecorded there could be some missing fishing information. Therefore, the fishing impact may possibly be under represented in the available information due to the gaps in system of recording, which also may affect the marine conservation efforts.

Following the presented issues, there were some possibilities that might had caused environmental influences. It is likely that the fishermen had increased their fishing efforts because those who sent their fish catch to the Zanzibar market could have increased their efforts in order to cope with the increased fish demand, which was caused by the gap of the fishermen who sent their fish catch to the mainland markets. Also, for those who sent their fish to the mainland markets, they had possibility of increasing fishing efforts in case there was ample market in the mainland due to the comparable high population and extensive geographical coverage. Thus, there was higher demand for fish. Another possibility could be maintenance of the same former fishing efforts due to either competitions or their limitation in fishing techniques and methods. The said possibilities of fishing show that it was likely that fishing increased during that period in order to cope with the demand.

Moreover, many fishermen from Pemba migrated to Mombasa in Kenya, to continue with their fishing businesses from 1964.[452] It is apparent that people from Pemba migrated for political reasons following the Zanzibar revolution in 1964.[453] It is also probably not precisely due to government policies that were directly related to the fishing industry and economic measures, but fishermen from Pemba were affected and relocated to Kenya during that period. It was the only significant large group of fishers, known up to this moment, which were self-relocated from Zanzibar and they made a significant noticeable impact where they went.

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[452] Anthony King, "The Strategies Used by Local Fishers to Ensure Access to and Control over Scarce resources in Galu and the Wider Implications for Marine Resource Management," in Jan Hoorweg and Nyawira Muthiga (eds.), *Recent Advances in Coastal Ecology: Studies from Kenya*, (Leiden: African Studies Centre, 2003), 222-3.

[453] King, Ibid.

From the preceding discussions, it follows that fishing and marketing processes were placed under strict state control and scrutiny, and therefore, created a number of issues between the government and the fishing communities. The fishing communities lost trust to the government and government officials who dealt with fisheries. That brought the fishermen to the second level that they became suspicious of any government intervention geared towards collaborating with the fishermen. The fishers then tried to avoid the fishery officials and anybody whom the fishermen suspected of being affiliated to the government. For example, data collectors were once seen as government agents who collected information for the government to tax and devise stringent control over the fishermen and their fishing activities. Yet, here there was suspicion about the collectors of fishing data. As some data collectors came from the same communities, some also shared the same feeling with the fishermen that the data could probably be used to hook the fishermen, and there was a possibility of a go-slow tendency in collection of fishing information. Therefore, both rounds of data collection practices, the one during the British colonial period and another during the 1970s failed to be accurate for different reasons. Factors behind the failure included lack of sufficient work force in 1952 to lack of sufficient funds in 1978 and one that seemed to be a common factor throughout, to some fishermen, was lack trust and fear from usage of information on taxation. Therefore, some fishermen hid important information or tried to circumvent and provide inaccurate information.

Thus, politics of fishing and marketing in Zanzibar in the period after the Zanzibar revolution resulted in an extent of shortage of fish in the markets in Zanzibar, that could have not been to such an extent if not because firstly, some fishermen avoided the markets for the better ones in the mainland at that time. Secondly, there were fish imports from Arabia and Seychelles, which stopped after the Zanzibar revolution of 1964. Thirdly, a number of people migrated from Pemba to Mombasa in 1964, most of whom were fishermen and it is likely that their move contributed to fish shortage in the islands in that period. In this case, it indicates that fishing as such did not decrease, but some fishermen diverted it to the mainland. Therefore, the environmental implication here is that although supply of fish in the market decreased, fishing on the fishing ground probably increased as the fishing recorders were based on the fish landing sites that could be diverted by the fishermen.

Furthermore, the cooperatives were other ways of controlling and punishing by sidelining those who were suspected of being against state policies. This is because it was easy for the government to avoid or tactically delay registering cooperative societies and not to extend support to people who seemed to be not supporting the government policies. Such tendency created regional disparity in Zanzibar. For example, among 33 government agencies that supported traditional artisanal fishing in Zanzibar, only eight (8) were located in Pemba while the remaining twenty-five (25) were stationed in Unguja.[454] In addition, in 1978, the ZRG through ZAFICO established the Centre for Fisheries that was based in Unguja. The centre had three fishing vessels (using Purse seine and Light attraction) and seven fish supply centres in Unguja. Fish from the centre were supplied in Zanzibar Town and in some villages in Unguja.[455]

During the period immediately after the revolution, all imports and exports were under state control and therefore, as far as fish imports and exports were concerned; they were under a state organ, which was the Zanzibar State Trading Corporation (ZSTC). The government established the ZSTC in 1964.[456] Concerning importation of fish, especially dried sharks from Arabia, Zanzibar halted the business after the revolution in 1964. However, it was learnt from Mombasa that in 1970, the import of dried salted fish and in particular shark was "more than half of the imports by dhows."[457] It is probable that the socio-political change in Zanzibar contributed to higher imports at Mombasa by dhows because there was a significant decline in dhows and other businesses between Zanzibar and the Gulf as well as Arabian region during that period. The increased importation of fish in Mombasa implies that either there was an increase in fish consumption in Mombasa or the fish was smuggled to nearby areas such as Tanga or Pemba.

The tendency of sharp decline in importation of fish after the revolution happened to other countries as well. Apart from Arabia, Seychelles also suffered when the shark trade with Zanzibar, which began in the 1920s, ended unexpectedly:

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[454] ZNA/BA41/6, SMZ: Sera ya Taifa, 1985, 5.

[455] Ibid. 6.

[456] Maghimbi, *Cooperatives in Zanzibar*, Ibid.

[457] Abdul Sheriff, *Dhow Cultures of the Indian Ocean: Cosmopolitanism, Commerce and Islam,* London: C. Hurts and Co. (Publishers) Limited, 36.

> The [shark] trade continued despite declining catches until 1964 when the fall of Zanzibar, the regional hub for the meat trade, saw the collapse of the market. The fall of Zanzibar signified a fundamental turning point in the economic dynamic of the Seychelles shark fishery, as from that point onwards, fin replaced meat as the primary commodity [in Seychelles].[458]

Thus, it is no wonder that during the period that followed the Zanzibar revolution, there was higher importation of dried fish and shark in Mombasa as the alternative market of Zanzibar had dried up.

In the period after the Zanzibar revolution, there was also an increase in charcoal and firewood demand in Zanzibar, which posed a threat to the mangrove forests. These were most suitable for making good charcoal in the islands of Unguja and Pemba. Rapid urbanisation in Zanzibar during that period contributed to an increase in the demand. The population of the Zanzibar city, for instance, increased tremendously during the period after the revolution whereby it rose for more than 75 percent from 58,000 in 1963 up to over 200,000 in 1995.[459] Increase and improvement of social facilities in the urban centres, especially housing also contributed to increase number of town dwellers as well as demand for firewood and charcoal for domestic energy. All these changes had environmental implications from the building materials to food consumption. Use of mangroves as one of the significant building materials was controlled by the government. Also, sand winning from beach fronts and removal of live coral reefs for building affected the fishing environment during this period.[460] Therefore, despite control of the resources from the government, pressure on demand for the resources seemed far exceeded government efforts.

This demand coincided with the government demand for revenue from the forests. As Seithy Chachage correctly put it, after Zanzibar revolution in 1964, "initial

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[458] Nevill, et al., *Seychelles National Plan*, 16.

[459] Garth A. Myers, "Political ecology and Urbanisation: Zanzibar's Construction Materials Industries."in *The Journal of Modern African Studies, Vol. 37, No. 1*, (1999), 92. According to the *2012 Population and Housing Census* in Tanzania the current population of the Mjini Magharibi (Urban West) region, which include the Zanzibar city is 593,678 that is 46 per cent of the population of Zanzibar.(see The United Republic of Tanzania, "2012 Population and Housing Census: Population Distribution by Administrative Areas," Dar es salaam, March 20 2013), 1, 11 and 14.)

[460] Ibid, 87 and 92.

efforts of the [Forest] Department were directed towards earning state revenue through state forests, and through licence and fees for harvesting forest products."[461]

Therefore, the country's forestry policy after the revolution with regard to mangroves as part of Zanzibar forests, in general, retained the same major stated objectives as in the late colonial period, which was, "fuel supply for Zanzibar town and water and soil conservation."[462] Then one year after the Zanzibar revolution, in 1965, the government gazetted all mangroves under the Forest Reserves. In addition, the Revolutionary government declared its determination to close down any forest for any kind of exploitation for an unspecified period.[463] From then on, management of the entire mangrove and other forests moved from the Department of Agriculture to the Forestry Department.[464] By establishing a new department for the forests, the government wanted to have effective and better control together with conservation of forest resources than during the colonial era, when the government managed the forests in the Department of Agriculture.

In the period from 1965, the Revolutionary government, like the former colonial administration, further reduced the maximum diameter of mangroves to be used. The limit for cutting down mangrove poles was now put to less than 4 inches.[465] Formerly, the British colonial government had limited the size up to 6 inches, which was still rare to find. The idea behind such move was to protect the larger mangrove trees to grow, but also further restrictions such as alternate closing and opening of the forests for ten-year harvest rotation period was geared for conservation of the younger and smaller trees to grow, and those exceeded four inches diameters had to be used for poles.

One of the significant changes for the mangrove conservation after the Zanzibar revolution was prohibition of trade in mangrove barks in 1965.[466] The mangrove barks for export had been one of the profitable trades during the colonial era. Although the

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[461] Chachage, *Environment, Aid and Politics*, 151

[462] Ibid. 150.

[463] Ibid., 150-51.

[464] Thabit S. Masoud and Robert G. Wild, "Sustainable Use and Conservation Management of Mangroves in Zanzibar, Tanzania," in Marta Vannucci (ed.), *Mangrove Management and Conservation: Present and Future* Tokyo: United Nation University Press, 2004, 283.

[465] Masoud and Wild, Sustainable Use, 283.

[466] Masoud and Wild, Ibid.

practice of exporting the mangrove bark threatened the wellbeing of the forests in the 1940s and early 1950s, the export continued in order to support revenue of the colonial government and keep the prevailed export markets. Then after independence, from 1965, the Revolutionary government prohibited removal of the mangrove bark for export. The local people continued to extract the barks on a small scale for local consumption in local industries. People continued to extract the barks for the leather industry, largely small-scale industries that were owned by families and operated using family labour.[467] Moreover, fishermen used the mangrove barks for protection of cotton fishing nets against insects. Again, that was not extensive since many people changed and preferred to use nylon fishing nets instead of cotton ones. Therefore, there was a significant reduction on use of the mangroves compared to the colonial era. Another contributing factor for the reduced exploitation of the mangrove barks was the discovery and gaining popularity of the tannic synthetic materials from the 1950s. Nevertheless, prohibition of extraction of barks in 1965 largely saved the mangrove forests from further deterioration.

Prohibition of removal of mangrove barks went together with prohibition of use of mangrove forests as a source of firewood. However, although prohibition of mangroves for firewood consumption had environmental conservation significance, the move was impractical and bound to fail. In the villages close to the mangrove forests, it was quite difficult to eliminate use of mangrove products right away after the prohibition. Additionally, the government issued cutting and transport permits for the extraction of mangrove poles. Nevertheless, cutting of the poles usually involved cutting and removing smaller sized branches of woods from the tree to get a fine pole. Such by-product woods of the mangrove poles were suitable for use as firewood.[468] Therefore, instead of the government to prohibit use of mangroves for firewood it could have allowed at least use of by-products that were useful. But the government was unable to create an alternative reliable source of energy to the rural population and to the urban dwellers in the city. Therefore, in addition to the licensed use of mangrove

[467] Traditional shoe maker - Chake Chake, Pemba

[468] Interview with Kombo Ali Kombo, 15 June 2011, Chake Chake, Pemba.

products, many villagers continued to extract mangrove poles from the forests illegally.[469]

Moreover, there was extensive illegal felling of the mangroves during the period after the revolution. Although there is no conclusive evidence for illegal felling of the mangrove, the general condition of the forests compared to the issued permit of mangrove cutting suggests that illegal exceeded legal felling of the trees.[470] In this respect, just like in other African states with mangrove forests, the Revolutionary government tried to balance between increment of revenue through taxing the forest resource use and preservation of the resources' sustainable use.[471] Some mangrove cutters established and organised tree felling cooperatives, like other cooperatives such as the Fishing, Lime making, Bakery and Charcoal Burning Cooperative unions and others in different economic settings who organised themselves in order to smoothly secure and develop their activities under the prevailing political and economic system (Table 5.2). Although it may appear like the tree felling cooperative union (mangrove cutters) as direct users of the mangrove forests, in reality, many others such as bakeries, hotels and charcoal burning cooperatives also used the mangrove forests in Zanzibar. Therefore, many people in cooperative unions used mangrove trees in some processes of their works and therefore, increased the incidence of illegal felling of the mangrove trees, especially villagers who lived in close proximity to the forests and thus, they affect conservation activities in general. Such trend threatened the wellbeing of the mangroves because with illegal cutting one was not bound to observe the conservation regulations such as the standard size and there was no replacement of the trees for sustainability.[472] Therefore, the mangrove forests deteriorated during that period.

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[469] Masoud and Wild, Sustainable Use, 283.

[470] Ibid.

[471] Philip D. Curtin, "African Enterprise in the Mangrove Trade: The Case of Lamu," No. 10, (Wisconsin: African Studies Program at the University of Wisconsin--Madison, 1981), 25, Source: http://www.jstor.org/stable/3601293Accessed: 04/08/2010

[472] Interview with Omar Ali Mamba, 14 June 2011

Table 5.2 Some of the registered cooperatives in Zanzibar in 1984

Cooperative type	**No. of Cooperatives**	**No. of members**
Consumer shop	1084	33,163
Tree felling	19	515
Bakery	8	499
Fishing	12	354
Agricultural	12	429
Hotels	3	1555
Building /Construction	3	85
Charcoal burning	21	59
Transport	1	28
Carpentry	2	58

Source: S. Maghimbi, "*Cooperatives in Zanzibar*, 7.

Conservation of the mangrove forests as well as marine resources in general during the period after the revolution was a top down system, which largely made some community members in the coastal villages and around the resource areas to perceive that there was too much control from the government. Some local people even felt that they were almost deprived of their resources. That was a colonial legacy, which made the government to push the local community to that level of feeling to have robed off ownership of their own resources. The government devised rules and regulations that communities around the forests had to follow. However, the government continued to observe the system of closing and opening mangrove forests for cutting of poles in some areas of the Islands.[473]

Therefore, the period from the Zanzibar revolution in 1964, saw the Revolutionary government becoming restrictive for environmental conservation. But despite greater protective efforts of the Government, pressure on the resources demand increased in that period. This shows that Government measures were not such effective. There were some factors that retarded government efforts on conservation of the

[473] Masoud and Wild, Ibid.

resources. Such factors included unequal access to the resources,[474] which made some people feel that they were sidelined from use of their own resources such that they devised alternative ways to access the resources whenever they got an opportunity. That means they cut and use the mangroves, for instance, without legal authority and that was considered illegal but served their purpose.[475] It is also probable that there was increasing demand in society at large that resulted from many issues such as population growth and rapid urbanisation as discussed before in this chapter. One of the environmental issues is that while demand for the resources was expanding, the Government on its part increased the level of restrictive measures. This resulted into raise of illegal use of mangroves as many people in villages surrounding the mangrove forests continued to cut the trees. The balance between nature and human being had therefore to be devised here in order to protect the environment and the natural resources, that is, mangroves and fish as well as to protect and maintain humanity culturally and economically.

5.3 Globalisation: Policy Reforms, Privatisation and Conservation 1980s–2000s

After the period of national building, immediately after independence and the revolution, there followed a phase of transformation from a controlled economy towards a liberal economy. The changes resulted in proliferation of MPAs and in more community involvement in resource use and conservation in Zanzibar. During that period, the trade in mangroves and fish began to acquire another shape in Zanzibar. The marine resources that had once been managed by government institutions now began to be managed either by private entities or by non-government organisations in collaboration with the government.

5.3.1 Transformations of Policies and the Marine Environment: Implications for Fishing, 1980–2000s

Garth Andrew Myers describes the decade between 1980 and 1990 as a period of 'confusion.' It was the era of gradual ideological change from "strongly socialist public agenda in Zanzibar"[476] towards a 'moderate' policy, which began after assassination of President Abed Amani Karume in 1972. Then unification of the two

[474] Myers, “Political ecology and Urbanisation", 91-92.

[475] Interview with Juma Mkuu Marumba, Makunduch 24 April 2012

[476] Myers, Reconstructing Ng'ambo, 403.

political parties followed, Tanganyika African National Union (TANU) and Afro-Shirazi Party (ASP) to form Chama Cha Mapinduzi (CCM) in 1977. Then in 1984, Aboud Jumbe Mwinyi, the successor of Karume resigned and Ali Hassan Mwinyi came in. He accepted trade liberalisation policies of the International Monetary Fund (IMF). Therefore, Zanzibar entered into the liberal economy in the 1980s.[477]

In 1985, Zanzibar introduced trade liberalisation policy and in the following year, the RGZ enacted the Private Investment Act of 1986. The two spearheaded privatisation and contributed to promotion of tourism and other private investments in the islands. Tourism became a significant component in the economic development of the country, and the government established the Zanzibar Tourist Corporation (ZTC) in 1985 to supervise and improve the tourism sector.[478]

Formerly, the Department of Fisheries and Marine Resources managed fishing activities in Zanzibar. But later on, two separate departments, the Department of Fisheries Development and the Department of Marine Resources to manage fishing and marine affairs were introduced in the island under the Ministry of Livestock and Fisheries. The Department of Fisheries Development mainly deals with the marine environment and development of fishing activities, while the Department of Marine Resources is responsible in promotion of trading activities related to marine including sustainable production and supply of seaweeds.

Although the Food and Agriculture Organisation (FAO) reported that about, "90% of the global marine catch is taken from within coastal state declared [Exclusive Economic Zone] EEZ,"[479] many of the coastal countries, especially in Africa are unable to fish effectively. Many coastal countries and islands faced the problem of Illegal, Unreported and Unregulated (IUU) fishing, which is a major marine fishing problem, especially in Africa. The IUU fishing, which is partly caused by a global inequality in the capacity of marine fishery activities, also created problems especially when it comes to inability of many African countries to fish and defend their marine waters. Additionally, many African coastal states lack the ability to defend and effectively

[477] Myers, Reconstructing Ng'ambo, 403 & 439.

[478] Chachage, *Environment, Aid and Politics*, 186.

[479] Rachel J. Baird, *Aspects of Illegal, Unreported and Unregulated Fishing in the Southern Ocean* in Jennifer L. Nielsen (Series ed.), *Reviews: Methods and Technologies in Fish Biology and Fisheries, Volume 5*, (Dordrecht: Springer, 2006), 6.

monitor marine resources, especially fish, from powerful and industrial fishing vessels from Europe and Asia.[480] For example, in 2000, there were about seven hundred trawlers from foreign countries, mainly from Europe and Japan, fishing illegally in Gambia, while the country's authority knew the facts but was unable to stop their activities.

Of all the African countries, only South Africa and Nigeria are able at least to patrol and protect their marine resources using motor vessels. Somalia opted to use another solution to problems of foreign illegal trawlers in the Somalia coastal waters. The militiamen patrolled the coast seizing foreign fishing vessels by demanding a ransom.[481] Later on, the Somalia marine issue took another course and advanced into the global phenomenon of terrorism and piracy in international waters when the militiamen expanded their reach to seize even the normal trade ships in addition to the illegal fishing by foreign ships for ransom.

However, regional or inter-state cooperation in protection and supervision of marine resources as well as environment for the coastal African states could provide possible solution to the IUU fishing. In addition to that, African coastal states such as Tanzania, Kenya and Mozambique need to collaborate with respective fishers who would inform government authorities of any irregularities on the sea so as to curb the extent and havoc of the IUU fishing.[482] Moreover, in order to meet these targets of minimising poaching of the marine fish resources from foreign vessels, Zanzibar and

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[480] See: Abiodun Alao, *Natural Resources and Conflict in Africa: The Tragedy of Endowment*, (Rochester: University of Rochester Press, 2007), 229; Thean Potgieter, "South Africa and maritime power in the Indian Ocean," in *Journal of the Indian Ocean Region, Vol. 7, No. 1*, (Routledge: 2011), 52-74, 52-3; and Nevill, et al., Seychelles *National Plan*, 23; and Julius Francis and Ian Bryceson, "Tanzanian Coastal and Marine Resources: Some Examples and Illustrating Questions of Sustainable Use" in Javed Ahmed, Cassandra Bergstrom, Ian Bryceson, Brian Child, Julian Francis, Paind Khan, Bawa Gaoh Ousmane, Thomas Louis Price, Sonali Senaratna, Naseer Tareen and Chris van Dam, *Lesson Learned: Case Studies in Sustainable Use* (International Union for Conservation of Nature - IUCN, 2001), 82, http://cmsdata.iucn.org/downloads/francis.pdf Accessed: January 12, 2013, 83; Issa Yussuf, "Zanzibar Fishermen Decry Foreign Trawlers in Zanzibar Waters," in the *Daily News* (18 January 2011), (Accessed 22 January 2011); Issa Yussuf, "Illegal Fishing in Zanzibar Still a Big Headache," in the *Daily News* (A Tanzania daily newspaper, 21 March 2012), (accessed: 20 October 2013); and Issa Yussuf, "Illegal Fishing Still Haunts Zanzibar," in the *Daily News* (17 March 2012), (accessed: 20 October 2013).

[481] See, for example: Alao, Ibid; and Edwin Tshivhidzo, "SA 'Can Lead Fight Against Piracy,'" 12 March 2009, in International Relations, source: http://www.southafrica.info/news/international/piracy-120309.htm#.Uq0-U-J0nis (accessed: 17 March 2013)

[482] Charlotte Tindall, Andrew Purvis, Sally Frankcom, Sandy Davies, Mark Ssemakula and Per Erik Bergh, *Fisheries in Transition: 50 Interviews with the Fishing Sector*, (Aquavision Consulting, 2012), 15, Source: http://pcfisu.org/wp-content/uploads/2012/01/TPC1224-Princes-Charities-case-studies-report_WEB-02.02.pdf Accessed 21 September 2013.

Tanzania in general need to establish and maintain deep-sea research programmes to have the EEZ resource base data and proper surveillance system for sustainable fishery exploitation. In 1987, the Ministry of Marine, Tourism and Forestry in Zanzibar confirmed that there were fishing fleets from four major fishery nations that were poaching marine fish in the EEZ waters of Zanzibar,[483] but it was unable to stop or at least legalise the activities so that the country could benefit.

Recently in 2009, Tanzania collaborated with South Africa, Mozambique and Kenya, using the South African Environmental Protection vessel and captured tons of blue fin tuna from a foreign fishing ship. John Pombe Magufuli, the then Tanzanian minister for the Ministry of Livestock and Fisheries Development was one of those who initiated the operation together with his counterparts from Kenya and Mozambique. Later on, on March 8th, 2009, the patrol team caught a fishing ship with thirty-seven fishermen suspected fishing illegally within the United Republic of Tanzania's Exclusive Economic Zone (EEZ). The suspected illegal fishermen were from different nationalities, including China, Taiwan and Kenya.[484] It was alleged that: "...on diverse dates between January 10 and March 8, 2009, while onboard a motor vessel christened named Number 68 Buyoung, alias Tawariq- 1... the accused jointly carried out fishing activities in the EEZ without a licence."[485] The High Court of Tanzania found that out of the thirty-five suspects, two of them – the ship captain and agent - were guilty and sentenced them up to twenty years in jail. The ship carried on board 296.32 tons of tuna fish that cost 2.07 billion Tanzanian shillings.[486]

In addition to declining in government control on utilisation of marine resources during the period of economic liberalisation in Tanzania and encroachment of the big foreign capital, there was also a tendency of declining marine resources especially fish in Tanzania and, in particular Zanzibar.

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[483] Ministry of Marine, Tourism and Forestry, "Pre-feasibility Study," 9.

[484] Faustine Kapama, "CJ Forms Magufuli Fish Appeal Panel," *Daily News* Online edition of Thursday, October 17, 2013: Accessed on 15 November, 2013 http://dailynews.co.tz/index.php/local-news/23485-cj-forms-magufuli-fish-appeal-panel

[485] Faustine Kapama, CJ Forms Magufuli Fish Appeal Panel.

[486] Faustine Kapama, Ibid.; and Vivian Warby, 27, March 2009, "Fishing Patrol Ship Makes Waves" in Sustainable Development Source: http://www.southafrica.info/about/sustainable/patrolvessel-273009.htm#.Uq03kuJ0nis Accessed: 15 October 2013

Table 5.3 Fish catch weights (tonnes) in Zanzibar, 1982-1986

1982	1983	1984	1985	1986
21,464	17,842	21,632	15,206	10,033

Source: Jiddawi and Pandu, "Summary of fisheries"

Fisheries figures (fish catches) in Zanzibar have been unstable and fluctuating. There are several possible factors for the declining figures in fish catch per year during those years. Firstly, they may have been a result of a depletion of fish stock in the marine waters of Zanzibar.[487] Whereas in the early 1980s, the size of fish catch was between 17,842 tonnes and 21,632 tonnes per annum (see, Table 5.3). This figure declined in 1985 and 1986 and then picked up later. For example, in 2000, the annual catch was 17,922 tonnes per annum, rising from 15,206 and 10,033 tonnes in 1985 and 1986, respectively.[488] For example, in 2000, the annual catch was 17,922 tonnes per annum rising from 15,206 and 10,033 tonnes in 1985 and 1986, respectively.[489] In the early 1980s, there was a significant low in the size of fish catch. The fact that reduction of fish catch went along with a reduction in fish sizes, suggests that there were in fact signs of depletion of the fish stock in the coastal waters of Zanzibar at that time.[490]

Another plausible factor for a decline in fish supply in the 1980s might have been shortage of capital to invest on fishing activities, especially purchasing of new fishing equipment such as suitable fishing boats. This factor might have been one of the

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[487] John Sebit Benansio and Narriman Jiddawi, "Investigating Changes in Fish Biodiversity in Coastal Villages of Zanzibar Island, Tanzania", in *International Journal of Fisheries and Aquaculture*, vol. 8(12), pp. 117-125. https://www.researchgate.net/publication/310955432_Investigating_changes_in_fish_biodiversity_in_coastal_villages_of_Zanzibar_Island_Tanzania, Accessed: 31 December 2016, 123 and Hampus Eriksson, Maricela de la Torre-Castro, Steven W. Purcell and Per Olsson, "Lesson for Resource Conservation from Two Contrasting Small-Scale Fisheries", *Ambio: A Journal of the Human Environment*, Vol. 44(3), April 2015, 210-212.

[488] N.S. Jiddawi & V.M. Pandu, "Summary of fisheries", Ibid.; and Narriman S. Jiddawi, Sihaba H. Vuai and Issa A. Suleiman, "Status of Fisheries Resources and Seaweed Farming" in The Department of Environment, *The Status of Zanzibar Coastal Resources: Towards the Development of integrated Coastal Management Strategies and Action Plan*, (Zanzibar Ministry of Agriculture and Livestock and Environment, April, 2009), 23.

[489] N.S. Jiddawi & V.M. Pandu, "Summary of fisheries", Ibid. and Jiddawi, Vuai and Suleiman, "Status of Fisheries", 23.

[490] See: Francis and Bryceson, Tanzanian Coastal and Marine Resources, 83; Benansio and Jiddawi, "Investigating Changes in Fish Biodiversity", 118, 124 and Baraka S.M. Mngulwi, "Country Review: United Republic of Tanzania", *FAO, Review of the State of the World Marine Capture Fisheries: Indian Ocean*. Online: http://www.fao.org/docrep/009/a0477e13.htm#bm39.

possible reasons for low and stagnating figures especially during the 1980s period.[491] Also the same can possibly explain the contributing factor for failure from the fishing community to venture on the deep sea fishing activities. For example, up to the recent period (2010), it was only between 10-15 percent of 8, 600 fishing boats in Zanzibar that were using inboard or outboard engines[492] partly because of lack of enough capital among the fishers.

Additionally, a possible explanation for the sharp decline in fish supply in 1986 might have been an acute shortage of equipment and spare parts for repair of those fishing vessels and gears that were still available.[493] Although there was a recovery of fish catch in the 2000s, fishermen still complain about decreasing fish sizes compared to the past[494]. The decreased size of fish indicates that many fish are captured before growing to their maturity[495]. In the study conducted by the Revolutionary Government of Zanzibar (Department of Environment), it was indicated that 67.6 percent of the respondents (fishers) perceived that fish size decreased while 10.5 percent of them said that size has increased and 21.9 percent indicated that there was no change on the size of fish compared to the past.[496]

In addition, there was and still there is an acute shortage of some types of fish that were formerly commonly obtained, which can be a possible indication of a decreasing population in fish in the area. For example, fishes such as milkfish, eagle ray, sword shark, goatfish, manta ray, and grouper were then relatively less available. Many fishermen complain about excessive fishing efforts[497] in the onshore waters as a

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[491] Jiddawi, Vuai and Suleiman, "Status of Fisheries", 21.

[492] The Zanzibar Revolutionary Government, "Zanzibar Fisheries Policy", June 2014, 6.

[493] Ministry of Marine Tourism and Forestry, "Pre-feasibility Study on Integrated Fishery Project," (Zanzibar Revolutionary Government, June 1987), 6.

[494] Jiddawi, Vuai and Suleiman, "Status of Fisheries", 28 and Benansio and Jiddawi, "Investigating Changes in Fish Biodiversity", 118, 124

[495] Ibid., 118.

[496] Ibid. This was an intensive study conducted by Department of Environment, Ministry of Agriculture, Livestock and Environment of the Government of Zanzibar in collaboration with the support from the Marine and Coastal Environmental Project (MACEMP) in 2009.

[497] The Food and Agricultural Organization (FAO) had reported that the fish stock in the onshore waters has been heavily overexploited. See: Baraka S.M. Mngulwi, "Country Review: United Republic of Tanzania", *FAO*

possible cause for fish depletion.[498] The fishermen explain this by an increasing number and concentration of fishermen in the same fishing areas compared to the past.[499] Although some fishers objected to that, denying that there was a significant reduction in fish size and quantity, a majority of the interviewed fishermen insisted on the depletion hypothesis. They associated the depletion in fish with illegal and unregulated practices of fishing partly contributed to by stiff competition in the fish market and unavailability of sufficient amounts of fish to satisfy the market demand.[500] Thus, there is a tendency of rising prices of fish in the Island.[501]

Many fishers provided examples of the illegal fishing practices in their fishing areas. For example, Mzee Jumaa Ali confirmed that some fishermen used *utupa*[502] in fishing: "since when I was young [around 1940s] I saw some fishers apply *utupa* in fishing but it was a very destructive kind of fishing, because one killed all the fish around the poisoned place... some of the killed fish were not seen and collected, they perished and lost without any benefit...but nowadays it is not frequently used because of the government control and community awareness on destructive fishing..."[503] In the year 2012, some fishermen reported use of small meshed nets in Jambiani village. The report created misunderstanding between fishermen in the village to the extent that different groups of fishermen did not cooperate in different social activities.[504] Harmful illegal fishing gear that kills fish prematurely and affects coral reefs, which are the breeding places for some fish, include small meshed net, wired fishing traps, beach seine and spear guns.

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[498] Jiddawi, Vuai and Suleiman, "Status of Fisheries", 21 and B. Hampus Eriksson, Maricela de la Torre-Castro, Johan Eköf and Narriman Jiddawi, "Resource Degradation of the Sea Cucumber Fishery in Zanzibar", in *Aquatic Living Resources*, Vol. 23 pp. 387-398, 395.

[499] The common words were, "*siku hizi uvuvi umezidi...*" and "*siku hizi wavuvi tumekuwa (wamekuwa) wengi...*" Also this was observed in the study conducted by Department of Environment, Ministry of Agriculture, Livestock and Environment, which indicated that 82% of the fishers had idea that fish population has decreased and only 18% said the fish population has remained the same as compared to the past situation. See: Jiddawi, Vuai and Suleiman, "Status of Fisheries", 28.

[500] See the following: Tanzania government owned daily news paper Issa Yussuf, "Challenges in Development of Fishing Industry" [in Zanzibar] in Daily News, Wednesday, December 24, 2014, 16 and Jiddawi, Vuai and Suleiman, "Status of Fisheries", 28.

[501] Jiddawi, Vuai and Suleiman, "Status of Fisheries", 26.

[502] Swahili name for a poisonous chemical from plant, which fishers use for fishing illegally.

[503] Mzee Jumaa Ali, interview, 12 March 2012 Jambiani

[504] Mzee Jumaa, ibid.

In 1985, the government of Zanzibar in collaboration with Norway provided a technical assessment of the quantity of fish stock. They estimated that there were between 105,000 and 212,000 tonnes, for the demersal, pelagic and coral reef fish species in Unguja-Pemba channel alone. Therefore, with this estimation of the fish stock, it was further evaluated that fishermen can fish up to 80,000 tonnes per annum without endangering the fish stock. Moreover, in 1987, it was estimated that the local demand for fish was about 30,000 per annum. The fishers were said to provide a daily supply of 56 tonnes of fish, while demand would have been 84 tonnes per day.[505] According to these figures, there was a short supply of the product in Zanzibar. The Zanzibar marine resources would have been underutilised. However, there are no reliable figures and information of fish supply or fish catch by local fishermen, for any given year from the colonial era to the post-revolution period, which could be used to support these technical estimations. They were just based on informed guesses.[506] If the estimations were realistic, then there should have been shortcomings in the fishing sector itself, in terms of fishing techniques. Again, recent fishing information suggests that there are signs of fish depletion in terms of the fish quantity and sizes as already reported in this section of this work.[507] If there was under-fishing, there would never be an experience in decrease in quantity or at least the decrease in fish sizes and shortage of some of the fish species that formerly were commonly available.

The fish stock figure estimated in 1985 by the government was detrimental to the fishing industry and distorted conservation efforts in a view that it was overestimated and misleading. They made planners believe that the area had huge amounts of the fishing resource. They probably contributed to results of data collection since the collectors were stationed only at fish landing sites, and it seemed unnecessary to monitor the affairs on the actual fishing grounds. In addition, the data collection system, which in this sense was partly influenced by the overestimated government reports, raised suspicions from the fishermen as to why the fishing data recorders were

[505] ZNA/BA41/6, SMZ, Sera ya Taifa, 10; and Ministry of Marine, Tourism and Forestry, "Pre-feasibility Study," 6.

[506] These data were largely based on presumptions and comparisons from researches conducted from other areas with similar conditions. See Ministry of Marine, Tourism and Forestry, "Pre-feasibility Study," 7-8.

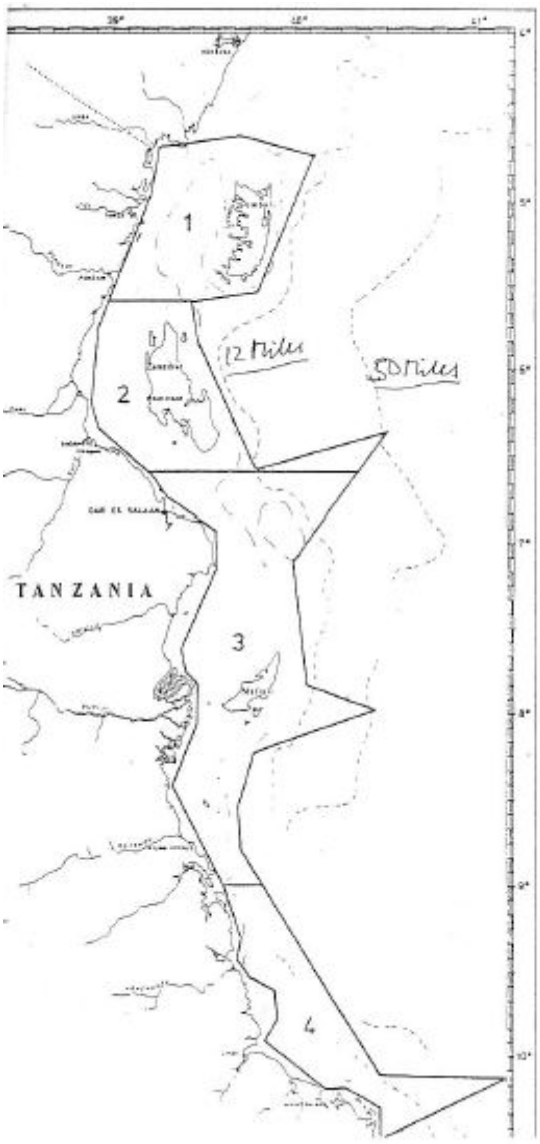
[507] Jiddawi, Vuai and Suleiman, "Status of Fisheries", 21.

interested in the fishing figures instead of the fishing process. Some fishers suspected that the government wanted to increase tax on fishing.[508]

From the colonial era to the period after the Zanzibar Revolution, the fishing practise as well as research activities created a gap of knowledge on fisheries for the deep-sea areas.[509] Up to 1987, there was no study conducted in the islands' marine fisheries beyond 50 nautical miles (see Map 5.1). This issue complicated the country's ability to exploit, manage and even protect the territorial waters of the country against the foreign industrial fishing vessels and therefore, provided good opportunities for IUU fishers to operate extensively in the EEZs, inside Tanzanian waters.

[508] Interview with Juma Ali (pseudonym), Jambiani, April 25, 2012

[509] Cecil von Bonde, "Report on a Preliminary Survey of the Marine Fisheries of the Zanzibar Protectorate" (Zanzibar: The Government Printer, 1929), 4; Majda Zumer, *Natural Resources Research in East Africa*, 12; and Narriman S. Jiddawi and Marcus C. Öhman, "Marine Fisheries in Tanzania", 519.



Map 5.1 The Marine Research Areas, Tanzania 1987

1) Pemba 2) Unguja 3) Mafia 4) The Southern Area
Source: Ministry of Marine, Tourism and Forestry, "Pre-feasibility Study."

5.3.2 Local Responses to the Changing Context

5.3.2.1 The Government Interventions

The government interventions and policy formulations on marine conservation related to protection of fish and other resources in the ocean are very recent compared to the terrestrial mangroves conservation. At Dar es Salaam, government efforts began in 1975 by declaring Bongoyo Island, Fungu Yasini and Mbudya off the coast of Dar es

Salaam as Marine Protected Areas (MPA).[510] In Zanzibar, marine conservation efforts commenced with introduction of the Fisheries Act of 1988, which stipulated that the Minister might declare any marine part a controlled area and any intervention against the declaration would be illegal and liable to the law.[511] The government also committed itself to protect traditional fisheries in the islands. In addition, the law declared further marine conservation measures like prohibiting the use of explosives and *utupa* or *kigumi* in fishing, and restricted use of some fishing gears such as fishing guns, spears and small mesh nets.[512] For years, fishers condemned using some of these gears, which threatened the marine environment.

Significant government interventions on marine resources, which also involved participation of the communities, began in the early 1990s. They started with Chumbe Island Coral Park (CHICOP), the first marine park established in Tanzania.[513] The RGZ gazetted the CHICOP a reef sanctuary in 1994 (Table 5.4). CHICOP involves local fishermen, teachers and schoolchildren in Unguja who participate in different environmental research and other educational programmes, which are run on Chumbe Island.

Marine conservation in Zanzibar began concurrently with international swing towards community-based initiatives. Such change of governmental attitude towards environmental conservation that involves stakeholder communities aimed to avoid the long dominant terrestrial mode of conservation that alienated the communities and created conflicts between the government and the communities surrounding the resources.[514] The conservation of marine resources in Zanzibar and Tanzania in general

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[510] Arielle Levine, "Local Responses to Marine Conservations in Zanzibar, Tanzania," Breslauer Symposium on Natural Resource Issues in Africa, Center for African Studies, University of California, Berkeley, 2004, http://repositories.cdlib.org/cas/breslauer/levine2004 Accessed: 29 July 2010 2.

[511] The House of Representative of Zanzibar, "Fisheries Act of 1988," Part II Section 7 & 8, (8 April 1989), p. 6. http://zanzibarassembly.go.tz/act%201988%20pdf/ACT%208.pdfAccessed: 20 December 2013

[512] Ibid., p. 9-12.

[513] See: Lina M. Nordlund, Ulrike Kloiber, Eleanor Carter and Sibylle Riedmiller, "Chumbe Island Coral Park-governance analysis", in *Marine Policy*, (2013), Source: http://www.chumbeisland.com/uploads/media/Chumbe_Island__Coral_Park__Governance_Analysis__In_press.pdf; and Chumbe Island Coral Park (CHICOP), "History," http://www.chumbeisland.com/reef-sanctuary/history/

[514] Abdallah R. Mkumbukwa, "The Evolution of Wildlife Conservation Policies in Tanzania During the Colonial and Post-independence Periods" in *Development Southern Africa Journal, Volume 25, Issue*

enjoy a relatively successful peaceful progress. In the following years, the government of Zanzibar gazetted more marine conservation areas (see Table 5.4), which largely involved local communities many of whom eagerly accepted the programmes.

Table 5.4 Marine Protected Areas in Zanzibar

Site Name	Designation	Year Designated
Chumbe Island Coral Park (CHICOP)	Marine Sanctuary	1994
Menai Bay Conservation Area (MBCA)	Conservation Area	1997
Mnemba Marine Conservation Area (MIMCA)	Conservation Area	1997
Misali Island Conservation Area	Conservation Area	1998[515]
Pemba Channel Conservation Area (PECCA)	Conservation Area	2005
Tumbatu Marine Conservation Area (TUMCA)	Conservation Area	Proposed
Changuu Bawe Marine Conservation Area (CHABAMCA)	Conservation Area	Proposed

Sources: Modified from Levine, "Local Responses," 2; IUCN, "Misali Island," and Abdullah, et al., "Constituting the Commons." Marine conservation Unit of (MCU)

The government of Zanzibar emphasised on "community participation in the management of natural resources,"[516] mangrove forests and fish included. The management of conservation programmes with community participation were received

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Number 5. Special Issue: Scramble for Africa's Natural Resources: The Emerging Contestations and Insights, December 2008, 593-97.

[515] The Pemba Channel Conservation Area (PECCA) includes the Misali Island Conservation Area. Therefore, the government order that gazetted PECCA in 2005 technically repealed the Misali Island conservation Area. However, the IUCN database continued to indicate both Marine Protected Areas. For more information and discussion, see: Ali Abdullah, Ali Said Hamad, Ali Mbarouk Ali and Robert G. Wild, "Constituting the Commons: Crafting Sustainable Commons in the New Millennium," Unpublished paper presented at 8th Biennial Conference of the International Association for the Study of Common Property (IASCP), 31 May - 4 June, Bloomington - Indiana, 2000; and International Union for Conservation of Nature (IUCN), "Misali Island Conservation Area," http://www.protectedplanet.net/sites/Misali_Island_Area_De_Conservacion

[516] Masoud and Wild, Sustainable Use, 281.

with varied reactions from different villages and different individuals.[517] There were two main variations of the local responses to the programmes that depended on programme organisers. The local perceptions and reactions to the programmes that were organised by Non-Governmental Organisation (NGO) were extreme with sharp criticism in case of failure. The programmes organised by the private sector such as business organisations reactions of the local communities tended to be submissive. Therefore, a marine conservation programme may have positive responses and participation in one village while the same may be received negatively by others in another village. For instance, the programme organised by the NGO the local villagers and fishermen when unsatisfied, threatened to rebel from the programme while feeling more involved and showing enthusiasm to the programme when the NGO met the expectations of the communities.[518] Also the conservation programme, which was organised by the private sector, the fishermen became unhappy for issues including limited access to the fishing and mangrove resources. But they felt satisfied for some benefits such as funds they received in their villages from the programme.[519]

Menai Bay Conservation Area is one example of the marine conservation programmes that received varied reactions from the communities. It was established in 1994 as a protected area programme, which was organised by the "World Wildlife Fund" (WWF) and gazetted by the Government in 1997.[520] It is a large programme that covers about 19 villages in Unguja, including, Kizimkazi Dimbani, Fumba, Kikungwi, Kisakasaka, Ng'ambwa, Uzi and Muungoni. It works through the established Village Conservation Committees (VCCs) in each village and the VCCs are used in organising as well as encouraging the fishermen and villagers to participate on the targeted marine conservation activities. The activities included cooperation in control of destructive fishing such as use of dynamites and illegal fish nets.

The marine conservation programmes that are organised by the NGO or the private sector received varied responses in different villages partly due to factors such as (i) easy accessibility from the headquarters of the project, (ii) availability of tourists'

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[517] Levine, "Local Responses to Marine Conservations", 6

[518] Ibid, 6-7.

[519] Ibid.

[520] Ibid, 8-9.

attractions and therefore, the rate of tourist flow to the village and (iii) previous history of marine conservation in a village, that is, the period before establishment of a certain conservation programme funded and organised by external agency.[521] These factors tend to influence the relationship between the fishing communities and the organisers of the conservation programme. They also affected perceptions of the local community on efficacy of the established programmes in the area as well as the outcome of the programmes to the fishermen and the villagers in general. Thus, the reactions from the villagers in Kizimkazi Dimbani and Fumba, for instance, were different in the same menai Bay programme. While Kizimkazi Dimbani had good road and tourist attractions, which through the Menai programmes are advantageous. Fumba, which is closer to the headquarters of the agency of programmes, had unfavourable infrastructure and fewer attractions for tourists. In addition, Fumba had conservation structures prior to the Menai programme, which it had to abandon in order to follow that of the Menai that was seen not well functioning. Therefore, the villagers and fishermen at Kizimkazi Dimbani are happy with the programme while Fumba fishermen - except for the members of the Village Conservation Committee - are dissatisfied.[522]

In 1998, 34 groups of fishermen associations and 12 local communities collaborated with a non-governmental organisation and established Misali Island Conservation Association in Pemba. Later on, the government joined in and together they formed a management team and the government declared Misali a Protected Area. Care International-Tanzania, the Islamic Foundation for Ecology and Environmental Sciences and World Wide Fund for Nature (WWF) supported Misali conservation project.[523] Zanzibar National Forest Policy, for example, emphasises on participation of communities in protection as well as conservation of the forests resources for social welfare and economic prosperity. The policy states that: "It is the policy of the Government of Zanzibar to encourage the active involvement of local people in the

[521] Levine, "Local Responses to Marine Conservations", 8-15.

[522] Ibid.

[523] Heather D. Zeppel, *Indigenous Ecotourism: Sustainable Development and Management*, (Oxfordshire: CAB International, 2006), 140-41.

sustainable planning, management and conservation of forest resources through community forestry programmes."[524]

Education and creation of public awareness are some of the significant factors for success of marine environmental conservation with community participation in Zanzibar.[525] One of the success stories of the policy is establishment of various groups that participate in conservation of the mangroves at Vitongoji in Pemba. The villagers established a Non-Governmental Organisation known as "Vitongoji Environmental Conservation Association" (VECA), which is active on marine environmental conservation as well as about providing education to other people in the community about environmental destruction, as the members declared that:

> We established this organisation for environmental conservation in general but our major target was to protect and recover or replant the mangroves in areas that were highly affected by people who were making lime for building and those who used [firewood] for bakeries. In the process we have two ways, one is collecting seeds and produce our nursery before we plant, and the second way is removing the already half grown mangroves from one area of concentration to the area which is much more affected in order to recover. We also cooperate with other non-members of our group who just volunteer for the big events of tree planting and therefore, the extent of destruction is declining due to cooperation and rising awareness of the community.[526]

In other fishing villages, the communities established committees that deal with education and help in awareness rising of society on the impact of the environmental destruction and use of destructive fishing methods as well as gears. In Unguja, for example, the Fumba Village Fishermen Committee helped to achieve the goals, as they said:

> Before the Village Fishermen Committees were formed we used to think that the marine resources belonged to the government. No one took any care and they were not worried if they saw somebody using destructive fishing

[524] Commission for Natural Resources, Ministry of Agriculture, Livestock and Natural resources, "National Forest Policy for Zanzibar, 1999" 4-5.

[525] Levine, "Local Responses to Marine Conservations", 8-9.

[526] Focus Group discussion with members of the Vitongoji Environmental Conservation Association (VECA)

> methods. After the formation of the Village Fishermen Committees and after attending a series of classes on environmental education every fisher believed that the marine resources were his and had to be used sustainably.[527]

Conservation activities in the period from the 1990s onwards represent a general transformation in environmental and marine conservation in Zanzibar. This was because for the first time, the Revolutionary Government of Zanzibar directly involved itself in marine conservation activities by combining together all marine related resources such as fish, coral reefs and mangrove forests. The management of the conservation activities also incorporated the rural communities who are either using or involved in activities related to fishing and mangrove forests, such as fishermen, mangrove cutters, mangrove users, mangrove traders, fish traders and traditional healers and different Non-governmental Organisations.

5.3.2.2. Fishing and Marketing

Fishing represented and still represents a significant economic activity in Zanzibar. Fish consumption is 80 percent of the consumption of food protein, followed by vegetables 13 percent, beef 6 percent and chicken only 1 percent.[528] Since the late 1980s, the Government has been less strict with the controlled market policy such that fish marketing and distribution have become easy and straightforward. When the fishermen arrive at a landing site, fish is sold by auction, depending on the quantity of fish and nature of the landing site. From the auction, fishmongers take the fish for distribution to consumers at different places. In the marketing process, fishmongers normally sell fish by lots or pieces as opposed to weights.

In general, with regard to fish sold during the period of free market economy, this study can summarise the trend of fish supply in Zanzibar by the following fish marketing and distribution patterns. The fishermen followed three main categories of marketing to expose of their daily fish catch as shown in the table (see Figure 4:1). One of the marketing strategies involves selling the fish to the retailers only, the retailers then distributes the products to the consumers. Fisherman retains some amount of fish

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[527] Tindall et al., *Fisheries in Transition*, 12.

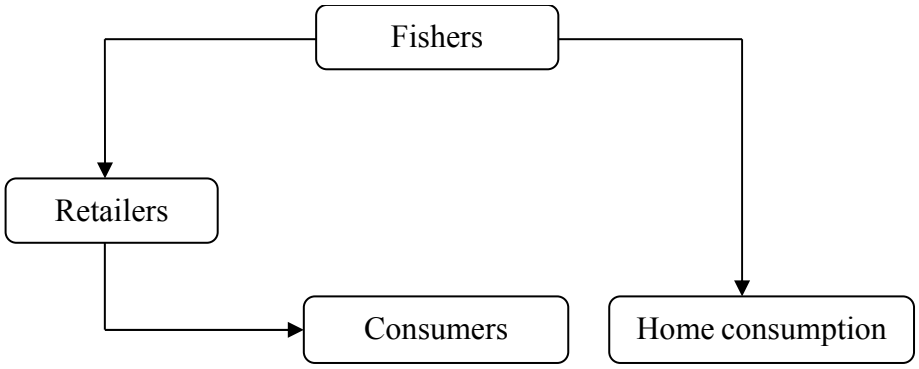
[528] Hamza Z. Rijal, Narriman S. Jiddawi, Juma M. Akil, Ali U. Basha, and Hamad O. Juma, "The Social Assessment in the Coastal Community of Zanzibar (Menai, Mnemba-Chwaka and PECCA Conservation Areas)," (Prepared for the Marine and Coastal Environmental Management Project - MACEMP, Zanzibar, August, 2009), 14.

for home consumption (see number 1). Another marketing channel is that the fisherman sells his catch either to retailers or consumers and retains, however, some amount for his own family(see number 2). Another marketing plan is selling the product to the wholesalers who sell to the retailers and consumers (see number 3). One thing to note here is that it is difficult to collect records of that portion of fish catch, which the fishermen send home directly (see Map 5.1 at 'Home consumption' part) and therefore, it is only based on estimation.

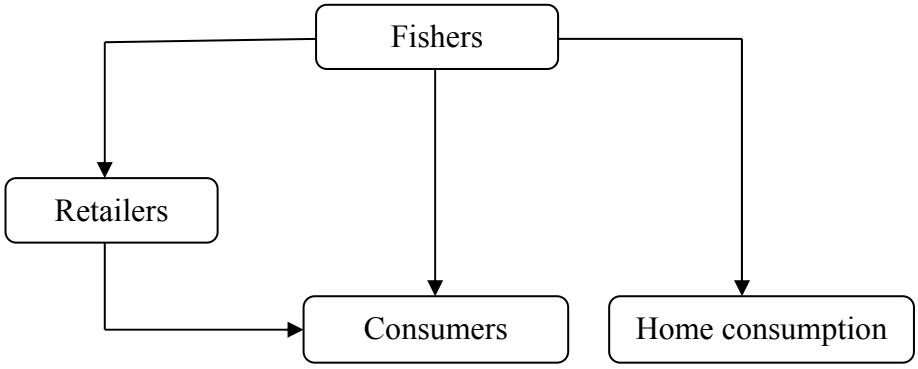
Figure 5.1 Fish market at landing site - Wesha, Pemba
Source: A. R. Mkumbukwa

Figure 5.2 Fish marketing channels in Zanzibar

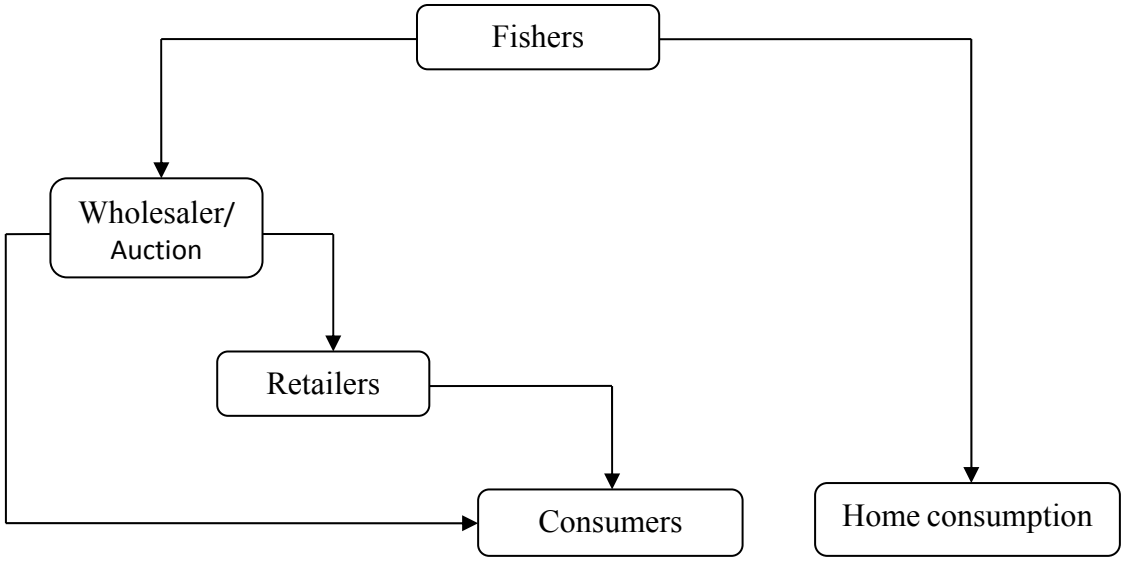
1.



2.



3.



There has been an increase in women participation in fish marketing in Zanzibar (see Figure 5.1). Such new marketing phenomenon was uncommon previously.

Numbers of women participating in the distribution and selling of fish have increased mainly because of two factors. First, there is "lack of alternative economic activities"[529] that the women could engage in, and secondly, there is a "need for all family members to contribute to household income."[530] Nevertheless, there are some differences that make women disadvantaged over men counterparts in a fish market field. For example, women have little access to variety of transport facilities that could ease trade over distance and time. While most women depend on local public transport (*dala dala* buses), male traders have variety of means of transport from *dala dala*, bicycles to motor bicycles for movement from one fish auction to another or for selling fish to different customers.[531] Very few fish sellers occasionally use motor vehicles to supply the products. Many women traders operate by roads in environs of Zanzibar Town and close to their households partly because of their commitment to other household activities.[532]

Men fish traders have a variety of choices for their market, including tourist hotels, which women were not able to access especially because of social traditions, norms, values and customs, which do not allow women to freely contact men. Therefore, male dominate the fish market in places such as the main fish market in Zanzibar Town, hotels and restaurants.[533] Additionally, most men engage in selling fresh fish while women sell either sun-dried, smoked or deep-fried fish. In addition to their engagements in fish trading, women have other reproductive responsibilities (such as caring for children) and other household works that make them more engaged for many hours of work than men who have time for socialisation.[534] Therefore, men are relatively freer on communications and movement than women and they are easily facilitated with fish trading activities.

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[529] Sara Fröcklin, Maricela de la Torre-Castro, Lars Lindström, Narriman S. Jiddawi, "Fish Traders as Key Actors in Fisheries: Gender and Adaptive Management," in *Ambio*, Volume 42, Issue 8 , (Springer), 954, http://link.springer.com/article/10.1007%2Fs13280-013-0451-1 Accessed 20 December 2013

[530] Fröcklin, et al., Ibid., 956.

[531] Fröcklin, et al., Ibid.

[532] Fröcklin, et al., Ibid., 954.

[533] Fröcklin, et al., Ibid., 956-7.

[534] Fröcklin, et al., Ibid., 951 & 957.

Markets for fish export have never been good for Zanzibar due to a number of factors. Among the contributing factors that hinder the export of fish from Zanzibar embody a relatively low quality and quantity of fish production. Many factors have contributed to the low fish exports:

> ...the main cause of low catch of the inshore water fishery is due to lack of capital among the fishermen to procure and operate large fishing boats in distant waters. Also investors do not get convincing offshore data on status of stocks to invest in fisheries. Low fish exports are attributed also to quality products that are unable to meet international export standards. The poor quality of fishery export products from Zanzibar is largely due to inefficient fishing methods, improper handling, lack of storage, and processing facilities. However, fish, lobsters, octopus, squids, dried sea cucumbers, hard shells, shark fins and skin of groupers are among the most valuable species exported to Kenya, European countries, United Arab Emirates and others. [535]

Also related to the fishing as well as marketing issues was the question of onshore cold storage. In 1987, the Revolutionary Government is reported to have had four onshore cold storage facilities, which had storage capacity of 81 tonnes. Three of the facilities provided services in Unguja that included two cold storages of thirty tonnes each and one with twenty tonnes storage capacity. This means eighty out of eighty-one tonnes cold storage facilities serviced Unguja and only 1ton cold storage facility served Pemba.[536] This made the fishermen in Pemba vulnerable to perishable fish and fish products, and therefore the fishers had to quickly sell their products[537] or acquire private cold storage that were also expensive to purchase and maintain especially with the unreliable electricity in Pemba compared to Unguja. That contributed to different prices of fish between Unguja and Pemba, the price in Unguja being comparatively higher than in Pemba and that of Pemba was unstable.

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[535] Jiddawi, Vuai and Suleiman, *Status of Fisheries*, 20.

[536] Ministry of Marine, Tourism and Forestry, "Pre-feasibility Study," 6.

[537] According to the fishermen, this condition contributed to a low price of fish in Pemba compared to the same in Unguja. Interviews with Khamis Ali Haji and Masoud - 16.06.2011, Vitongoji - Pemba

5.3.3 Management of Fish and Mangrove Resources: Utilisation and Conservation versus Degradation

Among the major aims of the government forestry activities was commercialisation of forests resources. The strategies were based on growing and maintaining forests to fulfil the demand for domestic energy, which still depended on fuel wood and to get timber for sale[538]. Therefore, the emphasis on markets dominated the post-revolution government in Zanzibar. In addition, because of some factors such as increase in population and better transport facilities such as roads as well as expansion of urban centres, especially the Zanzibar City,[539] charcoal and firewood became major local trading items.

The majority of the population of Zanzibar depended and still depends on agriculture and fishing. The society also depends on forest products for building and energy, especially building poles, firewood and charcoal. The growing urban population, which is almost half of the population of Zanzibar in Mjini Magharibi region, including Zanzibar City, numbering 593,678, that is, 46 percent of the population of Zanzibar),[540] also depends on firewood and charcoal for cooking, especially due to high price of electricity. Therefore, Zanzibar is losing an average of 1.2 percent of forests per annum.[541] It is unclear of the actual percentage share of the mangrove forest in this loss. However, the annual mangrove forest lost from the whole of Tanzania in the period between 2000 and 2005 was 0.4 percent (Table: 5.5).

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[538] See: Peter D. Little and David W. Brokensha, "Local Institutions, Tenure and Resource Management in East Africa," in David Anderson and Richard Grove, *Conservation in Africa: People, Policies and Practices*, (Cambridge: Cambridge University Press, 1987), 202.

[539] For the discussion and data about population and development of the Zanzibar city see: Myers, "Political ecology", 92; and The United Republic of Tanzania, "2012 Population and Housing Census", 1, 11, 14, 234, and 236.

[540] The United Republic of Tanzania, Ibid.

[541] Kirstin S. Siex, "Protected Area Spatial Planning for Unguja and Pemba Islands, Zanzibar," Final Consultancy Report Submitted to World Wide Fund for Nature (WWF) (New York: Unpublished, 2011), 2.

Table 5.5 Status and trends in the mangroves area of Tanzania, 1980-2005

				Annual Change			**Annual Change**			**Annual Change**	
Most recent reliable estimate		**1980**	**1990**	**1980-1990**		**2000**	**1990-2000**		**2005**	**2000-2005**	
Ha	Ref. Year	ha	Ha	ha	ha	Ha	Ha	%	ha	ha	%
127,000	2000	152,000	140,000	-1,200	-0.8	127,200	-1,280	-1.0	125,000	-440	-0.4

Source: Modified from Food and Agriculture Organisation (FAO), *The World's Mangroves, 1980-2000*, (Rome: FAO, 2007).

The government had to deal with two issues, which had to be harmonised. It had to deal with utilisation and conservation of the mangrove, fish and other natural resources. From 1964 up to the 1980s, the government single-handedly tried to deal with resource management and control issues, and the general community was not directly involved. It used to manage the resources and tried to organise the economy as well as society using resource management system that was not so effective. For example, it tried to organise people from various socioeconomic sectors in cooperative societies. Many people joined the cooperatives for conveniences and later on, some were even suspicious that the cooperatives were means of the government trying to extend tight control over their economic activities.[542] Then some tried to avoid the cooperative societies system by abandoning them and worked individually. The government of Zanzibar tried to control use of resources such as mangroves through licensing, closing, and opening cutting periods, with which people tried to bypass by illegal felling of the mangroves.

The war between Tanzania and Uganda in 1978 to 1979 together with economic problems that followed during the early 1980s[543] shook the economic position of the country. Later on, in the early 1980s, Tanzania was transforming to trade liberalisation[544] and in the early 1990s following the wind of change in the world and the collapse of socialism in eastern Europe, Tanzania transformed the state controlled economy and welfares to liberalised sociao-economic policies. Therefore, crop marketing, supply and distribution of inputs such as fishing implements, import and export trade were liberalised. With liberalism in mind, the government initiated transformations in dealing with environment and resources, mangroves and fish in this case. It began to manage the environment using community-based conservation. It also

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[542] Maghimbi, *Cooperatives in Zanzibar*, 6 and 8. See also; Jan Theron, "Cooperative policy and law in East and Southern Africa: A review," in *Coop AFRICA Working Paper No.18*, (Dar es Salaam: International Labour Office, 2010), 20.

[543] The war with Uganda was from October 1978 up to April 1979, and was followed with the cost of peace keeping in Uganda in 1979 highly cost the Tanzania economy. See: Jeni Klugman, Bilin Neyapti, and Frances Stewart, *Conflicts and Growth in Africa: Volume 2: Kenya, Tanzania and Uganda*, (Paris: OECD Publications Service, 1999), 71&72; and Daniel G. Acheson-Brown, "The Tanzanian Invasion of Uganda: A Just War?" in *International Third World Studies Journal and Review, Vol. XII*, 2001, 12: 1-11

[544] The United Reform of Tanzania, The Law Reform Commission of Tanzania, Report on Exchange Ordinance Control Ordinance (CAP, 294), Presented to the Minister for Justice and Constitutional Affairs, Dar es salaam, April 1994, 5.

involved different international organisations in the management issues,[545] such as World Wide Fund for Nature (WWF), Women in Development (WID), Finnish International Development Agency (FINNIDA).[546]

Figure 5.3 A fisherman using a spear
Source: A. R. Mkumbukwa

Figure 5.4 Fishermen dividing fish catch before reaching a landing site
(The one with cap was leader of the group Mr. Mikidadi Haroub who divided the fish)
Source: A. R. Mkumbukwa

[545] Chachage, *Environment*, 26-9.

[546] Ibid.

In 1982, the government prepared a land policy that was complex and therefore, it was not fully implemented.[547] Afterwards, in 1989, the Revolutionary government established the Commission for Lands and Environment. This was seen as the government was trying to reconcile between the previous and the prevailed changing land organisational systems in order to cope with the changing situation of liberalisation policies.[548] Introduction of the commission paved a way for new laws and regulations that guided its implementations of different land and environmental issues as the commission was empowered to deal with environmental and land issues in urban and rural Zanzibar.[549] Other laws and regulations that smoothened land and environmental activities followed. They included the Land Adjudication Act (1989), the Registered Land Act (1989), the Land Tenure Act (1992), the Land Transfer Act (1993) and the Land Tribunal Act (1994.

Major concerns were soil infertility, environmental degradation and land ownership, partly due to higher population density and excessive use of land, especially for shifting agriculture. For example, it was difficult to meet the demand for wood products for Zanzibar town, and therefore, the islands had to import mangroves from the Mainland.[550] That was because of mangrove degradation in Zanzibar, which shows that there was a clash between conservation and use of the resources during the post-revolution era. While the government tried to conserve the resources, society on its part continued to use even where it was prohibited. That is probably because the local community was not so involved in the processes. Such pattern resulted in a situation where the so-called illegal felling, as already stated, exceeded the legal cutting throughout the post-revolution period. However, apart from losses of the mangrove cover due to illegal felling, there are significant losses that resulted from development

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[547] Furaha N. Lugoe, "Land Policy Reform in Zanzibar - A Situation Analysis, (Sustainable Management of Land and Environment (SMOLE) - Ministry of Lands, Housing, Water and Energy of Zanzibar & Ministry for Foreign Affairs of Finland, July, 2012), 9.

[548] Salim Rashid Abdulla, "Institutional Developments in Land Administration in Zanzibar" in *Shaping the Change XXIII FIG Congress, Munich October8-13, 2006*, Source: http://www.fig.net/pub/fig2006/papers/ts22/ts22_02_abdulla_0289.pdf accessed on 21.03.2010, 7-8; and Pertti Juhani Onkalo, and Muhammad Salim Sulaiman, "Zanzibar: Sustaining the Environment at the Confluence of Cultures," in *Bridging the Gap between Cultures. Marrakech, Morocco, 18-22 May 2011*, 5, Source: http://www.fig.net/pub/fig2011/papers/ts06c/ts06c_onkalo_sulaiman_5051.pdf

[549] Abdulla, Ibid., 6.

[550] Chachage, *Environment*, 180.

of infrastructures such as building of tourist hotels and industries[551] along the beaches as well as water pollution in some parts such as Wesha in Pemba.

Figure 5.5 Fishermen setting fishnet ready for fishing
Two of them are in the boat and about six others are in the water trying to set the net. See the coast at the background.
Source: A.R. Mkumbukwa

Figure 5.6 Mangrove stumps prepared for lime processing in Pemba
Source: Courtesy of Haji Massoud Hamad

[551] Masoud and Wild, Sustainable Use, 283.

Figure 5.7 Fishing boats anchored at Wesha port, Pemba
Source: A.R. Mkumbukwa

Figure 5.8 A bark stripped mangrove tree and the barks before pounded for use
Source: A.R. Mkumbukwa

Table 5.6 Change in the Mangrove Area in Zanzibar

	Colonial era (estimated in 1949/50)	**Post-independence**	**Difference**[552]
Unguja	4,047 ha. (equiv. 10,000 ac.[553]) 25%	5,829 ha. (equiv. 14,403 ac.) 30%	1,782 ha. (equiv. 4,403) 50.1%
Pemba	12,141 ha. (equiv. 30,000 ac.) 75%	13,919 ha. (equiv. 34,393 ac.) 70%	1,778 ha. (equiv. 4,393) 49.9%
Total	16,188 ha. (equiv. 40,000 ac.) 100%	19,748 ha.[554] (equiv. 48,797 ac.) 100%	3,560 ha. (equiv. 8,797) 100%

Sources: Griffith (1950); and Masoud and Wild (2004)

The overall mangrove forest area in Zanzibar increased from the colonial period to the post-independence era. However, the percentage shows that Unguja forests incresed while those of Pemba have relatively decreased. This is because of differences in spatial distributions of the mangrove forests in betwen Unguja and Pemba. In the post-independence period, both areas had almost equal amounts of spatial increase, whereby Pemba had larger forests coverage and thus, the unequal percent of increament signify overall decrease in percentage of mangrove forest area in Pemba. Therefore, while a mangrove forests ratio of 25:75 for Unguja and Pemba during the colonial period, then 30:70 ratio for the same in the post-independence era, which is a five percent decrease in the coverage of mangrove in Pemba.

[552] This is the differences of mangrove coverage between the colonial period and the post-independence.

[553] ac. means acre.

[554] These data are 1,529 higher than the data from J. R. Mainoya, S. Mesaki, and F. F. Banyikwa, who presented that mangroves covers 12,146 hectors of Pemba and 6,073 hectors in Unguja that makes 18,219 hectors of the mangroves. However, I use the data from Masoud and Wild because they presented source of information for the mangrove coverage in Zanzibar. See: J. R. Mainoya, S. Mesaki, and F. F. Banyikwa, "The distribution and socio-economic aspects of mangrove forests in Tanzania," in Peter Kunstadter, Eric C. F. Bird, and Sanga Sabhasri, *Man in the Mangroves :The Socio-economic Situation of Human Settlements in Mangrove Forests,* (Tokyo: United Nations University Press, 1986), 1, Source: http://archive.unu.edu/unupress/unupbooks/80607e/80607E0d.htm#8.%20The%20distribution%20and%20socio-economic%20aspects%20of%20mangrove%20forests%20in%20Tanzania Accessed: November 21, 2013 Accessed: 21 November 2013

Among contributing factors for the low rate of mangrove increase in Pemba is the impact of excess cutting of the forests during the war period in the colonial era.[555] Moreover, the impact was further increased when the colonial govenment continued with mangrove bark business without regard to forests deterioration.[556] The forests recovery measures in the 1950s did very litle to recover the deteriorated resources in Pemba, some of them, especially Kichenge creek that was the largest in Pemba, were unreachable[557] for surveillance from the colonial forests officilas for control.

On fishing industry, from 1980s, the Revolutionary government began new efforts to revive it, which deteriorated in the 1970s. The Ministry of Marine, Tourism and Forestry started to provide fishing equipment, raised awareness and there were encouragements to the fishing communities on proper fishing methods and marine environmental conservation. In 1976, the government established shops for selling fishing equipment at cheap prices to boost fishing productivity. However, later on, the shops were neglected and became useless without supplies. Therefore, in the 1980s, the government decided to revive the shops and supplied fishing equipments. The main issue was to encourage artisanal fishing in Zanzibar.[558]

In 1983, for example, the government signed an agreement with West Germany to assist the industry on technical skills and modern fishing technology. Three years later, West Germany provided the country with "five 30-foot craft and two 40-footers fishing vessels to the state owned ZAFICO under an aid grant amounting to about $2.6 million. The grant also provided for the rehabilitation of the corporation's refrigeration plants and cold store ashore."[559] The facilities were working under-capacity without proper repairs for quite long time due to lack of funds, but also the government neglected them. Therefore, the fishing industry that had declined during the period in

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[555] ZNA /AU7/42 A. L. Griffith, *Working Scheme for the Mangroves of the Zanzibar Protectorate*, (Zanzibar: Government Printer, 1950), 12 &18).

[556] Ibid., 10, 15

[557] Erik O. Gilbert, *Dhows and the Colonial Economy of Zanzibar, 1860 – 1970* (Oxford: James Currey Limited, 2004), 120.

[558] ZNA/BA41/6, SMZ, Sera ya Taifa, 5.

[559] James R. Peipert, "Zanzibar Revives Fishing Industry" in the *Lewiston Journal, Vol. 124*, January 22, 1986, 13, source: http://news.google.com/newspapers?nid=1899&dat=19860122&id=tfBGAAAAIBAJ&sjid=YfMMAAAAIBAJ&pg=3076,2387779 Accessed 21, October 2013.

1975 as well as 1976 and in the period of the early 1980s, it indicated relative improvements in late 1980s and 1990s[560] until the industry started to decline again in recent years. Reasons for current decline in productivity of fishing industry included increased fishing efforts and poverty among the fishermen, which made the fishers to change fishing methods to that seemed economical as well as efficient in fish capture but environmentally destructive.[561]

5.4 Conclusion

Use and conservation of marine resources during the post revolution era was characterised by continuity and changes. The Revolutionary government introduced new regulations from 1965 in order to control use of the resources (fish and mangroves) in Zanzibar. From 1965, the government prohibited use of mangrove barks for export and large scale use. However, people continued to cut the trees for poles and for energy consumption, especially fuel wood, which was used for domestic consumption (firewood and charcoal burning) and for production of lime, regardless of the prohibition in some places.

In addition, in areas such as Chwaka in Unguja, the government continued to supervise periodical closing and opening of the mangrove forests for the cutting of mangroves for poles. Such kind of conservation practice began in a period before the British colonial rule in Zanzibar, when it was supervised by the *wavyale*. The conservation practice continues to date.

The government inability to support deep-sea fishing and research activities during the colonial era continued during the post-revolution era in Zanzibar. That failure created a fishing gap in the deep sea, which was not covered until the illegal large foreign fishing vessels came in, and the Illegal Unrecognised and Unreported fishing activities became rampant in the Zanzibar deep sea area. Illegal fishing by large foreign fishing enterprises is one of major fishing issues that the authorities in Zanzibar, Tanzania and Africa, in general, have failed to deal with it in an effective way. Therefore, the failure of governments to support deep sea fishing was never to the

[560] See for instance; ZNA/BA41/6, SMZ, Sera ya Taifa, 48.

[561] S. Mangi and T.R. McClanahan, "The effect of a Marine Protected area and the Exclusion of Beach seines on Coral reef fisheries," in Jan Hoorweg and Nyawira Muthiga (eds), *Recent Advances in Coastal Ecology: Studies from Kenya*, (Leiden: African Studies Centre), 2003, 72.

benefit of artisanal fishermen, but turned to be advantageous for illegal international and industrial fishing operators from Asia and Europe.

During the period between the Revolution of Zanzibar to the 1980s, the Revolutionary Government put efforts in developing of fishing in the Islands. The government sought external support for the purpose. The Revolutionary government pursued fishing education internally and outside in order to boost the local fisheries, which was dominated by artisanal fishing. While all such efforts were taking place, they were based on assumptions that prevailing local fishing efforts were low compared to the capacity of the resource base to deliver. That proved true later when it was found that 80,000 tonnes of fish could be fished without disturbing the ecological balance and fish resource base on Zanzibar waters. However, this figure was based on an informed guess and from comparison with other areas, which had a comparable environment. It was not based on empirical research in Zanzibar's marine environment. It had the practical effect, however, that government efforts went on without efforts to conserve fish resources, but showed optimism about the abundance of resources and an assumption that fishing was below capacity. Later on, as a consequence of this estimate, the idea of under-fishing failed when it became obvious that the resources were depleted in terms of amounts and sizes.

In addition, stringent control of the economy, which included stiff control of markets and fish prices in Zanzibar, resulted in the self-relocation of some fishermen to the Mainland, around 1975 and 1976. In addition, some fishers relocated themselves and sold fish in other markets on the Mainland instead of Zanzibar markets, which were comparably more controlled than those in Dar es Salaam and Tanga. Again, that tended to further deprive Zanzibar of access to its resources and to raise the price. Additionally, although some fishermen sometimes returned for fishing in their former fishing areas, but generally this had environmental implications that it reduced the fishing pressure in Zanzibar and offered a short period of recovery to the fish.

With liberalisation policies from the 1980s, Zanzibar began to change environmental policies and conservation organisations. The marine conservation efforts that began in 1988 saw establishment of the Marine Protected Areas (MPAs), which were entirely community-based integration. Communities received the government

interventions on conservation of marine resources through the MPAs with mixed reactions. The conservation programmes in areas such as Misali in Pemba and Menai Bay in Unguja, were run by the NGOs and members of local community including fishermen were involved in the management and supervisions of the conservation programmes.

Although there were some mixed feelings about the programmes, the majority of the fishers in villages with many economic alternatives that are related to the marine resources, especially tourism, favoured the MPAs and other community-based marine conservation programmes. In areas with fewer tourist attractions, many fishermen and villagers complained. This implies that there should be alternative economic benefits for the fishermen to gain. In the recent years of the 2000s, the fishing as such has not improved while pressure for the resources is on an increase. This also applied to the mangrove forests, which shows some recovery compared to the previous period before the 1990s and 2000s

CHAPTER SIX

CONCLUSIONS: CONTINUITY AND CHANGE IN MARINE RESOURCE USE AND CONSERVATION IN ZANZIBAR, 1840s-2000s

6.1 Introduction

Marine resources, in particular fish and mangroves, are important components in socio-economic well-being of the Zanzibar community. For a long time, the community of Zanzibar Islands has been using and conserving marine resources and therefore, the history of the islands and its environment is better understood when put into this context. Therefore, the major objective of this work was to examine historical changes in the use and conservation of these marine resources in Zanzibar in the period from the pre-colonial period up to the present, specifically from 1840s to the 2000s. The analysis proceeded as follows. First, it explored how marine resources were used in Zanzibar before the advent of British colonialism (Chapter 3). Second, traditional methods were examined, which were used for conservation of marine resources in Zanzibar before British colonialism (Chapter 3). Third, it examined how British colonialism influenced use and conservation of marine resources (fish and mangroves) in Zanzibar between 1890 and 1963 (Chapter 4). Fourth, the study examined economic policies and practices, which the Zanzibar Revolutionary Government adopted from the 1960s which affected marine environments (Chapter 5). Fifth, the study examined how the local community used the resources and how they participated in conservation measures during the post-revolution era, 1960s – 2000s (Chapter 5).

In order to collect empirical information, the study used interviews and focused group discussions (FGDs) as well as field observations. In addition, the study collected information from archival sources and secondary information from libraries in Bayreuth, Dar es Salaam and Zanzibar as well as online sources. In the interviews, the study used key informants and used the research guiding questions to conduct semi-structured interviews. Additionally, digital photographing was used as part of data collection techniques. Qualitative data analysis was used to examine forces that led to changes in use and conceptualisation of these marine resources in Zanzibar from 1840s up to 2000s. For its empirical analysis, the study used a number of general terms and explanatory concepts from debates about conservation, environmental history, and the

commons with regard to Africa, including external influences such as colonialism and globalisation (Chapter 2).

This chapter presents summary of major findings from this study. The chapter is organised in three main sections: a summary, concluding remarks, and suggestions for further studies. In the summary section, major issues and discussions arising from the previous chapters of this dissertation are summarised. The concluding remarks (the second section) show some general historical trends observable for the history of use and conservation of marine recourses in Zanzibar throughout the study period. The last section presents some possible areas for further studies related to the current one. The study areas were identified already in the course of this study but due to limited time, scope and space, it was difficult to incorporate them into this dissertation.

6.2 Summary

6.2.1 Socio-economic Change and Marine Resources, 1840s-1890

Chapter 3 answered the following two questions: (i) How were marine resources used before the British colonialism in Zanzibar? (ii) What were traditional methods used for conservation of marine resources? The empirical analysis indicated that the historical development of Zanzibar began with use of fish as a marine resource. Zanzibar City, for example, began to develop with the fishing industry when Malindi area was used for fishing camps and later a fishing village grew up in the twelfth century. Later on, it developed into Zanzibar city in different phases of administration and dominations, from the Portuguese in the sixteenth century to the British in the nineteenth and twentieth centuries. But before dwelling on expansion of the city of Zanzibar, which also had significant influences on utilisation of marine resources, presentation begins with summary of the general history of the marine resources, as discussed in Chapter 3.

For centuries since the first millennium, fishermen and different merchants (local and visitors) have been living in Zanzibar. Merchants and sailors from outside Zanzibar visited the islands travelling back and forth, using the north-easterly and south-westerly monsoon winds of the Indian Ocean. The traders sailed from the Arabian Peninsula. Later on, merchants established settlements, trade centres and networks from Mogadishu in Somalia up to Cape Delgado in Mozambique. The main trade import items included cloth and dried fish, and when the traders left, they took

ivory, tortoise shells, iron, gold and timber – mainly, mangrove poles - as well as some slaves. The cultural interactions between the indigenous African inhabitants and different settlers, including Arab traders, resulted in the Swahili city-states and the Swahili civilisation in the East African littoral in general.

Events from the 1830s onwards had a significant influence on use and conservation of marine resources, notably fish and mangrove wood, in Zanzibar. Among those events were the expansion of Zanzibar City from 1835 and growth in the population from the late 1830s, which resulted in an expansion of demand for marine resources by the city dwellers. Such expansion was first concerned with fish as an important food component in Zanzibar in general and in Zanzibar City, in particular. The demand for fish in the city turned fish trade into a particularly profitable business compared to other local economic activities in Zanzibar, except for the clove plantation economy that was expanding during that time. For people who did not own clove plantations, fishing became more attractive than agriculture.

Second, the demand for mangrove poles also began to increase during that time because more houses were required, and most of them required poles as major building materials and also for regular repair. Therefore, it can be said that there were significant changes in use of marine resources in the islands already before the intrusion of British colonial rule, and these changes signalled further transformations after the impact of the British colonial rule and policies.

At the same time, although there is no conclusive evidence as to when the practice began, but some communities in Zanzibar practised periodical closing and opening of mangrove forests for cutting. The *Mvyale*[562] (or *Mzale*) supervised the practices, and it had conservation effects because it allowed time for the mangrove trees to recover before they started to be cut again.

Third, during that period, many people withdrew from peasant agriculture activities in favour of fishing, mangrove cutting and sailors as well as other marine

[562] The *Mvyale* (Sing.) or *Wavyale* (pl.) were locally recognised in the east African coastal places such as Zanzibar, Mombasa and Lamu, as leaders who had duty of appeasing the spirits in the society. Also, *Wavyale*, were mediators in the communities and they were consulted in both fishing and agricultural issues, including the use mangrove forests. They were also countering the witchcrafts.

related activities because the activities proved to be relatively more profitable than peasant agriculture. In the period from the 1840s onwards, the agricultural economy mostly turned into the plantation sector, mainly of cloves, which was serviced mainly by slaves. Such increment of people engaged in marine related activities was partly copying with an increased demand for marine commodities from the 1840s onwards.

Fourth, further expansion of the city of Zanzibar and clove plantation created a continual demand for the rural work force moving to the city and to the plantation areas as domestic and plantation workers. Those workers increased the demand for building materials for more houses in the city, for food and probably for more fish.

Fifth, establishment and expansion of a slave-based clove plantation economy in Zanzibar in the 1830s was by itself another significant factor for changes in use of and pressure on marine resources in Zanzibar. The expansion of clove plantations, mainly happened in the areas where there were natural forests and took over some peasants' land, some of which had been used for the production of food crops. The decline of natural forests in the western parts of Unguja and Pemba deprived people who depended on those forests for their living and reduced their opportunities for hunting, and for collecting traditional medicine, honey, energy, wild fruits and building materials. The only major alternative for them were the mangrove forests, to which many villagers turned. The decreasing access to natural forests and the increasing pressure on mangroves became a threat for the future availability of marine resources, especially in view of the population increase and the expansion of Zanzibar city from the 1830s.

All this shows that already during the nineteenth century use and pressure on marine resources increased. But there were also older practices of conservation still in place that helped to check the pressure mentioned before. For instance, traditional local leaders in Zanzibar, the *Wavyale* or the *Wazale,* had a significant role to play in this context. Their role, which probably goes back to before the nineteenth century, attained particular prominence during the nineteenth century, mainly because of the relative pressure on marine resources as we analysed above. In the fishing industry, the *Wavyale*, in cooperation with the *Watu wanne* or *Wakubwa wa mtaa*[563] were

[563] The council of elders.

responsible for closing the fishing areas, which the fishing community considered to be overfished. Therefore, this shows that the *Wavyale* played an important role in controlling the use and conservation of both terrestrial and marine resources in Zanzibar.

6.2.2 British colonialism and Marine Resource Management, 1890-1963

In Chapter 4, discusses changes during the period of colonial rule. The discussions in this chapter answered the question of how British colonialism influenced use and conservation of marine resources (fish and mangroves) in Zanzibar between 1890 and 1963. Introduction of British colonial rule and economic policies from the 1890s brought in significant socioeconomic transformations, which had consequences for the use and conservation of the marine resources in Zanzibar. For instance, abolition of the status of slavery in Zanzibar in 1897 had two main effects. First, it created a shortage of reliable labour, which was much needed in the labour intensive and economic dependent clove plantations in Zanzibar. Second, it gave freedom to the former slaves, and some of them saw working for wages, especially in the agricultural sector, as resembling slavery. Hence, they opted for works that they considered highly independent, such as building, mangrove cutting, fishing or charcoal and lime making activities. This shows that strategies of former slaves to resist maintenance of their former status by various disguised forms of slavery, as it happened frequently, led to a further increase in use of marine resources.

Furthermore, a number of other colonial practices affected use and conservation of marine resources during that period. This refers to economic as well as other practices which had direct impact on the wellbeing of both the colonial community and the natural resources in the islands. For instance, the increased market value of mangrove bark and its trading potential for export to Europe and America in the 1930s, which was coupled with eruption of the Second World War in 1939, had different effects. First, the two (the trade and the War) created opportunities for lucrative business for local and international traders and capitalists. As the trade promised greater profit for the traders, the War on its part created a need for more foreign currency, for the administration and for the purchasing of raw materials. Therefore, the bark trade was an opportunity for the colonial government in Zanzibar to get an income that contributed to fill the increased gap of income and expenditure during the war

Second, exportation of mangrove bark contributed to degradation of the mangrove forests in Zanzibar, and in the late 1940s, it was seen that they were being devastated and strict conservation measure had to be devised for a better use of the resources. Although it was recognised at that time that the mangrove cover was not sufficient for an economic extraction of the bark, the British colonial government insisted on continuing with the business. In addition to the extractive nature of the colonial economy, the government's insistence on the business was, first, because it wanted to retain the already established export markets and feared to lose them when the markets were not sufficiently supplied due to any reasons, including lack of enough materials. Second, the government also wanted to continue getting the much needed foreign currency that was obtained from the trade.

Another important sector on marine resources during the British colonial period was fishing. During the colonial rule, fishing research, which began from the 1940s, dominated the industry in Zanzibar. Research activities concentrated on the inshore as opposed to the offshore and deep-sea areas. Additionally, the research did not consider the relationship between the mangroves and the fishing industry. Mangrove conservation activities took place from around 1949 and 1950, at a time when also the demand for foreign exchange was on the increase, a significant part of which was obtained from the export of mangrove barks, creating a dilemma for the colonial government.

In the end, the British colonial government, from the late 1940s, decided to re-establish closing and opening seasons for mangrove cutting in Zanzibar. The local community had practised such a system before the coming of British colonialism, but it had fallen into disuse and not followed until that period when it was seen that the mangroves were devastated. But at that time, people were forced to accept and follow the closing periods and the government strongly supervised unlike before when the government was reluctant to pursue conservation practices and despised the local practices. Therefore, colonial conservation policies with regard to mangroves continued former practices of mangrove use that reduced pressure on use of the resources.

6.2.3 Socialism, Liberalism and the Use of Marine Resources, 1964-2000s

Two key questions guided empirical analysis of Chapter 5, namely, (i) What economic policies and practices did the Zanzibar Revolutionary Government adopt from the 1960s (which affected marine environments)? (ii) How did the local community use the resources and how did they participate in the conservation during the post-revolution era, 1960s–2000s? One month after Zanzibar gained her independence from the British on 10th December 1963, the government was toppled through the Zanzibar Revolution of 12th January 1964. That resulted in an abrupt change in the social and political arena in the country. From that period, Zanzibar began building a socialist state and introduced socialist economic policies. The policies included confiscation and nationalisation of private properties together with reallocation of land as well as insistence on forming cooperative societies. These societies were later used as a means of controlling economic and social activities of the people, including fishermen and users of mangrove forests in the country. Additionally, this was a period in which, on the ground, nothing much changed with regard to fishing. The nationalised fishing firms were placed under the government and worked under capacity and the government efforts to boost the industry were ineffective as well as unable to open venue for the off-shore fishing. However, the country was transformed again by liberal economic policies from the 1980s. Both trends had historical and environmental significance for use and conservation of the marine resources in Zanzibar including mangroves and fish.

During the early years from around 1965, the Revolutionary Government of Zanzibar followed economic policies of market control. One of the impacts of the control encompassed re-locations of fishermen of two types and occasions. First**,** there was a self-relocation of the fishermen, which was as a result of the discontent of the fishermen with the perceived socialist control of fish the market. As a result, in the period of 1975 and 1976, some fishermen shifted their activities and markets to Bagamoyo, Tanga and Dar es Salaam in Mainland Tanzania. Second, there was a forced re-location that resulted from the political changes after the Zanzibar revolution of 1964. After the 1964 Revolution and the resulting political upheaval, a number of people, many of them fishermen from Pemba, left the country for Mombasa in Kenya where they continued with their fishing activities. Their activities in Mombasa

influenced fishing activities in the area. Although that probably did not have any major impact on the magnitude of fishing in Zanzibar, but it can be assumed that the departure of such fishermen reduced the supply of fish to the market in Zanzibar that could otherwise have contributed to socio-economic development on the islands and it also reduced pressure to the fishing in the islands.

Moreover, for many years there had been a concentration on inshore fishing research and inshore artisanal fishing in Zanzibar. Such dual concentration of fishing activities began during the British colonial period in the 1940s and continued after independence and the revolution. It resulted in concentration on fishing knowledge and information on inshore fishing efforts. The concentration on inshore as opposed to offshore and deep sea fishing resulted in a structural degradation of the fishing environment and resources on the coast. For example, the size and number of fish available per fishing effort continued to diminish over the years in Zanzibar. The reductions are partly attributed to the increased concentration of fishing efforts on specified inshore areas. Also, the concentration on inshore fishing efforts and knowledge resulted also in the emergence of a gap in offshore and deep water sea fishing. This gap was not left idle by other fishing actors, but was filled by Illegal, Unreported and Unregulated (IUU) fishing by large fishing enterprises from Europe and Asia. They continue to fish in Zanzibar and Tanzanian waters as well as in other parts of the East African region, while the authorities were and are unable neither to strongly and strictly protect the fishing areas and resources nor to effectively fish in the areas themselves.

From 1985, Zanzibar began to embark on liberalisation policies, which were responsible for an opening up in local participation in the management of marine conservation in the country. The liberalisation policies involved, first, introduction of a new law that affected marine environmental issues. Second**,** the Revolutionary Government of Zanzibar introduced local community involvement in management of marine conservation activities. For example, Misali Island Conservation Association in Pemba was established by 34 groups of fishermen and 12 local communities in collaboration with a Non-governmental organisation (Care International - Tanzania) in 1998. It was one of the outcomes of the emphasis and encouragement of community participation in management of the marine conservation activities in Zanzibar. Third,

the Revolutionary Government began to establish Marine Protected Areas (MPAs). The first one was the Chumbe Island Coral Park, which was established in 1994 in Unguja. It was followed by the establishment of other MPAs such as the Menay Bay Conservation Area and Mnemba Marine Conservation Area in 1997 and the Misali Island Conservation Area in 1998. These were part of the continuation of the government of Zanzibar policy for community involvement in the management of environment and marine conservation, and the local fishing communities formed one third of the management of the MPAs.

Pressure of use of marine resources (fish and mangroves) has increased in recent years, that is, in 2000s, more than previously and the conservation efforts seem to be more beneficial to some places such as Kizimkazi Dimbani than others such as Fumba. Those in the more marine related economic alternatives such as tourists' attractions are enjoying the benefits on the MPAs and other community-based marine conservations. Others with fewer alternatives are not content with the current conservation programmes. On the mangroves, the situation has never recovered since devastations during the colonial era in the late 1940s.

6.3 Concluding Remarks: Continuity and Change

As mentioned in the beginning of this chapter, the following five key questions guided empirical analysis in this study: (i) How were marine resources used before the British colonialism in Zanzibar? (ii) What were traditional methods used for conservation of marine resources? (iii) How did British colonialism influence on use and conservation of marine resources (fish and mangroves) in Zanzibar between 1890 and 1963? (iv) What economic policies and practices did the Zanzibar Revolutionary Government adopt during the period of the 1960s (which affected marine environments)? (v) How did local community use the resources and how did they participate in the conservation during the post-revolution era, 1960s–2000s? The conceptual debates that presented in Chapter 2 helped in the empirical analysis are indicated in concluding discussions.

The empirical examination showed that there were continuity and change during the period under the study. The answer to the first and second questions, for instance, shows that during the period before British colonial rule, communities in villages such

as Charawe, Unguja Ukuu, Micheweni, Tumbe, and Gando, practiced closing and opening periods for mangrove cutting. The same took place with fishing when the *wavyale* or *wazee* closed fishing areas that were considered overworked by the society during the period before the British colonial rule. The areas that were known as *vilindi*[564] were also opened up by the same *wavyale* for fishing activities to continue. The concepts of "use" informed the way the local society perceived, measured and planned to consume their marine resources. In addition, the conceptual discussion on the "debates about conservation" shows that some African practices on resources had significance on environmental conservation. Although there is no clear evidence to show whether the *vilindi* and the closing of the periodical closing of the mangroves were consciously for conservation purpose or not, but they proved to have conservation impact. The conceptual discussion in Chapter 2, on the commons debates informed empirical analysis here that there are ways of controlling the common resources in order to avoid "the tragedy of the commons" without interventions from government as it was the case with the Zanzibar communities before the British colonial rule. At that period around 1840s onwards, the Islands were under the Oman Sultanate, which seemed not paying attention to the marine resources such as mangroves and fish and they were left on the hands of the individuals, except for the custom duty from the mangrove polls. Thus, the local community became susceptible to the tragedy of the commons if not for the practices, which had environmental conservation impact.

Another question in this study was, how did British colonialism influence on use and conservation of marine resources (fish and mangroves) in Zanzibar between 1890 and 1963? Also, the answer here indicates aspects of continuity. The British did not continue with the local and traditional practices of periodical closing of the mangroves for cutting, which had conservation effects, partly for reasons of economic exploitation. Later on, they initiated the same closing and opening practices in the late 1940s when they realised that there was excessive mangrove cutting during the Second World War. It was clear that if the mangroves were to be cut on the same rate as a few years before and during the War, there would be no more mangroves for bark exports in the near future. The conceptual discussions about foreign influence and colonialism successfully

[564] The *kilindi* (sing.) or *vilindi* (pl.) are deep waters or channels. These are normally relative deep water areas or spots on corals that are usually plenty of fish as they are close to or part of the breeding places for fish.

guided the empirical analysis in this period. Moreover, it is also indicated in the other last two key research questions, which dealt with the post-revolution period that the practice of closing continued. In 1965, the Revolutionary government categorically declared that it would close any part of the mangrove forests for the poles and other uses in case of excessive usage of the forests.

Another phenomenon on use of the marine resources, which also shows a trend of continuity in Zanzibar, was the issue of the local people's mangrove utilisation versus control of the government during the colonial and the revolution periods. The empirical study of almost all key research questions, except for the first two questions, indicates the trend that people used and still use the mangroves to serve their social requirements under whatsoever control regime is in place. The communities that used the resources from the period of the nineteenth century, when the Omani-Arab administration began extensive expansion of cloves that deforested most of the natural forests for the plantations, continued with the use of mangroves in whatever place they could. In Chapter 4, the study observed that first, people in Pemba, for example, continued cutting the mangroves in extra-legal ways during the British colonial period when the colonial forest officials were unable to access Kichenge creek in order to control tree cutting. Secondly, results from the study revealed that the mangrove traders and cutters took advantage of the Second World War when the British administration relaxed its control on the supervision of the mangrove cutting, and they excessively cut the mangrove trees to the extent that after the war the forest administrators realised that the resources were depleted, and devised tight control measures to restore the situation. The conceptual examinations about "marine resources" and "use" informed the study about local perceptions, and that people perceived that to use the resources was (and continue to be) their right and they had to practise it in any means possible.

Furthermore, the empirical study for the last two key questions revealed that during the period of post-independence, the government prohibited use of mangroves in areas such as Chwaka Bay in Unguja and Kichenge Creek in Pemba, in order to restore the deteriorated forests in Zanzibar. However, the communities that used the forests in both Chwaka Bay and Kichenge Creek continued to utilise the forests by escaping the control from the government. This, to some scholars, was termed as illegal use of the mangrove forests. But the continual cutting of the mangrove trees that can be observed

in every regime shows that people continued to use their mangrove resources during different period and political regimes in Zanzibar (see Chapters 4 and 5). This tendency can also be described that the community used passive resistance by creating an environment that allowed them to avoid the governments control from using the marine resources. As described in chapters four and five, communities in Zanzibar had different ways of diverting the attention and control from the colonial and post-independence governments. Therefore, the regime did not matter for users of the mangroves in Zanzibar, and they largely continued to utilise the resources in various ways.

On part of fishing in the islands, the industry began with relative inferior fishing vessels and equipment in the inshore areas, even before the 1840s, as it is analysed in Chapter 3. Then Chapter 4 answers the question of how British colonialism influenced use and conservation of marine resources (fish and mangroves) in Zanzibar between 1890 and 1963. In the empirical study, it was found that during British colonial rule, the first major intervention in fishing activities began with a survey of fishing, which was conducted by Dr. Cecil von Bonde in 1928. He conducted his research in Zanzibar as well as in Mombasa in Kenya and published two reports. Von Bonde concentrated his work on the inshore areas, partly because of facilities that made him unable to survey the deep sea. Later on in 1951 and 1954, the British colonial administration also concentrated on inshore fishing research, with almost no activities taking place on deep sea areas for fishing development. That produced a further concentration of fishing knowledge and fishing efforts on the inshore area with the artisanal dominance and contributed to the structural degradation of the fishing environment and of fish.

The study also found significant change in the fishing industry from 1954, when the colonial government introduced motorised fishing boats in Zanzibar. Although the programme was slow but it was a milestone in the local fishing. A few fishermen accepted to use outboard engines and the programme faced mixed response from the government officials and some members of the legislative council did not fully support the programme. However, the move did not change supply of fish in the market. Also the empirical analysis in Chapter 4 indicates that during in the colonial era in the late 1950s the traditional authority began to lose its environmental significance on preservations of the *vilindi*, especially among the youth members of the fishermen

communities. But there is no conclusive evidence to show what factors caused the changes in the attitudes and perceptions of the ability and efficacy of the local conservation measures in fishing. It is presumed that a relative increase in urban population and the beginning deterioration of the fishing stock might be responsible factors. Also the colonial authority did not take seriously the local marine conservation activities in Zanzibar and the *wavyale* began to lose their grips in the society, including their power to initiate and supervise the closing periods for fishing. In this case, the external influence disclosed in the conceptual discussion (Chapter 2), might have played role in changes as social conceptions were changing slowly, at least among the youths, from the local leaders to the colonial forests and agricultural officials in the control marine resources.

In the post-independence period between 1964 and 2000s (Chapter 5), the main fishing grounds continued to be the same like during the colonial era. Artisanal fishermen continued to dominate the inshore areas. The Revolutionary government of Zanzibar continued the fishing and research activities concentrating on the inshore. In addition, partly because of avoidance of the deep sea fishing research, the researchers during that period overestimated the available fish stock in Zanzibar by making the educated guess comparing the stock availability with other areas with the same oceanic condition. They estimated that it was possible for the fishing industry in Zanzibar to exploit about 80,000 tonnes per annum without disturbing the fish ecology in the island. They argued that there was extreme under fishing in the area and the fishing industry was unable even to deliver half of what was estimated as the optimum fishing capacity. However, within a few years, it was seen that the area was faced with excessive fishing efforts and the fish stock was declining.

The above trend of inshore fishing brings the study in another aspect of change in the industry. The empirical analysis show that although there were complains of declining of fish quantity and quality from the late 1950s among the fishermen in Zanzibar (Chapter 4), the data shows that there was a decline in fish stock in 1975 and 1976. But that time around (Chapter 5), there was also a decline in number of the fishermen, partly because some of them relocated to mainland Tanzania due to stringent controls of fishing activities in Zanzibar. Then later on in the 1980s, there was another

period of decline in fish stock and fish catch per annum. In that period, the fishermen complained of a reduced fish quantity and size.

In 1999, the Revolutionary government introduced a National Forest Policy for Zanzibar, which emphasised on community participation in conservation of the marine resources in Zanzibar. Following that policy, there have been a shift and improvements in some fishing areas while leaving others with complaints as we have discussed above. That was a transformation in conservation of marine resources because (i) for the first time, the government is involved in the conservation in a wide range combining the fishing and the mangroves and (ii) the community is also incorporated in the activities unlike before when it was either the community alone or the government acting on paternalistic mode.

However, conservation in the fishing industry has been not effective. The fish catch continue to decline and fishermen complain of reduced fish stock. They also complain that there is shortage of some types of fish and size of fish like milkfish, eagle ray, sword shark, goatfish, manta ray, and grouper, which were formerly commonly available. Some fishermen are happy and content with the government interventions on conservation activities partly because of available alternatives in the fishing industry, especially in areas such as Kizimkazi-Dimbani where they can benefit from tourism sector, using fishing equipment and skills to the tourists. Otherwise, in the areas with fewer alternatives like Fumba, the fishermen are still complaining and not content with the interventions and their involvement in the conservation activities.

Besides the trend of continuity in the fishing grounds and degradation of the fishing industry, there was also the same trend of continuity in use of mangroves. The Revolutionary Government continued to observe closing and opening periods of the mangrove forests for cutting. This practice began during the period before the British colonial rule and was re-established by the British during the late 1940s and the continuity was sustained to date. The local communities continued to make extensive use of mangrove resources, especially as wood for building and energy, all the time regardless of the change in the regimes. Therefore, during the period after the Zanzibar Revolution, it was observed, for example, that the amount of illegal cutting of the mangroves was by far exceeding the legal uses of that resource. Therefore, there is a

tendency of continuity of some aspects of practices in use and conservation of both fish and mangroves in Zanzibar from the period before the British colonialism up to period after independence and Revolution of Zanzibar.

6.4 Suggestions for Further Research

There were a number of issues that were found interesting and of some relevance for this study, and could add significant value to the study of environmental history and to the history of marine resources in Zanzibar and East Africa in general. However, because of limitations of time and space as well as due to scope of this current research project, the researcher was unable to cover but consider for further research.

6.4.1 Marine Resources and the History of Medicine

There is a need to undertake further studies on the specific relationship between mangroves and other marine resources, such as different species of fish, coral reefs sea grass, and practices of health and healing in the societies under study. Such measure can help to document and determine the extent to which the marine resources are in fact beneficial in traditional therapeutic activities. This will be useful for social historians and policy makers alike, and it could guide specific actions of conserving and developing those resources in collaboration with the traditional healers in the areas concerned. Places such as Vitongoji and Jambiani, in Pemba and Unguja, respectively, have a potential for initiating further research of this kind. Due to limitation of time, the current research was unable to cover and present analytical data on the history of marine-therapeutic practices in Zanzibar. A preliminary study shows, however, that no significant historical research of this kind has been done up to the moment. Many significant sources are in Arabic scripts in the Zanzibar National Archives, and according to some sources (research partners), other documents are possibly located in Oman.

6.4.2. Toponyms and the History of Marine Environment

There is also a pressing need to collect and study the historical underpinnings of marine-related Swahili place names, sayings, and proverbs. They carry historical significance as far as environmental and cultural history of Zanzibar together with Swahili coast of East Africa is concerned, including fishing, sailing and even farming

among the coastal societies in East Africa. For instance, the origin, environmental and historical significance of names such as Kokoni, Mkokotoni, Mchangani, Pwani-Mchangani, Vikokotoni, Mangapwani and Kisiwandui need to be clarified. Such place names and possibly many others suggest marine related social and environmental implications, and they can be used to trace the history of cultural changes including transformations of the marine environment of Zanzibar and other related towns. The place names can help historians to understand how the names instigate and signify process of changes in the environment and societies.

6.4.3 History, environment and technology

In addition to the Indian Ocean, the East African region is endowed with great lakes, which include Lakes Tanganyika, Victoria, Nyasa and Turkana. Such large water bodies contributed and still contribute to food and transport in the region. A few scholars devoted efforts to historical analysis of transport networks in the area and the way the networks contributed to transform social and natural environment before and during the colonial period. Therefore, a further study should focus on development of waterborne transport systems in East Africa as African initiatives in development of transport technology. However, waterborne transport facilities such as dhows were multipurpose. They carried cargoes and passengers, and depending on size, people used some vessels for fishing. Again, the environment would be among a significant issue to be taken into account when studying waterborne transport networks and technology in the region. An important question would be how the local people tried to develop their transport technology while keeping the environment, especially the forests, safe and sustainable. Another important arena would be foreseeable future projections according to the trend of events in the past to the recent past.

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APPENDIX

Stratified Random Selection of Interviewees

Number of Strata	Historical Period	Category of Strata of Respondents
1	Marine in Zanzibar, 1840-1890	People from 80 Years Old and Above
2	Colonial era and Marine, 1890-1960s	People from 60 Years Old and Above
3	Marine in Zanzibar, Post-1960s	People from 46 Years Old and Above
		People from 20 Years Old and Above