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MANAGING ADAPTATION OF COMMUNITY OPEN SPACES IN SEMI-ARID REGION, KATSINA NIGERIA

By

GIDADO USMAN MUHAMMAD

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia. In Fulfillment of the Requirements for the Degree of Doctor of Philosophy

July 2022

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Abstract of the thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Doctor of Philosophy.

MANAGING ADAPTATION OF COMMUNITY OPEN SPACES IN SEMI-ARID REGION, KATSINA NIGERIA

By

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July 2022

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Desertification is one of the most serious and alarming social and environmental concerns we face today. Open spaces are recognized as a critical component of the landscape in semi-arid rural communities since they serve as the site of socio-cultural and economic activities. It is important to keep an organized and well-managed open space in northern Nigeria to ensure that they accommodate the cultural and ethical values of the communities they serve. Site observations and in-depth interviews with community leaders were conducted to explore and investigate the community's adaptation management strategies (local approaches) for the sustainability of open spaces in hosting socio-cultural events in a semi-arid region of northern Nigeria. The goal was to produce adaptation management strategies that would assure the continuity of community open spaces while preserving socio-cultural activities. The results were analyzed using ATLAS Ti for data processing, with the real analysis taking place during the reporting stage. The results were reported using simple statistical techniques. The study reveals the typology, improved concept, and functional categorization of community open spaces. It also investigates adaptation management strategies and methods. Additionally, it was revealed several adaptation strategies and techniques for community open spaces depended heavily on indigenous knowledge. The report recommends using local knowledge and indigenous materials to manage open spaces that can sustainably host the community's socio-cultural and economic activities. The findings of this study will serve as a guide for decision-makers, resource planners, policy-makers, and tourists. It will also guarantee orderly community utilization of open spaces and improve their sustainability.

Keywords: Community open spaces, Community values, Adaptation management, Adaptation strategies, Semi-arid regions.

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MENGURUSKAN PENYESUAIAN TEMPAT TERBUKA KOMUNITI DI WILAYAH SEMI-ARID, KATSINA NIGERIA

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Pengurusan adalah salah satu kebimbangan sosial dan alam sekitar yang paling serius dan membimbangkan yang kita hadapi hari ini. Kawasan lapang diiktiraf sebagai komponen kritikal landskap dalam komuniti luar bandar separa gersang kerana ia berfungsi sebagai tapak aktiviti sosiobudaya dan ekonomi. Adalah penting untuk mengekalkan ruang terbuka yang teratur dan diurus dengan baik di utara Nigeria untuk memastikan ianya memenuhi nilai budaya dan etika komuniti yang mereka berkhidmat. Pemerhatian tapak dan temu bual mendalam dengan pemimpin masyarakat telah dijalankan untuk meneroka dan menyiasat strategi pengurusan penyesuaian komuniti (pendekatan tempatan) untuk kelestarian kawasan lapang dalam menganjurkan acara sosiobudaya di kawasan separa gersang di utara Nigeria. Matlamatnya adalah untuk menghasilkan strategi pengurusan penyesuaian yang akan menjamin kesinambungan ruang terbuka komuniti sambil mengekalkan aktiviti sosiobudaya. Keputusan dianalisis menggunakan ATLAS Ti untuk pemprosesan data, dengan analisis sebenar berlaku semasa peringkat pelaporan. Hasilnya dilaporkan menggunakan teknik statistik mudah. Kajian ini mendedahkan tipologi, konsep yang dipertingkatkan, dan pengkategorian fungsi ruang terbuka komuniti. Ia juga menyiasat strategi dan kaedah pengurusan penyesuaian. Selain itu, ia juga mendedahkan beberapa strategi dan teknik penyesuaian untuk kawasan lapang komuniti bergantung kepada pengetahuan orang asli. Laporan itu mengesyorkan menggunakan pengetahuan tempatan dan bahan asli untuk mengurus kawasan lapang yang boleh menjadi tuan rumah aktiviti sosiobudaya dan ekonomi masyarakat secara mampan. Dapatan kajian ini akan menjadi panduan untuk pembuat keputusan, perancang sumber, pembuat dasar, dan pelancong. Ia juga akan menjamin penggunaan masyarakat yang teratur bagi kawasan lapang dan meningkatkan kemampuannya.

Kata kunci: Ruang terbuka komuniti, Nilai komuniti, Pengurusan penyesuaian, Strategi penyesuaian, Kawasan separa gersang.

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LIST OF ABBREVIATIONS

AU	African Union
CBO	Community-Based Organization
COVID-19	Corona Virus Diseases 2019
CSA	Climate-Smart Agriculture
EPA	Environmental Protection Agency
GGWI	Great Green wall initiative
IK	Indigenous Knowledge
IYDD	International Year of Deserts and Desertification
MDGs	Millennium Development Goals
NGO	Non-Governmental Organization
NPA	National Action Plan
PMT	Protective Motive Theory
SDGs	Sustainable Development Goals
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNCSD	United Nations Conference on Sustainable Development
UNFCCC	United Nations Framework Convention on Climate Change
VPA	Victorian Planning Authority

CHAPTER 1

INTRODUCTION

This chapter begins with a story that contextualizes the study and states the research problem, followed by the research questions, research aim, and objectives to give the study a clear focus, the significance and scope of the study are explained, and the justification and expected knowledge contribution is discussed, and the chapter concludes with the thesis structure.

1.1 Background of the Study

Environmental degradation is undesirable because it causes environmental degradation and ecosystem devastation; it is one of the key dangers identified by the United Nations (Maurya et al., 2020). The environment is said to be degraded when natural habitats are destroyed, natural resources are exhausted, or ecological functionality is denied. While environmental degradation is usually associated with human activities, existing environmental conditions are naturally changing over time posing a positive or negative impact on human ecosystems. One of the negative impacts is land degradation (James et al., 2018). United Nations Convention to Combat Desertification (1994) considered land degradation in arid, semi-arid, and sub-humid areas as a result of human pressure, deforestation, and climate variation on fragile ecosystems as desertification (Ambalam, 2014). Desertification is one of the most severe and disturbing socio-economic and environmental issues in recent times (Azare, et al., 2020). The impacts of desertification include severe biodiversity loss, soil erosion, reduction of vegetative cover, as well as a scarcity of available water resources (Medugu et al., 2008).

The desertification issue in semi-arid regions has become a crisis that destabilizes communities worldwide at an alarming rate as presented by the UN report (UNCCD, 2014). Desertification is an ecological issue of global concern because it affects both developed and developing nations (Olagunju, 2015), the phenomenon of desertification will most likely increase due to the current global warming (Audu & Adie, 2018), and human activities further accelerate the process of desertification (Abdi et al., 2013). Urbanization and land clearing for agricultural activities, construction, and mining activities not only aggravate the condition but also make it difficult for the local communities to manage the consequences (Tan & Li, 2015).

Desertification is one of the most critical challenges facing northern Nigeria, affecting about 580,841 km² of the country's total land area of 927,892 km² and impacting over 62 million Nigerians directly or indirectly, with roughly one-fifth of the country's land area becoming degraded (Nwokocha, 2017). Desertification has been documented in northern Nigeria since the 1920s, but its influence became more visible since the famine of 1971–1973. Nigeria loses 2,168 square kilometres of arable land to desertification per year, and this increasing encroachment of the desert is estimated to cost Nigeria \$5.1 billion every year (Ikeke, 2016). In Nigeria Desertification has a severe impact not just on the

land, but also on people's lives and culture. Several efforts have been made to mitigate the effect of desertification, from global, and regional to local levels, these efforts cover international, regional, national, and local levels.

1.1.1 International (global) efforts to address desertification

The United Nations Convention to Combat Desertification (UNCCD), which was ratified in 1996, is the only internationally binding legal framework established to tackle the issues of desertification in the most vulnerable ecosystems, namely, arid, semi-arid, and dry sub-humid areas (Ambalam, 2014). Under the Convention, 197 parties teamed together to improve the living conditions for people living in drylands. The UNCCD secretariat promotes collaboration between industrialized and developing nations, especially in the areas of knowledge and transfer of technology for long-term land management (UNCCD, 2002), the "International Year of Deserts and Desertification" was designated in 2006 to assist popularize the Convention. During the 58th Ordinary Session of the United Nations General Assembly in 2003, a decision was adopted declaring 2006 as the International Year of Deserts and Desertification (IYDD), the declaration was successful in raising public awareness regarding desertification and the same time making commitments to help protect dryland ecosystems as well as the knowledge and cultures of those whose daily lives are affected by desertification, the declaration also enhances the implementation of the UN Convention to Combat Desertification (Stringer, 2008).

The United Nations (UN) Conference on Sustainable Development (UNCSD) 2012, also known as "Rio+20" had three goals: renewing political commitment to sustainable development, assessing progress and implementation gaps in reaching earlier pledges, and addressing new and emerging concerns (Leggett & Carter, 2012). Member states agreed to start a process to create a set of Sustainable Development Goals (SDGs) that would build on the Millennium Development Goals (MDGs) and align with the post-2015 development agenda (Dodds et al., 2014). The United Nations Framework Convention on Climate Change (UNFCCC) of 2015 is a game-changer, the goal was to boost the operational efficiency of actions to reduce global greenhouse gas emissions and adapt to climate change until 2020, and the nations of the world are committed to an irreversible course of action aimed at limiting climate change and protecting the planet's most vulnerable citizens (McInerney & Johannsdottir, 2016).

1.1.2 Regional initiative

The Great Green wall initiative was launched in 2007 by the African Union (AU) and was a symbol of hope in the face of the desertification challenge. It aims to restore Africa's degraded landscape of the Sahel which stretches more than 8,000 kilometres across the entire region (FRN, 2012). More than 20 African countries including Nigeria have now adopted the program. The initiative is expected to restore 100 million hectares of degraded land by 2030. In Nigeria alone, 5 million hectares of degraded land have been reversed while 20,000 jobs were created (UNCCD, 2016).

1.1.3 National (Nigeria) efforts addressing desertification

Nigeria took a significant step toward resolving the desertification issue in 2011 by launching a National Action Plan (NPA), which demanded better coordination of efforts from all levels of government to control the consequences of desertification (Medugu et al., 2011). The NPA is an initiative stem from Great Green Wall initiative (GGWI) program at the regional level.

1.2 Research Problem Statement

Nevertheless, National Action Plan (NPA) is a sub-sectoral method with a top-down approach (Medugu et al, 2014). As a result, local communities are not roped in the process, and thus the challenge of desertification remains unsolved (Ibrahim et al, 2018). The top-down approach in addressing the impact of desertification rendered the community's role insignificant and that contradicts the sustainable development agenda that pledge to leave no one behind (Gannon et al., 2020). With limited roles and participation in NPA, communities residing in the semi-arid areas of Africa, especially in Nigeria, develop some strategies to adapt to the impact of desertification, which allows them to continuously survive in the semi-arid region in the face of desertification as pointed out by Hazo et al., (2019), especially about agriculture activities. Climate-Smart Agriculture (CSA) is the approach in agricultural development to ensure resilience and increase productivity (Fanen & Olalekan, 2014), that considered local input or knowledge and strategies and deemed fit for the prevailing conditions as a result some communities may uphold strategies that may be different from other communities (Rao et al., 2020).

Desertification in northern Nigeria has a negative effect not only on agricultural lands and water sources but also affects the community open spaces that are considered to be an integral feature in the landscape (Abdul & Juanil, 2020; Macaulay, 2014; Nwilo et al., 2020). These effects of desertification, alongside encroachment on open space caused by development in the form of building and road expansion, have been observed to be closely related to residents' behaviour and socioeconomic situations (Alabi, 2020). The government pays less attention to the development and management of open areas. Nevertheless, communities in northern Nigeria use open spaces to celebrate their traditional values through meetings, socioeconomic activity, leisure, and entertainment (Officha, Onwuemesi, and Akanwa, 2012). This causes communities to lose their heritage values. This makes it necessary for the communities to develop some strategies for agriculture and water resources (Fanen & Olalekan, 2014; Umar et al., 2017). It is unknown if local knowledge has been adapted to save the traditional rural open spaces that are important, and documentation on how these open spaces are managed by the locals is inadequate.

Open spaces are to enhance well-being, promote a sense of security, and encourage social integration and collective responsibility as pointed out by (Francis et al., 2012) this could be achieved when researchers and designers alike recognize and create an environment that promotes and reinforce the sense of belonging within the neighborhood. Presently,

open spaces are considered to be an integral component of land use management decisions (Van Hecke et al., 2018) organized and well-managed open spaces have an additional advantage in various aspects, such as ecological, environmental, phycological, economic, educational as well as the cultural assimilation and ethical behaviors (Agboola et al., 2016).

Therefore, there is a need to explore the adaptation of open space by the local population in the face of desertification in northern Nigeria to make them accommodate the culture and the ethical values of the communities.

1.3 Research Questions

The study's main research question (RQ) is how communities adapt to the usage of open spaces during desertification in Nigeria's semi-arid regions. To ensure long-term sociocultural activities?

1.3.1 Sub-Research questions

- i. What is the current state of community open space in the semi-arid region of Nigeria?
- ii. What is the function of community open spaces in semi-arid regions in Nigeria?
- iii. How does the community adapt to open spaces during desertification in the semi-arid region of Nigeria?
- iv. What are the best practices for community adaptation to open spaces in the semi-arid region of Nigeria?

1.4 Aim and Objectives

To sustain open spaces for hosting socio-cultural events in the semi-arid region of northern Nigeria under desertification hazards, this research seeks to investigate the community's adaptive management strategies. The study's objectives are as follows:

- i. To identify the typology of the community open spaces in the semi-arid region of Nigeria.
- ii. To categorize the functions of the community open spaces in rural semi-arid regions in Nigeria
- iii. To investigate community adaption management strategies for sustaining open spaces for hosting socio-cultural events in Nigeria's semi-arid area.

- iv. To make proposals for managing community adaptation in Nigeria's semi-arid region's communal areas.

1.5 Significance of the study

Semi-arid communities largely depend on open spaces for their daily life routine (Garba, 2012). However, until recently, when the fragility of semi-arid environments was given concern, this did not make open spaces popular among researchers. In this study, the documentation of the typology, functional categorization, adaptation strategies, and management will add to the knowledge bank in the field of community adaptation and adaptation management. More so, the result of this study will lead to the development of a framework for managing the adaptations, a guidance document for policy-makers in drawing decisions on managing the open spaces, and to resource planners for adequate and comprehensive plans and to the tourist make them adequately plan their activities. The document will also ensure orderliness when it comes to the use of open spaces by the communities and enhance its sustainability.

1.6 Scope of the Study

This study will focus on exploring the structure, hierarchy, function, and management settings of the community open spaces in rural areas while evaluating the reaction and adaptability strategies by the community to the environmental hazards inflict by the open spaces, the study will be limited in the following ways:

- i. The study will focus only on those community open spaces that are significant to the cultural values in the study area.
- ii. The focus will be on those communities living within the rural settings in Nigeria, specifically in Katsina State.

1.7 Expected Knowledge Contribution

The study, which contends that open spaces are conceptualized by taking into consideration the climate and functional setting of the environment, will add to the ongoing advancements in the definition of open space for the interest of landscape architects and resource planners. Therefore, the concept of open space is subjective. The study also recognizes the fact that open spaces follow the rhythm of the community and change in conjunction with the socio-cultural formation of the community.

The study observed that the rural communities in semi-arid regions are contented with their native leadership and the stewardship of their local knowledge, therefore, allowing the communities to manage their adaptation to their open spaces will go a long way in

ensuring the sustainability of such open spaces to discharge their roles for the communities, the government can be involved in the form of funding and legislation.

1.8 Research Organization

The thesis will consist of five (5) chapters, the research organization is highlighted in the table the possible publications plan will be to review literature from the second chapter, methodology, and pilot in chapters three (3), and results and recommendations in chapters 4 and 5 respectively, which will enable materials to be used for publications.

Chapter One (1) will introduce the whole thesis and provide the focus of the research, which will lead to a research issue statement, research questions will be raised to be addressed through the research objectives, and the chapter will highlight the scope and explain the structure of the thesis. Chapter two (2) will explore previous research on adaptation theories and strategies, and also the concepts of open spaces will be reviewed to give a theoretical background to the thesis. Chapter three (3) will give a rundown of the research approach method, sampling technique, and selection criteria, then discuss the data collection procedures, and the development of the research tools. The leadership and community structure of Katsina state will be discussed for appropriate data collection. And also, contain a test of the instrument as a pilot survey that will result in the appropriateness of the instrument for the objectives. Chapter four (4) will be the analysis, interpretations, and discussions of findings from the results obtained during data collection. Chapter five (5) will contain a presentation of the summary of major findings, and make some recommendations and conclusion

Table 1.1: Organization of study

Background of the study	<ul style="list-style-type: none"> ➤ Overview of research interest ➤ Formulation of the research problem, and problem statement. Research questions and research objectives ➤ Formulation of research title, the scope of the study, the significance of the study, and study limitation ➤ Research Design 	Chapter 1
Literature Review	<ul style="list-style-type: none"> ➤ Desertification and Climate Change ➤ Definition of Open Space ➤ Typology and Categorization of Open Spaces ➤ Roles, Function Attributes of Community Open Spaces ➤ Open Spaces Management ➤ Adaptation Concept ➤ Adaptation Management ➤ Theoretical Background ➤ Research Proposition 	Chapter 2
Research Methodology	<ul style="list-style-type: none"> ➤ Inquiry Philosophy and Research Design ➤ Research Method <ul style="list-style-type: none"> ❖ Field observation: Observation Procedures, Observation checklist, Observation data analysis. ❖ In-depth Interviews with leaders: Population and sampling, Interview protocol, Interview Data Analysis, Content Analysis. ❖ Reliability validation of observation and interview ❖ Pilot Study: Instrument pre-testing 	Chapter 3
Results and Discussion	<ul style="list-style-type: none"> ➤ Observation Results: Typology; functions; Environmental Issues as it affects open Spaces; Adaptation Strategies ➤ Interview results <ul style="list-style-type: none"> ✓ Participant's profile ✓ Typology; Ownerships; Functions, Categorization, Community open Spaces in Northern Nigeria ✓ Environmental Issues as it affects open Spaces ✓ Adaptation Strategies; Adaptation Management Funding for Adaptation Management ➤ Validation of Findings: Theoretical Proposition and Data/theory Triangulation 	Chapter 4
Conclusion	<ul style="list-style-type: none"> ➤ Summary of the Study ➤ Integration of Research Findings ➤ Summary of the Most Significant Findings ➤ Recommendation ➤ Contribution to Knowledge ➤ Limitation of Study ➤ Conclusion ➤ Areas for Future Research 	Chapter 5

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