

**INFLUENCE OF COMMUNAL RESOURCE EXTRACTION ON
ECONOMIC DEVELOPMENT: THE CASE OF RED-SAND
HARVESTING IN LAIKIPIA NORTH (2006-2016)**

BY

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**A Project Submitted in Partial Fulfillment of the requirements for the
Degree of Master of Arts in Political Science and Public Administration**

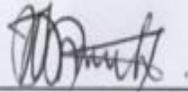
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DECLARATION

This project is my work and has not been submitted by any other person in any university for a degree or any other award.



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This Project has been submitted for examination with my approval as the Supervisor.



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25.07.17

Date

DEDICATION

I dedicate this work to the people of *Mukogodo*, Laikipia North.

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ACRONYMNS

BSR	Benefit Sharing Regime
CAoL	County Assembly of Laikipia
CBNRM	Community Based Natural Resource Management
CGoL	County Government of Laikipia
CoK	Constitution of Kenya
FGD	Focus Group Discussion
IBA	Impact Benefits Agreement
IEBC	Independent Electoral and Boundaries Commission
KNBS	Kenya National Bureau of Statistics
LCDP	Laikipia County Development Plan
NEMA	National Environment Management Authority
PNG	Papua New Guinea
RCT	Resource Curse Theory

ABSTRACT

This research interrogates how communal resource extraction contributes to economic development. The study calls into question the conventional wisdom that resource abundance and extraction lead to development. Departing from previous studies which concentrated on state-led resource exploitation, it examined how communal exploitation of red-sand has impacted on employment, income levels and demand for local non-tradable goods in Laikipia North. It also assessed the regulatory framework that controls extraction, income redistribution and ecological impacts. The study also sought to identify the challenges and opportunities in balancing economic and ecological priorities in extraction of communal resources. Primary data was collected from randomly sampled households while participants in FGD and Key informant interviews were purposively sampled. Findings indicate failure of forward and backward economic linkages to generate development. Findings also point to existence of a gated enclave dominated by a class of the propertied, bureaucrats and local politicians who control extraction business through influence and ownership of construction companies. Further, the resource-exploiting agent has failed to offset ecological costs incurred in the run to satiate a growing demand for red-sand. Evidence suggests failure to channel resource rents into alternative income generating investments. It also shows missing infrastructural linkages with resource extraction. Lack of a coherent exploitation framework poses a challenge to harmonized economic development. The study finds the absolute scarcity of sand in the contiguous counties and its concentration in Laikipia North coupled with an assured market as a great opportunity which can be tapped to develop the sub-county.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Economic growth and development is today nested on the level of industrial production a country has attained. The social stability of the state, the influence of a military, geo-political dominance, wealth accumulation, industrial growth, and economic stability all depend largely, on the ever increasing extraction of natural resources (Bunker and Ciccantell, 2005). Sustainable natural resource exploitation has become a fundamental pillar in harnessing industrial growth in third world countries. Today, fossil fuels such as coal, oil, natural gas and valuable mineral resources such as uranium, copper, iron, aluminum and Coltan form the basis of economic development and growth in major economies across the globe. In both developing and developed countries, global issues of social justice, human rights, peace and development are tied to natural resource extraction .The demand for these resources and their consequent extraction has led to inevitable conflicts which in many countries such as Iraq, Venezuela, Chile, Libya, Sudan, DRC, Sierra Leone and Nigeria culminated into civil wars and political upheavals (Michael, 2004).

In many cases, economic development has taken place at the expense of ecological integrity. In Malaysia, the massive clearing of vegetation in Riau Province of Sumatra to pave way for growth and extraction of palm oil has led to an ecological disaster and this shows that ecological sustainability appears separate from economic development (Colchester M& Pang W, 2007). Environmental degradation has occurred in various forms such as air pollution, water pollution and physical deformation of natural scenery.

Sand accounts for the largest volume of resource material extracted globally and the second most used resource after water (Peduzzi, 2014).Each year, between 47 and 59 billion tones of material is mined (Steinberger, et al, 2010). Sand forms 68% of the total materials extracted annually (Krausmann, 2009).The global extraction of sand indicates a higher rate of extraction compared to the rate of weathering process in which it is

formed (John, 2009). The demand for sand is growing as the level of urbanization and industrialization rises. China alone in 2013 constructed 146,400 kilometers of tarmac road in one year and this is an indicator of the growing demand for sand (EDE, 2013) and the expansion of sand industry. With such huge volumes of sand being extracted, socio-economic and ecological impacts are inevitable (Sonak, S.et al, 2006). Mining activities have led to forced eviction of indigenous people from areas in which they have ancestral bonds of religious and cultural significance (Walton, 2001). This eviction takes place without prior consultations with indigenous land owners and at times violates the traditions of land tenure systems. In the Sarawak state of Malaysia, development of local land for palm oil production took place without prior consultation with the Long Teran Kanan community and this has resulted in alienation of the communities. In Papua New Guinea (PNG), the government declared that mineral rights are state property. This act contravened land ownership traditions and alienated the indigenous populations of PNG. The Bougainville mines were responsible for catastrophic social and environmental impacts. The Grasberg mine, one of the largest global Copper mines produced 1644 tons of Copper and over 700,000 tons of waste material daily (Free-Port McMoran Copper and Gold, 2007). Despite the government of PNG receiving more than \$500 million per annum from the copper, there have been adverse economic effects on indigenous populations. These effects include the loss of subsistence livelihoods adjacent to the mines. Papuans have received little benefit from Copper mining yet they bear the brunt ecological costs of mining while mining companies and the government continue accruing massive profits (Perlez, 2006). It would be expected that the development of a resource within an area should have a trickle-down effect on the immediate communities.

Extraction of sand has even had political ramifications to the extent of changing of international boundaries. In Indonesia, sand extraction led to the subsequent disappearance of sand islands (NewYorkTimes, 2010).

1.2 Problem Statement

Laikipia North is a major source of construction sand in Mt. Kenya region. Over one hundred Lorries ferry red-sand to neighboring towns such as Karatina, Nanyuki, Meru and Naro-moru every day. The County Government of Laikipia accrues estimated

revenue of about 15 million on monthly basis as cess fees collected from sand ferrying vehicles. Sand is a major source of livelihood in the arid land characterized by long droughts and seasonal rivers.

However, despite the high revenue accrued by the County government and the high income that traders in the sand industry obtain, Laikipia North inhabitants are victims of perennial socio-economic challenges. The inhabitants cannot access proper social amenities such as water and health care and the roads cutting through a hilly and rugged terrain remain unusable during rainy seasons (Gitonga, 2013). Recent research findings published by KNBS on the status of economic development raise number of issues in relevance to Laikipia North. The report indicates that over 20% of the inhabitants of Mukogodo have no proper sanitation. It also shows that 28% of the population is unemployed. Further, on quality of life, the report shows that 67% of the inhabitants of Mukogodo live in grass thatched houses and approximately 87% use firewood for cooking and lighting. Over 54% of the inhabitants have no formal education in Mukogodo (Ngugi, 2013). This generally indicates low quality of life in the background characterized by major resource extraction. This calls forth for explanations on how red-sand extraction has influenced economic development in Laikipia North. Sand constitutes a communal resource which is constitutionally community wealth due to the fact that it lies explicitly on communal land identified on basis of ethnicity, culture and ancestry and it's therefore held in trust by county governments. Article 63 (4) of the Constitution of Kenya 2010 grants that community land and its resources shall not be disposed or be exploited except in terms of legislation specifying the nature and extent of the rights of members of the community individually and collectively (CoK, 2010).

Moreover, there have been major inter-community disputes arising as a result of sand harvesting in Laikipia North. The most pronounced was in *Mukogodo* involving the *Yaaku* community living in *Kurikuri* Group Ranch and the *Makurian* community living in *Makurian* Group Ranch as they fought over *Loisokut* sand site.

The Laikipia County Development Plan indicates that Laikipia North harbors great potential for red-sand harvesting (LCDP, 2013). It's against this background that the

study investigated the impact of communal resource extraction on economic development; The case of Red-Sand harvesting in Laikipia North.

1.3 Research Questions

The main research question that guided the study was: What is the contribution of communal resource extraction to development in Laikipia North?

Specific Questions

1. How has sand harvesting influenced economic development in Laikipia North?
2. How is extraction and regulation situated within the politics and economics of intra-society, state-firm dynamics and the ecological patterns of communal resources?
3. What are the challenges and opportunities in balancing environmental and economic priorities in the extraction of communal resources?

1.4 Research Objectives

The overall objective of the study was to find out the contribution of communal resource extraction to economic development in Laikipia North.

Specific Objectives

1. To examine how sand harvesting has influenced economic development in Laikipia North.
2. To examine the regulatory framework that regulates sand extraction, ecological impacts, and redistribution of benefits.
3. To identify the challenges and opportunities in balancing environmental and economic priorities in the extraction of communal resources.

1.5 Justification of the Study

Academic justification

Previous studies have indeed addressed the ecological and socio-economic impacts of resource extraction. Focus has been directed to state-led natural resource extraction of

highly valuable resources but there has not been strong focus on the extraction of communal resources. As such, there is little reliable data on extraction of resources such as sand in the developing countries. In the developed countries such data is only available for recent years (Krausmann, 2009). This has in turn contributed to lack of awareness on the influence of sand extraction on economic development in areas where communal resource extraction obtains. There is consensus that the indigenous communities or those adjacent to communal resource extraction sites continue facing economic hardships and living in poverty even with the high income accrued from these resources (Gitonga, 2013). The recent research by KNBS clearly depicts the status of development in Laikipia North but offers no explanation for the situation (KNBS, 2013). There has not been significant focus on why the state has failed to capture potential development of such areas endowed with communal resources such as sand.

This study is also useful in examining the place of indigenous communities in the extraction and regulation of communal resources. Laikipia North like many other areas inhabited by the Maasai is under the communal system of land ownership. There is no clear boundary to define the ownership of the resources on communal land. The regulatory framework in regard to communal resources is clearly a gray area that requires detailed investigation. Secondly, this area has received very minimal attention from researchers. Most research work done in this area for instance the recent works by Arwa have concentrated on the social and environmental impact of artisanal sand extraction (Arwa, 2013). There has not been strong focus on the continued lag in development of areas endowed with communal resources thus rationalizing this study. Also, the previous publications for instance that authored by Kuntai which attributes ecological degradation to globalization is not comprehensive (Kuntai, Undated paper) and does not fully reflect the true economic and ecological state of Laikipia North. The analytical generalizations arrived at in this study will be useful in the development of strategies and programs for socio-economic development of the region.

Policy Justification

The study is useful for the County Government of Laikipia in a number of ways. One, the County Assembly of Laikipia (CAoL) has the intention of enacting a Sand Harvesting

Bill (Achieng C. and Menda M., 2014). This study is therefore timely because the Bill will benefit largely from the findings and recommendations arrived at. Secondly, the findings will inform policy making processes geared towards sustainable resource extraction and also lay ground for a Benefit Sharing Regime (BSR) or an Impact Benefits Agreement (IBA) to regulate the relations between the County Government of Laikipia, the players in the sand industry and the indigenous community in Laikipia North. Thirdly, this study has examined the influence of communal resource extraction development and arrived at factors that hinder economic development of resource rich areas where communal resource extraction obtains. To this end, policy makers will use the findings presented herein to design alternative models of communal resource extraction so as to achieve sustainable development.

1.6 Scope and Limitations of the study

The principal focus of this study was sand extraction and regulation in Laikipia North for the years between 2006 and 2016. The study sought to understand the influence of sand harvesting on economic development, the ownership, regulation and extraction of communal resources, and the relationship between the actors in that industry. The study also examined the challenges and opportunities in balancing economic and ecological priorities in extraction of communal resources.

There were a number of limitations to this study. Geographical constraints such as rugged terrain with impassable roads was a major challenge and access to the interior of Laikipia North was difficult. Secondly, the population is sparsely populated and villages are about six to seven kilometers apart from each other. The population density is estimated to be 15 persons/ sq. km (IEBC, 2016). This increased the distances the researcher had to cover during data collection. Additionally, this study was also being conducted within a short time frame and with minimal resources and thus limiting the size of the sample that was used. Language barrier was also a problem.

In response to these anticipated challenges, the researcher identified *Mukogodo* as the area of concentration because it's located on major sand sites. This reduced the distance that was covered and also saved on financial resources. By concentrating on one location

which was large in size, the researcher was also able to achieve the objectives set within the time frame. Reducing the size of area to be covered made this study feasible.

1.7 Definition of Concepts

Communal Resources

These are resources found on community land. Community land is “land held collectively by a community by virtue of it being ancestral and traditionally occupied by hunter-gatherer communities” (CoK, 2010). This definition is ambiguous because it doesn't differentiate common resources held in an open access regime such as grazing lands with those exclusively owned by a single community. In this study, “communal resources” refer to those resources whose extraction and use excludes all people who have no ancestral claim to the land they are found.

Communal Resource Extraction

This is the development of a shared resource(s) under an overarching body or organization established by a community.

Economic Development

Economic development has been defined as “a sustained community effort to improve both the local economy and the quality of life by building the area's capacity to adapt to economic change” (Morse G. and Loveridge S., 1997). Increase in jobs and income in a community indicates economic growth. Economic development extends beyond job and income growth to encompass sustainable increase in individual and business productivity. It also conciliates resource increase with societal welfare and quality of life. However, the definition does not directly capture ecological welfare intrinsically as part of economic development. In this study, the concept “economic development” has therefore been applied to denote increase in income, increase in jobs, increase in demand for local goods and services, and environmental sanity as indicators of economic development.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter is divided in such a way that existing literature is reviewed at three major levels; the global level, regional level and the local level. The literature review is done in strict relevance to the problem, the research questions and the set objectives. The literature review is under three categories of; Explanations on influence of resources on economic development, regulatory frameworks, ecological impacts and benefit redistribution with relevance to sand extraction.

2.2 Natural Resource Extraction and Its Influence on Economic Development

The ideal of economic development, as conceptualized by Todaro and Smith, has in it three major aims. One can talk of development when there is increase in basic-life sustaining goods such as food, shelter, and health. Secondly, it aims at improving living standards by inducing higher incomes, expanding employment opportunities, providing better education and bringing to closer attention issues of human values. Thirdly, development objectifies an expansion in the range of economic and social choices available to both individuals and states (Todaro, M and Smith,S, 2012). Like Sen who sees development as freedom (Sen, 1999), Todaro and Smith also see it as emancipation from servitude, dependence, ignorance and misery.

There is no doubt that many countries in Africa, Latin America, the Middle East and some parts of Asia collectively referred as “third world” are endowed with massive amounts of natural resources. Yet, poverty and general underdevelopment form the spacious valley that separates these countries from the developed world. Andre Gunder Frank argues that the past economic and social history is responsible for the present underdevelopment in third world countries (Frank, 1992). By this Frank implied that the historical experience of colonialism has indeed adversely influenced the direction, the pace of development and the economic structure that third world countries adopted. He further contends that :

“the relations between development and underdevelopment on the international level, the contemporary underdeveloped institutions of the so called backward or feudal domestic areas of an underdeveloped country are no less the product of the single historical process of capitalist development than are the so called capitalist institutions of the progressive areas” (Frank, 1992, p. 109).

In this argument, it follows then that the metropolis-satellite relations discussed by Frank are not a preserve of the imperial or the international level. Contrary to that, these relations permeate the country's socio-economic and political structure not just in Latin America but across third world. To that end, the underdevelopment theory presents the cities or metro-poles and the rural underdeveloped communities as a replica of the core-periphery imperial structure at the systemic level. These are exploitative relations whereby the cities exploit the rural underdeveloped areas. Therefore, the underdeveloped areas of Africa can be said to be victims of the new domestic metro-poles created after independence. In terms of natural resources and in the case of Laikipia North, the explanation why the state has failed to capture economic development would therefore follow Frank's argument. The rural communities in Frank's words “will be exploited and later abandoned by the metro-polis when the wealth of their mines disappears”. Frank tends to have followed the same reasoning that Baran applied to argue that the failure of the western capitalist system has had far-reaching implications in backward areas. He argues that this disrupted the remnants of the feudal coherence of those backward societies hence stagnating development (Baran, 1992). Under-development in areas with natural resources would therefore seem to be the result of technological backwardness, which constraints economically efficient extraction and production of such resources.

Modernization theories, conceived as dichotomous approaches, present development as a bipolar process from traditional communities to modern societies (Pieterse, 2010). Walt Rostow, in his classic theory of modernization equated modernization with economic growth. His stagist theory implies that development occurs by dismantling and transforming pre-existing structures, institutions and values in favor of those in developed world (Rostow, 1971). Robert Nisbet had posed an argument similar to that developed by Rostow that social change was a natural, directional, immanent and uni-linear process

(Nisbet, 1969). Like Frank and Baran, scholars of modernization attribute the status of third countries not to the failure of the state but to an evolutionary process where development is bound to take place only that third world states have not evolved to that stage. Development is defined and conceived as a Western model. These explanations do not place responsibility to the states or allude to failure of states and governments to transform their societies. Modernization theories have failed to explain the presence of poverty in developed countries and do not offer an insight into how development actually occurs. It therefore lacks a structural perspective of development (Webster, 1995). While attributing underdevelopment and un-development to the systemic structure, Samir Amin denies the effectiveness of national economic policies in third world countries. He argues that;

“so long as the underdeveloped country continues to be integrated in the world market, it remains helpless...the possibilities of local accumulation are nil” (Amin, 1974).

These models of economic development depict the state and its natural resources as conduits of development .They eliminate the possibility of the state tapping into potential economic development because the drivers of economic development are treated as exogenous to the state. Immanuel Wallerstein, Theotonio Dos Santos, Raul Prebisch, Paul Sweezy, and Hans Wolfgang Singer are among the major critics of the premises in theories of development that claim developing countries rich in resources will modernize rapidly through resource-backed industrialization (Mako, 2010:4). Instead, these authors argue that due to these resources, third world countries will eventually be under-developed. Studies by Sachs and Warner (Sachs and Warner, 1997) and (Sachs and Warner, 2001) show that “increase of one standard deviation in natural resource leads to a reduction of about one percent per year in economic growth”. These findings have triggered further empirical research to justify the same.

Institutional Fragility, Corruption and the Resource Curse Thesis

Despite the above arguments that tend to exonerate the state from failure to capture economic development from resources within its territory, a growing literature accruing

from different schools of thought attributes this phenomenon to factors endogenous to the state. A conglomerate of literature attributes the slow economic development in areas endowed with resources to corruption. Collectively, these views form the theory of corruption which propounds the thesis that it is resource abundance that engenders corruption and therefore curtails economic development in resource rich areas. Leit and Wiedmann conducted the first econometric study on this theory with the major aim of investigating the determinants of corruption with a biased emphasis on the role of natural resource abundance. They concluded that resource-induced corruption fundamentally slows economic growth and development (Leit & Weidmann, 1999). This finding has been supported by subsequent studies. Damania and Bulte argued that most governments thriving in environs of insubstantial political competition are more likely to engage in corrupt deals in the licensing of natural resource extraction to special interest groups (Damania and Bulte, 2003). Only a fraction of this voluminous literature linking corruption to lag in development in resource endowed areas has suggested that corruption is good for development. Nathaniel Leff saw corruption as the “grease that lubricates the wheels of development (Leff, 1964)” contrary to others who see it as the “weed that suffocates better plants” (Simpkins and Wraith, 1963).

In addition to corruption, the failure of the state to capture potential economic development has been attributed to the fragility of state institutions. As such, there are causes intrinsic to state institutions which have inhibited potential development. The “overall impact of resource booms in an economy depends on institutions because they can determine the extent to which political incentives map into policy outcomes” (Robinson et al, 2006). Robinson, Verdier and Torvik further contend that ;

“...countries with institutions that promote accountability and state competence will tend to benefit from resource booms since these institutions ameliorate the perverse political incentives that such booms create. Countries without such institutions may suffer from a resource curse”.

This is because effective institutions check clientelism, rent seeking behaviour, and corruption (Mako, 2010:4).

Mehlun, Moen and Torvik argue that there are two types of institutions in resource rich developing countries; grabber-friendly and producer-friendly institutions. The grabber-friendly institutions are characterized by dysfunctional democracies, lack of transparency, weak property rights that can be manipulated to cover shady deals among others (Mehlun et al, 2006). Woolcock and others contend that not all types of natural resources affect the quality of institutions. Rather, hydrocarbons and mineral resource rich areas have a higher propensity for corruption and rent seeking behaviour because there is absence of institutional control (Woolcock et al, 2001). However, Karl Lynn argues that institutions alone are not sufficient to promote growth from areas endowed with abundant resources. Resources also influence the regime, the state and the government as well (Lynn, 1997). The argument that natural resource extraction influences institutions negatively is valid. Nevertheless, the existing literature revolves around state-led extraction of highly valuable resources but there doesn't seem to be focus on how extraction of resources impacts on community organizations mandated to extract and appropriate resource rents.

Indigenous Culture Impact on Economic Development

Arguments put forth to explain the influence of resource extraction on economic development in resource rich-developing countries tend to attribute blame to the victims of economic under-development. Sudden returns and benefits from resources create a "messianic mentality" that prosperity will be achieved. This idea is founded on the illusion of a ready-made prosperity that can be obtained independent of economic processes or individual effort and it is responsible for hindering productivity increase (Kroef, 1956). The arguments put forth tend to justify the fact that the exploitation and use of natural resources and its positive or negative influence on economic development is largely determined by a people's culture, work ethics and devotion. This is however debatable given that there are independent forces at play in liberal markets in which resources are exploited and traded.

Common Property Regimes and Indigenous Community Rights

Despite the growing interest in common pool resources and common property (Ostrom et al, 2002), literature reveals the constant failure of scholars to demarcate common pool resources from communal resources owned by indigenous communities. Both have been associated with the tragedy of the commons yet they differ. In the context of resource extraction and economic progress, three schools have emerged in attempt to resolve the state of perplexity. These are the traditionalists, ecologists and free enterprisers (Gachenga et al, 2009). Gachenga and others argue that recent events have shown that the sanctity of the free hold land tenure system is no longer accepted and can no longer be protected by the state. They further contend that in the pre-colonial period, land ownership was communal and cultural- hereditary claims made it an inalienable property of the indigenous people. British colonialists didn't understand the nature of African commons and they interpreted the property system as *terra nullius* (open access in land system means the land is free for everyone to use without exclusive restrictions.) They thought property can only derive from a sovereign and that communities are not legal persons (Gachenga et al, 2009).

African commons are however not *res nullius* (ownerless property which is not yet the object of rights of any specific subject and free to be owned) as perceived but *res communis* which demarcates them from public property and makes them a form of group “private property” where members of these groups have rights to how that property is used. Article 63 of the Constitution of Kenya 2010 indeed acknowledges that Community land claimed by indigenous people is community property (CoK, 2010) but there is no clear legal structure explaining the rights of indigenous peoples in resource-rich areas because the constitution also puts it that all land and minerals belong to the state (GoK, 2014). Article 6(2) of the Mining Bill puts it that ownership of minerals is by the state despite any rights or ownership or by any person in relation to any land on which minerals are found. Examples of these group properties still exist in Laikipia North where group ranches are a common phenomenon. For property owned under such a common property regime, there is a decision-making process about its use. This makes a case for their separation from open access property. Gachenga et al argue that after the British declared the land in Laikipia North *terra nullius* and vested it on the crown, the

new land system ignored established community principles and the indigenous communities were pushed into reserves such as the Mukogodo reserve which forms the locale of study in this research. Ogando argues that with independence, there was no radical alteration to remedy the worsening situation of landlessness and that this disequilibrium has been the cause of land deterioration and poverty (Ogando, 2002).

2.3 Regulatory Framework, Ecological Impacts, and Redistribution of Benefits in Relevance to Communal Sand Extraction

There is little evidence in existing literature of scholars who have *per se* examined the regulation of communal resource extraction and specifically sand. This is because in most countries, unlike Laikipia County, the resource exists as a common resource in an open access system or under a state-owned property regime. As such, most literature in existence in reference to indigenous communities is on Community Based Natural Resource Management Systems (CBNRMs). In Southern Africa, CBNRM is most clearly defined in terms of the devolution of rights to make management decisions, and capture benefits, in relation to resources located on communal lands (Sandbrook et al(eds), 2009). This strategy has been used in management of natural resources such as forests, conservancies, and wild-life based tourism ventures but there has not been any attempt to introduce a similar idea in management of resources such as sand. Though Sandbrook and others attribute commendable local and national achievements to CBRMs, they also demonstrate the challenges facing these institutions. Few communities care to obtain authority to use land and natural resources found on such land. They further advance the argument that incentives both political and economic exist for political elites and central bureaucracies to solidify their control over natural resources.

Roe and Nelson argue that “local governance institutions are not downwardly accountable to the community and benefits are disproportionately captured by local elites” (Nelson and Roe, 2009). They have also pointed to the tension that arises between the development of natural resources by governments and traditional authorities. There are challenges facing such models of resource extraction. One, “CBNRM interventions are not accompanied by the type of long-term investments in capacity-building required

to ensure broader participation and the accountability of local leaders to their community” (Sandbrook et al(eds), 2009). The distribution of local benefits of CBNRM can also be influenced by the nature of benefits generated and how individuals are able to gain access to them.

Sandbrook and others observe that;

“whereas a formal legal framework may be absent....., customary CBNRM regimes are generally high in internal legitimacy but low on external legitimacy while newer formal regimes tend to have higher external legitimacy but lower internal legitimacy” (Sandbrook et al(eds), 2009).

The major challenge with the existing literature is that it has all through examined the management of open access resources but has not concentrated on communal resources. CBNRM is a way of alleviating the tragedy of the commons, a tragedy that should not exist in the case of communal resources where extraction is an exclusive “private right” of a particular indigenous community.

2.4 Theoretical Framework

The Resource Curse Theory (RCT)

The major proponent of this theory is Richard Auty. The RCT, also known as the paradox of plenty is an ideological strand of neo-liberal economic theory. The theory is founded on a number of assumptions among them being the premise that natural resource rich developing areas are cursed by the abundance of resources (Auty, 1993). There is a close relationship between the resource curse theory and the underdevelopment theories propounded by political economists especially in third world countries (Mako, 2010:4). From a neo-liberal perspective, RCT theorists attribute the under-development and “un-development” of resource rich developing countries to internal factors such as rent-seeking, political corruption, weak institutions and poor governance. External factors responsible include a colonial legacy especially in relation to colonial law on property ownership and property rights in natural resource which neo-colonial nation states retained upon independence. The theory purports political elites and peripheral capitalists

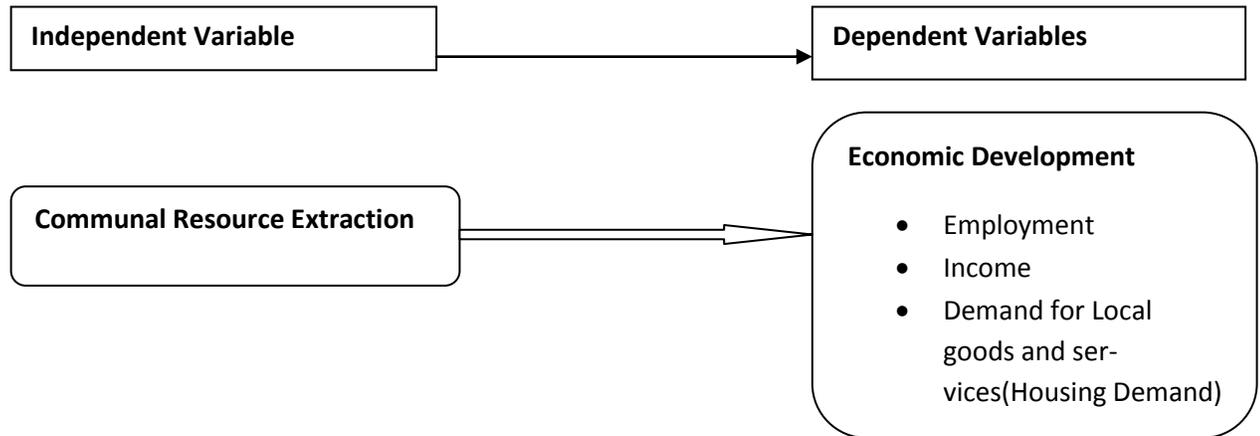
share resource wealth leaving majority of the population impoverished and large parts of their countries underdeveloped.

The theory also advances the argument that natural resources are a source of economic rent which can generate large revenues for those controlling them even in the absence of political stability and wider economic growth. The RCT discourse explores the effects of capitalist state-led resource extraction, the unequal exchange, underdevelopment and even ecological destruction and this makes it the most suitable framework for this particular study.

Empirical comparative studies undertaken by Auty in resource-rich and resource-deficient countries showed that the latter developed at a faster rate than the former (Sachs and Warner, 1997). The theory is also useful because it has within its framework the aspect of resource ownership and control and how this impacts on development (Wenar, 2008). Warner for instance argues that property rights of indigenous people in resource-rich developing countries have been ignored.

The theoretical framework also makes recommendations for resource-rich countries such as Benefit Sharing Regimes (BSRs). It proposes policy prescriptions and institutional changes. Per se, RCT recommends that resources ought to be left in the ground (Stevens, 2003) not forever but until such a time that proper extraction policies are put in place because it's in the interest of extracting companies to ensure as little as possible gain goes to the government (Stiglitz, 2006:250) and the communities. This framework guided the study and created the basis for the construction of a policy framework for a BSR and even an Impact Benefit Agreement (IBA) which the study found necessary. The utility of this theory is of great significance because its high level of generalizability enables its application to diverse cases other than those studied by Richard Auty in 1993.

2.5 Conceptual Framework



Economic development can be measured by use of indicators such as increase in employment, income and demand for non-tradable goods like housing in a locality. The aspect of development largely refers to improvement in social welfare as a result of change in these indicators. This study sought to evaluate the impact of communal resource extraction on these indicators. Coordinated and institutionalized development of a natural resource has the ability to impact on employment, income levels and spur local infrastructural development. Through forward linkages, a resource can generate employment if resource rents are invested in new income generating avenues. The multiplier effect of resource extraction can also generate new businesses which create new income sources and increase employment. Likewise, backward linkages to the resource extracting agency can generate development through procurement of local inputs.

2.6 Research Hypotheses

Ho1: Increased communal resource extraction does not lead to increased employment.

Ho2: Increased communal resource extraction does not lead to increased income per capita.

Ho3: Increased communal resource extraction does not lead to increased demand for local goods.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This section discusses how the research was conducted. It begins with a description of the research design. Next the target population which constitutes the sampling frame, the sample size and the sampling techniques adopted are discussed. The section then delves into the type of data collected, the techniques and instruments of data collection and data analysis.

3.2 Research Design

The researcher utilized a case study design. This design allowed use of both quantitative and qualitative research methods. The design was appropriate because it also provided basis for evaluation of assumptions related to the resource curse theoretical framework applied so as to strengthen or expand existing knowledge in regard to impact of resource extraction on economic development. It expands the existing knowledge by focusing specifically on communal resource extraction an area that has not attracted much attention from researchers.

3.3 The Study Area

Laikipia North constituency is located in Laikipia County bordering Samburu County. There are four wards; Sossian, Segera, Mukogodo East and Mukogodo West. The Constituency Area is Sq. Km 5, 434.3. Laikipia North has a total of 27, 794 registered voters (IEBC, 2016). This research focused on Mukogodo area to limit the scope and to enable a thorough investigation. Mukogodo area is divided into Mukogodo East and Mukogodo West County Assembly Wards. The area of study herein referred to as “Mukogodo Area” is therefore a combination of the two county assembly wards of Mukogodo East and West which together constitute a total area of sq.km1, 544.3. As such, Mukogodo area borders Sossian County Assembly Ward to the North and Segera ward to the East (Soft-Kenya, 2014).

Laikipia North has a total population of 79,286 compared to Laikipia West with 83, 267 and Laikipia East with 62, 844. Mukogodo West and Mukogodo East have a population of 13, 715 and 23, 412 respectively. The population density of Laikipia North is 15 persons/sq.km (KNBS, 2013).

3.4 Target /Study Population

The target population used is the indigenous community of Mukogodo area. The study targeted individuals of majority age (18 years) who have lived in this area for the past ten to fifteen years. This is the major prerequisite of participants from whom data was collected.

3.5 Sampling Design

The study utilized both probability and non-probability sampling methods. Out of the 60 potential respondents who formed the study sample, 22 were selected on non-probability sampling basis. This is because they formed critical sources of data without which this study would have been incomplete. Purposive sampling was used to identify , the Ward administrator (1), LOATA sand cooperative society representatives (2), sand loaders (3)/transporters (1)/buyers (3), environmental officer(s)-NEMA (1), Women (2) and Youth Group Leaders(2), field representatives of International organizations (Caritas,(1)),and Group Ranch Representatives (3).

Snowball sampling was essential in identifying community elders (3). This is because the research required elders who have historical information on the LOATA Sand Cooperative Society formed in 1979 and there was obviously no existing list of such elders. After making contact with one elder, the researcher used that elder to identify and establish contact with other elders. For authenticity of data, elders who participated were required to have been living in the area since the year 1980.

The remaining 38 participants were selected on random basis to participate in a household survey. Mukogodo West and East sub-counties were treated as one unit. On random basis, 38 households were selected. The inhabitants live in villages or *Bomas* within and around group ranches. Households were selected from the settlements adjacent to the four group ranches in Mukogodo. No two *Manyattas* selected were

adjacent to each other or within the same *Boma* where there were *Bomas*. The people living within *Ipolei* center were also respondents in the household survey following the same rules stated above.

A sample size of 60 participants computed the study sample. The study population was largely homogenous and therefore, similar characteristics were dominant and this made the sample typical of the larger population. In selecting this sample, other factors were considered in addition to the variability of population attributes. The time and financial resources dictated a relatively smaller sample. The geographical spread of Mukogodo area and the sparse population density of 15 persons /sq.km were also critical in determining the sample size.

3.6 Methods and Instruments of Data Collection

The researcher used structured questionnaires to conduct the survey. These were necessary so as to capture data that is relevant to the objectives and the research questions pertinent to this study. Though most questions were closed-ended, there were a number of open ended questions so as to capture opinions and views of the respondents. The questionnaires were administered in 38 households within the study area.

Face-to-face interviews with key informants were also conducted .These interviews were semi-structured using an interview schedule. This was important so as to ensure all interviewees got exactly the same context of questioning and received similar interview stimulus. The major goal of adopting such a strategy was to ensure interviewees` replies could be aggregated. This can be achieved if those replies are in response to identical cues. These questions were pre-coded and can be described as closed questions. Using semi-structured interview allowed the researcher to ask further questions as follow up to significant replies. Despite being semi-structured, the schedules used varied from one group of respondents to another group. For individuals representing institutions, the schedules differed from those of individual interviewees.

Additionally, observations regarding the red-sand harvesting sites were recorded for later analysis. These observations were used to document the observable impact of red-sand extraction. The researcher also used a set of open questions to conduct FGD with

selected target groups. This was essential so as to collect detailed data and also to incorporate first hand information from the target population.

Historical data in secondary sources was useful in this study. For instance, to understand the income flow from red-sand harvesting, the researcher used account records from LOATA sand cooperative society. Other secondary sources included data from national surveys conducted in the area by KNBS and other reliable sources such as the constitution, Mining Acts, online journals, and articles. All these content was analyzed and cross-checked with other sources to ensure that data is authentic.

3.7 Data Processing & Analysis

After data collection the researcher embarked on data processing. Preliminary activities included data editing to correct possible recording. The data was then categorized in line with the independent and dependent variables, the research objectives and the research questions it was collected for. These categories of data were then transformed into countable symbols in a coding process and entered in the SPSS software version 24.0 for statistical computations and further data manipulation.

Tabulations and frequencies were obtained and statistical inferences drawn from the data. Pearson's Chi square tests were conducted to measure and establish causal relationships in reference to the defined variables. Though distinct, the use of quantitative analysis was not in complete exclusion of the qualitative analysis because the study employed a mixed method approach to data collection and analysis. Quantitative data was summarized with frequencies and percentages. Descriptive narratives were used to summarize qualitative findings. Field notes and recorded audio were used to check authenticity of data collected.

CHAPTER FOUR

FINDINGS, DATA ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter is organized into three major subsections which present findings, data analysis and discussion. The first section presents findings on how red sand harvesting has influenced economic development in Laikipia North. In line with the second objective, findings on how extraction and regulation are situated within the politics and economics of intra-society state-firm dynamics and environmental patterns of communal resources follow in the second subsection. The third subsection presents findings related to opportunities and challenges of balancing ecological and economic priorities. The discussion of findings then follows.

4.2 General Demographic Statistics

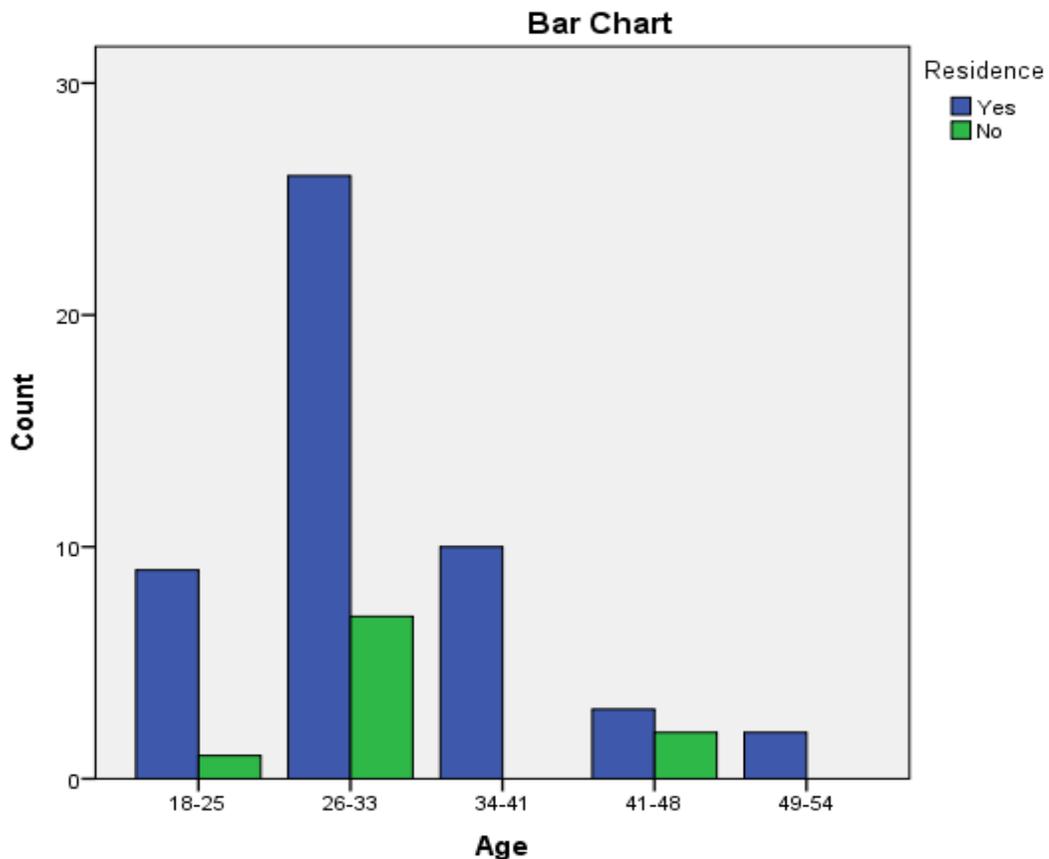
The general demographics of the study respondents are presented below. The major variables captured included age, gender, level of education and residency. Information related to state of employment was also captured. The table below summarizes sex and education.

Table 4.1 Cross Tabulation of Sex and Education

			Sex		Total
			Male	Female	
Education	None	Count	14	2	16
		% within Education	87.5%	12.5%	100.0%
	Primary	Count	23	3	26
		% within Education	88.5%	11.5%	100.0%
	Secondary	Count	10	4	14
		% within Education	71.4%	28.6%	100.0%
	College	Count	2	1	3
		% within Education	66.7%	33.3%	100.0%
	Undergraduate	Count	1	0	1
		% within Education	100.0%	0.0%	100.0%
Total		Count	50	10	60
		% within Education	83.3%	16.7%	100.0%

The observation made is that 83% of the respondents were male and 16.7% female. In terms of levels of education, 70% of the participants had less than secondary school education. Specifically, 43.3 percent had attained primary education while 26.7% had no education. Only, 6.7% had attained education above secondary school. From this information, it can generally be inferred that literacy levels are very low in Laikipia North. Of the 70% who had no education, the male gender was dominant an indication that most males either did not attend or discontinued school. Additionally, Figure 4.1 shows that while most of the participants (83%) were residents a number of them were non-residents. Majority of the participants both residents and non-residents were 26-33 years old.

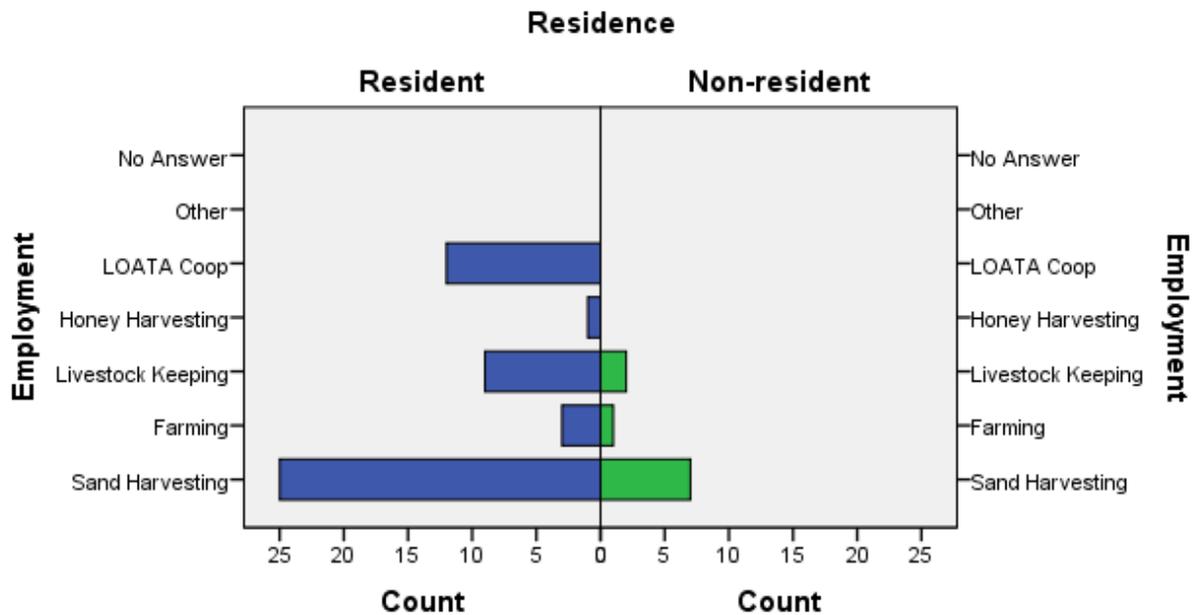
Fig 4.1: Residence and Age



The study also confirmed that sand harvesting is the major economic activity in the area. As shown in the table below, 39.1 % of the participants had worked in sand harvesting over the last seven days prior to the survey. The data collected also shows that the level

of unemployment among the respondents is 28%. This was established by enumerating the number of individuals who were seeking for work within the seven days prior to the survey. This statistic cannot be generalized as the indicator for unemployment in Laikipia North as a whole due to the obvious factor of proximity to a major resource. The level of unemployment may be higher than established in areas where sand is not harvested. The study also established that 17.2% of the participants were in other businesses not related to sand harvesting and livestock keeping.

Fig 4.2: Residence and Place where respondent Worked in the last 7 Days



4. 3 How Sand Harvesting has Influenced Economic Development in Laikipia North

To examine how sand harvesting has influenced economic development in Laikipia North, the impact of backward and forward linkages generated by sand extraction was evaluated. The indicators of multiplier effect namely employment, income, demand for local inputs (goods and services) and outputs such as new projects established through profit re-investment and funding injected into the local businesses through the operations of LOATA Cooperative were examined.

4.3.1 Forward linkages

The forward linkages evaluated the extent to which sand extraction has created new jobs and how it has stimulated demand for local goods specifically demand for rental housing within Ilpolei area.

4.3.1 Measuring Influence of Sand Extraction on Employment levels through new Income-generating Projects

To measure the multiplier effect on employment, respondents were asked to state whether there were income generating projects started and funded through LOATA Cooperative. The frequencies indicated that the majority of the participants disagreed with the existence of any income generating projects initiated by LOATA Cooperative within the locality. As shown in Table 4.3 below, only 16.7 % claimed to know of such projects. On further probing, it was established that the majority of the respondents who had indicated that there existed income generating projects referred to the five group ranches namely Munishoi, Mrupusi, Ilpolei, Makurian and Kurikuri.

Upon further investigation through FGDs, the study established that the ranches are not income generating projects but a communal structure through which individuals are identified by their location. The ranches are under the control of LOATA Cooperative. The sub-county administrator clarified the issue during a key informant interview.

“It’s not that ranches make money here. There are no tourists or projects in Munishoi, Mrupusi or Makurian. Those are purely administrative areas with elders and community offices which help us locate citizens and to distribute relief when we need to. We have a list of all people living in particular ranches.”

It can therefore be inferred that except by providing direct employment to loaders and its employees, there was no any evidence of multiplier effect especially linked to deliberate creation of jobs within the locality that can be associated to the Cooperative.

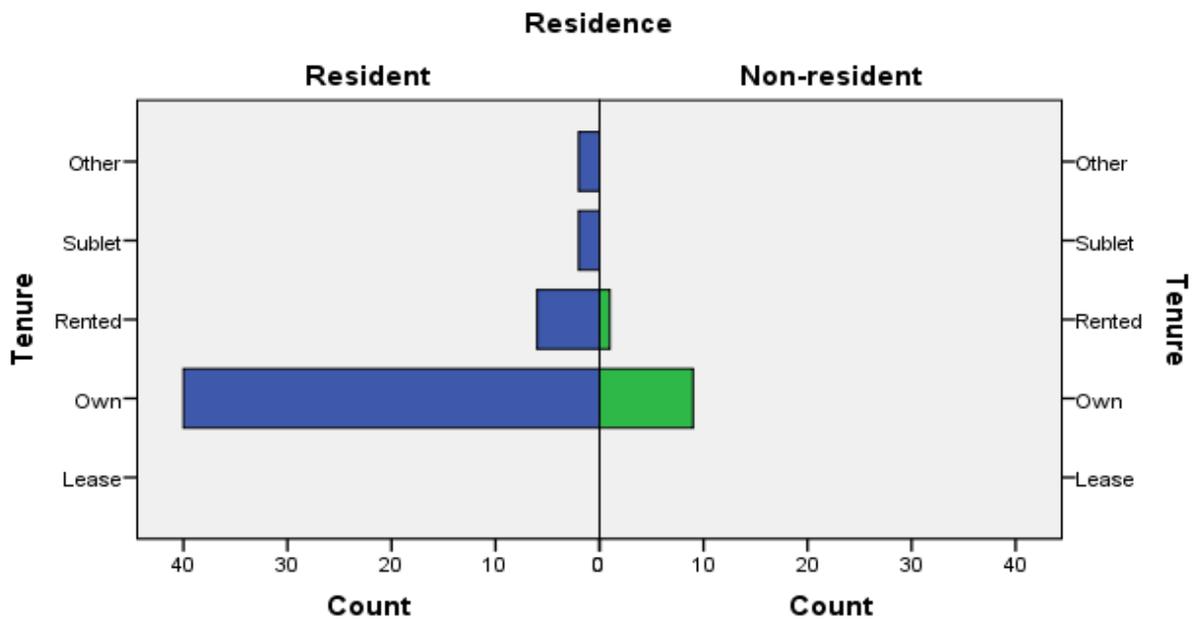
Table 4.2 Existence of Income Generating Projects Initiated by LOATA

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	10	15.6	16.7	16.7
	No	50	78.1	83.3	100.0
	Total	60	93.8	100.0	
Missing	System	4	6.3		
Total		64	100.0		

4.3.2 Influence of Sand Extraction on Local Demand for Rental houses.

To measure the extent to which sand extraction in Mukugodo area has stimulated demand for local housing at Ilpolei Center, data on residency and type of tenure was important.

Figure 4.3 Residency and type of Tenure.



From the above, 83 % of the respondents were residents of Mukogodo area. The remaining 17% were non residents. The respondents were then asked the type of tenure so as to estimate the percentage of individuals who were tenants. The study established

that most of the respondents (81%) owned houses within Mukogodo area. The findings also indicate that 11% lived in rented houses. 3.3 % had sublet houses from other lessees in the area.

Participants were also asked for their opinion on the statement that: “The demand for local rental houses is higher today compared to five years ago.” Diverse opinions arose during the FGD. Some respondents argued that the demand for rental houses has not changed in the last five years. One such participant argued that;

“Ilpolei has not changed much since the last election. Only two stone houses have been built within that duration. Very few rental houses have been built here. Owners of the new houses do not charge rental fees higher than it was before. Most people move to Nanyuki or Jua Kali but few people come to live in Ilpolei.”

Another participant in response supported the argument that the demand for rental houses had not remained .He pointed that:

“I came to Ilpolei in 1989. The shopping center was just a small livestock market. It has grown since then. In the last five years, most business people have abandoned the shops and shifted to Doldol. Very few people rent the shops. It’s the owners who operate them. The cost of rent here is about Ksh. 1000-1500 for houses built of corrugated iron sheets. Even sand workers who come from Kimanju prefer going back home instead of renting here. That’s why there are not many individuals living in rental houses. ”

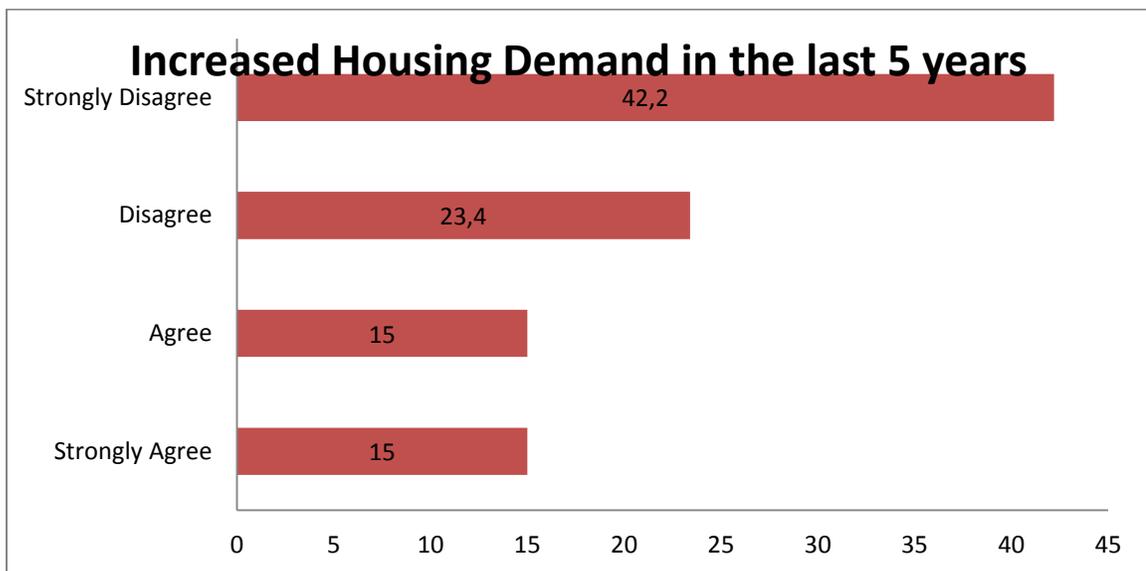
However, a few argued that indeed the sand business has attracted young people seeking work as loaders who have rented houses at Ilpolei. One loader reported the following;

“I come from Jua Kali but I have relatives here. There is more work for loaders here because many Lorries come on daily basis. I have to be here by the time Lorries reach the Scout barrier or I won’t get a job. I have

rented a single room behind the school at Ilpolei. I also know a number of people who have immigrated to Ilpolei in search of sand loading jobs. However, there are very few people who move here because working in the sand sector requires you to be a local or you be affiliated to the buyers or transporters of sand.”

During the survey, opinions regarding the same were collected. The responses presented in figure 4.4 indicated that 42.2% and 23.4% Strongly Disagreed and Disagreed respectively compared to 30% who either agreed or strongly agreed.

Figure 4.4 Increased Housing Demand in the last 5 years



The expectation was that with the expansion of sand extraction, the activity would attract more workers which in turn would raise the demand for local houses. However, the absence of significant migration trends to *Ilpolei* Center was interpreted as an indicator for low or insignificant stimuli of sand extraction on demand for local housing.

4.3.3 Backward Linkages

To examine the extent to which the LOATA Cooperative has enhanced economic interdependence in Mukogodo, production linkages were evaluated. This was important

so as to find out how the expansion of sand extraction industry has raised the demand for services and goods from the locality.

4.3.2.1 Measuring Influence of Sand Extraction on Demand for Local Services and Goods.

Data collected from accounting records was used to trace procurement and human resource emoluments trends for the cooperative. The data is shown in the table 4.3 which follows. From the tabulated data gathered from the cooperatives accounting records, a number of observations and trends were deduced.

To begin with, the number of Lorries of sand harvested per day increased steadily in direct proportion to the volume of sand harvested and the total sales. The variation observed on the decline of Lorries from 45 in year 2009 to 38 in 2010 does not alter the trend substantially. It can therefore confidently be inferred that as the volume of sand being extracted increased, the level of income for LOATA cooperative increased.

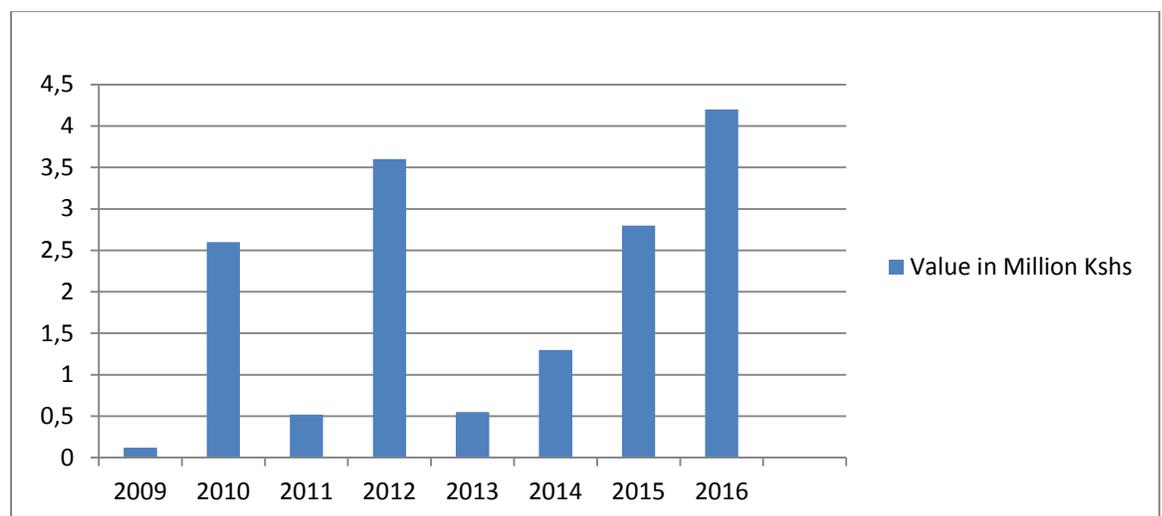
Table 4.3: Summarized LOATA Cooperative Records(2009-2016)

YEAR	Lorries	Lorries	Volume (t)	Payment Kes	Sales Kes	No of Staff	LOATA COOP Expenditure				Total
	P/Day A	P.A B	C	D	E	F	Bursary G	Proc H	Wages I	Welfare J	
2009	45	16200	729000	3500	56.7	6	9.2	0.12	3.1	3.2	41.08
2010	38	13680	519840	3500	47.88	8	13.8	2.6	3.2	4.1	24.18
2011	56	20160	1128960	4000	80.64	12	21.5	0.52	3.4	2.6	52.62
2012	67	24120	1616040	4500	108.54	17	34.2	3.6	5.4	4.8	60.54
2013	78	28080	2190240	4500	126.36	18	33.2	0.55	7.3	0.8	84.51
2014	87	31320	2724840	5550	173.826	21	47.5	1.3	7.6	1.9	115.55
2015	82	29520	2420640	5550	163.836	26	43.2	2.8	10.3	7.4	100.1
2016	85	30600	2601000	5550	169.83	28	32.3	4.2	12.1	5.4	115.8

Source: LOATA Records

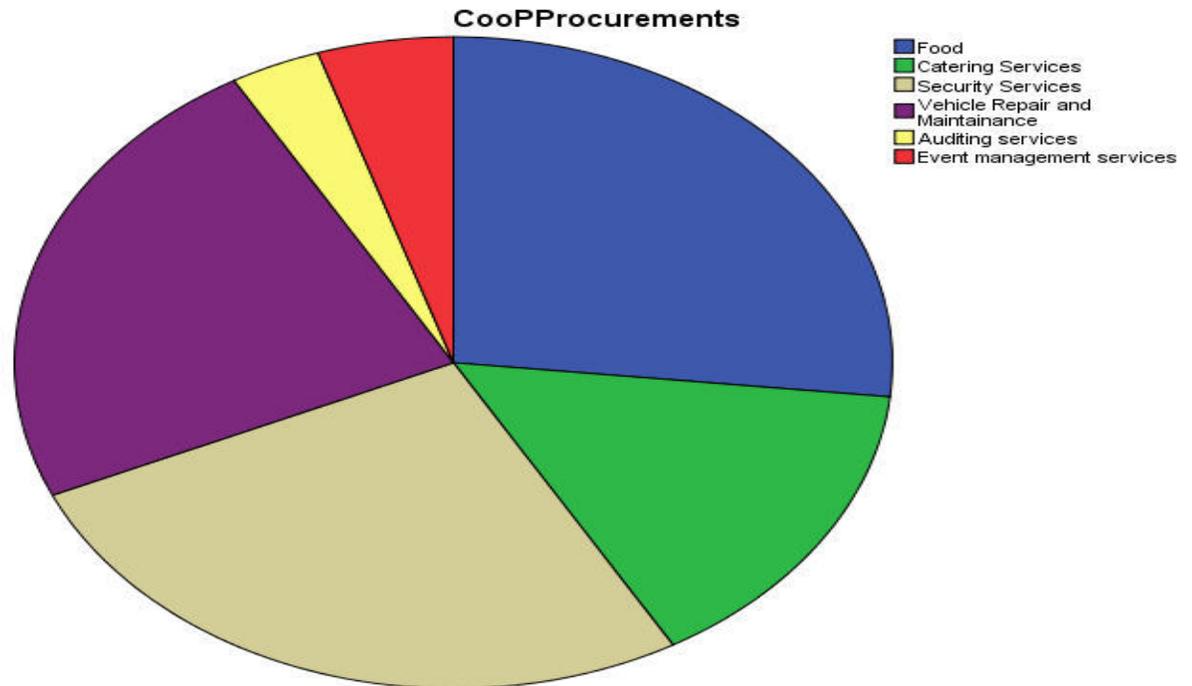
As far as the pattern of expenditure is a concern, only wages increased in proportion to increase in sales as shown in Column H in Table 4.3. Column G, H and J which represent Bursary, Procurement and Welfare expenses do not reflect any increase that is proportional to the increase in sales. However, there was an observable trend showing a general increase in total expenditure as the sales increased as the totals column depicts. Figure 4.5 shows the procurement trend for the years between 2009 and 2016.

Figure 4.5 LOATA Procurement Trend between the years 2009-2016



Further, respondents were asked to identify the major goods and services procured by the cooperative from the locality. This was important so as to estimate whether there is impact in terms of increment in income for the sale of non-sand related goods within the locality. The response frequencies are presented in Figure 4.6. From the responses, the study established that the cooperative procured a variety of services including security services, catering services, event management services, vehicle repair and maintenance services and even auditing services. Food was mentioned as one of the most frequently procured commodity. Security was rated as one of the most frequently demanded service by the cooperative having been mentioned by 26.7% of the respondent

Figure 4.6: Goods and services Procured by the Cooperative in Mukogodo area



From the pie chart above, it can be inferred that there is a rising demand for local goods and services outsourced within the locality. However, the monetary value of these goods and services compared to the value of total sales constitutes an insignificant figure and therefore, the demand observed is minimal and is not likely to have substantial impact on economic interdependence patterns. Additionally, some locals claimed that procurement in the cooperative is highly skewed and sometimes supplies are outsourced from other areas even when they can be sourced from the locality. One such participant in the FGD at Ilpolei stated the following;

“Sometimes if you know somebody inside you can supply. At times, the Cooperative purchases maize and beans in bulk for the local school. Last year I had beans but the cooperative did not buy from me. They bought from Nanyuki which is a long distance and even more costly...”

Other respondents preferred not to sell to the cooperative due to what they referred to as “bad business”. One such respondent reported that:

“Whenever there is little rainfall, I harvest cow peas enough even for sale but I prefer selling them myself instead of selling to the cooperative. They buy at very low prices yet they can do better given that they are using money from the community welfare kitty which comes in on daily basis.”

The huge resource rents earned by LOATA are a result of factors such as; the absolute scarcity of sand in neighboring areas and its concentration in Laikipia North (Mukogodo) which lies at the heart of the study area, the efficiency of extraction over the local market (determined by the preference of red-sand in construction) and the concentration of regional market power.

Respondents were also asked to identify the major income earner in the area. The responses are summarized below. 53.3 % identified sand harvesting as the major income earner. An additional 20% pointed out that the sand cooperative was their major source of income. The only other significant economic activity is livestock keeping. Table 4.4 summarizes the responses in regard to major economic activity.

Table 4.4: Major Economic Activity in Mukogodo Area

	Frequency	Percent	Valid%	Cumulative %
Sand Harvesting	32	50.0	53.3	53.3
Farming	4	6.3	6.7	60.0
Livestock Keeping	11	17.2	18.3	78.3
Honey Harvesting	1	1.6	1.7	80.0
LOATA Coop	12	18.8	20.0	100.0
Total	60	93.8	100.0	
System	4	6.3		
Total	64	100.		

Respondents were also asked to state their average income and their monthly expenditure. The former was useful in the estimation of the pa capita income and the latter for estimation of pa capita consumption. The study established that the majority of the respondents earned between three hundred and five hundred. Figure 4.7 represents the average income while Table 4.5 shows a summary of responses regarding respondent's monthly expenditure.

Figure 4. 7 Average Income

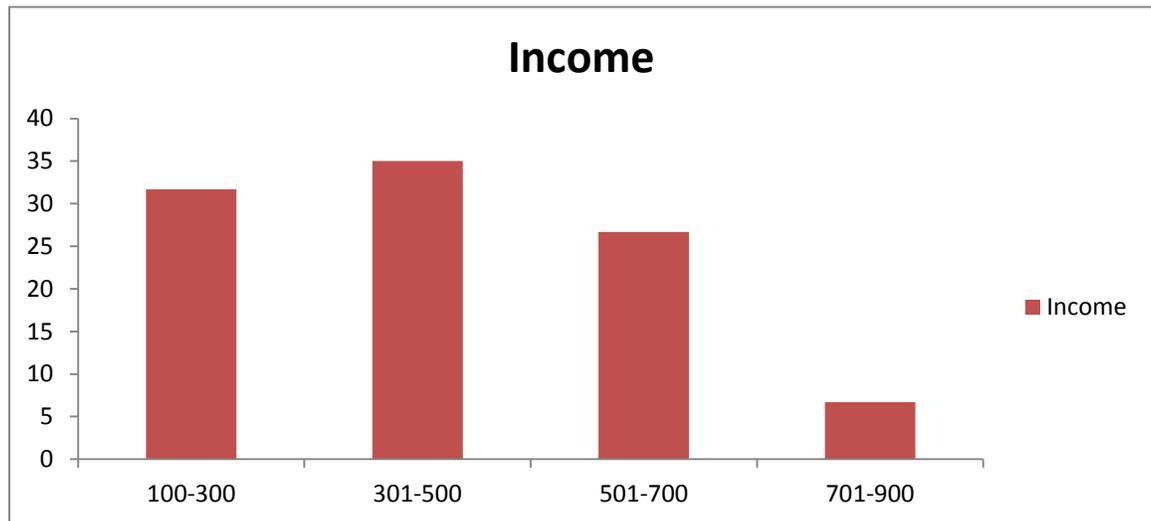


Table 4.5 Monthly Expenditure

Categories		Frequency	Percent	Valid %	Cumulative %
Valid	2000-3500	10	15.6	16.7	16.7
	3600-5100	30	46.9	50.0	66.7
	5200-6700	11	17.2	18.3	85.0
	6800-8300	6	9.4	10.0	95.0
	8400-9900	2	3.1	3.3	98.3
	10000+	1	1.6	1.7	100.0
	Total	60	93.8	100.0	
Missing	System	4	6.3		
Total		64	100.0		

4.4 The Regulatory Framework that Regulates sand, Ecological impact and Redistribution of Benefits.

The second objective sought to find out how extraction and regulation are situated within the politics and economics of communal resource extraction. Here, the concerns were relate to the regulatory frame- work and benefit redistribution. The inquiry sought to understand who regulates red-sand harvesting within Mukogodo area.

4.4.1 : Regulation of Sand Extraction

The respondents were therefore asked who is responsible for determining where sand is to be extracted. 56.7 % of the respondents identified LOATA Cooperative as the major regulator of red sand-harvesting. 20.3% of the respondents pointed out that local politicians were also key determinants of where sand is harvested and how the extraction is managed. Despite the fact that the County Government of Laikipia has a cess point at *Ilpolei* Center, there was no response linked to its influence in the regulation of sand extraction activities.

Table 4.6 Regulators of Sand Extraction

		Frequency	Percent	Valid %	Cumulative %
Valid	Cooperative	34	53.1	56.7	56.7
	Loaders	5	7.8	8.3	65.0
	Council of elders	5	7.8	8.3	73.3
	County Council of Laikipia	3	4.7	5.0	78.3
	Local Politicians	13	20.3	21.7	100.0
	Total	60	93.8	100.0	
Missing	System	4	6.3		
Total		64	100.0		

These results were confirmed by participants in the FGD. One participant said that:

“The cooperative is in-charge of everything. It runs the ranches, it controls the extraction and even the sale of sand. The cooperative decides where sand can be collected and by whom.”

Another participant echoed these remarks and added the following;

“ The county government of Laikipia plays no role in the extraction of sand. The County officers only collect cess in the office next to the scouts barrier and nothing beyond that. The cooperative runs the business fully. The only other influential individuals are politicians and people working for government.They are always here during the elections and some have lorries that ferry sand. ”

In line with the second objective of the study which sought to understand intra-society and state-firm dynamics in relation to regulation and extraction, the study examined the role the community plays in that process. This was achieved by inquiring whether or not the respondent had participated in the cooperative’s elections .Further, the study sought to establish whether the people of Mukogodo had participated in any boycotts or demonstrations related to the activities of the cooperative. Findings in table 4.7 indicate that 90 % of the participants had ever participated in the elections . However, only 45% had participated in demonstrations against LOATA Cooperative’s activities.

Table 4.7 : Participation in LOATA Elections

		Frequency	Percent	Valid %	Cumulative %
Valid	Always	25	39.1	41.7	41.7
	Sometimes	29	45.3	48.3	90.0
	Never	6	9.4	10.0	100.0
	Total	60	93.8	100.0	
Missing	System	4	6.3		
Total		64	100.0		

Table 4.8: Participation in Demonstration Against LOATA Cooperative.

Response		Frequency	Percent	Valid %	Cumulative %
Valid	yes	27	42.2	45.0	45.0
	No	33	51.6	55.0	100.0
	Total	60	93.8	100.0	
Missing	System	4	6.3		
Total		64	100.0		

Furthermore, the study established that only 15 % of the respondents had never attended the Cooperative’s annual general meeting. The responses are summarized in table 4.9.

Table 4.9: Participants’ attendance of AGM

Response		Frequency	Percent	Valid %	Cumulative %
Valid	Mostly	19	29.7	31.7	31.7
	Sometimes	19	29.7	31.7	63.3
	Never	9	14.1	15.0	78.3
	Always	13	20.3	21.7	100.0
	Total	60	93.8	100.0	
Missing	System	4	6.3		
Total		64	100.0		

4.4.2. Benefit Redistribution

To assess benefit- redistribution, respondents were asked whether they received annual dividends. The study established that no dividends were paid to members of the Cooperative. The response rate in Table 4.10 shows a valid percent of 98.3 which supports the Inference that LOATA Cooperative doesn’t pay annual dividends to its members.

Table 4.10 Dividends Payout

		Frequency	Percent	Valid %	Cumulative %
Valid	Yes	1	1.6	1.7	1.7
	No	59	92.2	98.3	100.0
	Total	60	93.8	100.0	
Missing	System	4	6.3		
Total		64	100.0		

The results were also confirmed from the cooperative representative with whom the researcher conducted an interview. The respondent who was a clerk stated as follows:

“I have worked as a clerk for over five years. Though the cooperative Sometimes intervenes in cases of funeral contributions, fundraising for hospital bills and in supporting school children, I have not had of any dividends being paid to members. I am a member myself and I have never received dividends.”

4.4.3 Group Ranches Bursary Kitty

It was also important to assess the transfer of funds from the Cooperative directed to communal welfare as a form of benefit redistribution. Respondents were asked whether themselves or their relatives had benefitted from the LOATA Bursary Kitty. 75% indicated that neither them nor their close relatives living in Mukogodo had ever received that bursary. One respondent reported the following:

“I went to the Cooperative when my daughter was going to secondary school. I had no money and most of my cattle had died during the drought. The clerk asked me to fill forms for bursary which I did. Afterwards, I went back to check but they kept telling me to wait. Luckily, she was admitted in Daraja school and sponsors pay

all her fees. I have not heard from the cooperative a year after my application.”
 A different respondent agreed that the cooperative gives bursaries once a year. He argued that:

“It’s just like the CDF bursary. You must know somebody who sits at the board so that they can push your application. Many people get it because they have relatives working for the cooperative. My sister’s children receive that bursary annually. Her husband is a driver for a local politician.”

The table below presents results from the survey showing that 75% of the participants in the had never received bursaries from LOATA and neither had their relatives.

Table 4.11 LOATA Bursary

		Frequency	Percent	Valid %	Cumulative %
Valid	Yes	15	23.4	25.0	25.0
	No	45	70.3	75.0	100.0
	Total	60	93.8	100.0	
Missing	System	4	6.3		
Total		64	100.0		

The key informant interview with the cooperative representative largely supported the claim that the cooperative issues bursaries every year. He stated that:

“The bursary kitty runs every year. I am not involved and I can’t tell how the board decides how much money goes to the kitty. I also don’t know how the selection is done. Many people complain about the process saying that it is unfair . I think what should bedone is to direct more money into the bursary kitty so that it can cover all children because the money is there but lies in a bank.

4.5 Challenges and Opportunities balancing Environmental and Economic Priorities in the Extraction of Communal Resources.

4.5.1. Challenges of balancing environmental and economic priorities

The respondents were asked to name the major challenges associated with sand harvesting in Mukogodo Area in general. 26.7 % of the respondents pointed out that political interference and corruption were the key challenges of balancing environmental and economic priorities. One respondent argued that:

“There is a lot of money flowing into the cooperative. The problem is that that Money mostly goes into people’s pockets. Last year , one of the workers was prosecuted for stealing five million. A lot of the money is stolen but we cannot know how much. That money is enough to make this community better.”

Further, respondents alleged that local politicians are involved in the sand business and are among the biggest beneficiaries of the sand business. One respondent in the FGD asserted that:

“Sometimes taking them to court becomes difficult because they are supported by politicians. Politicians use their influence in the election of board members and can control those they supported for election. The politicians are the owners of the lorries you see ferrying sand to Nanyuki. It’s possible the stealing is also linked to politics.”

In addition to the above, 15% of the respondents cited poor management of the resource as a major challenge. Other challenges reported are summarized below.

Table 4.12 Challenges of Balancing Ecological and Economical Priorities

		Frequency	Percent	Valid %	Cumulative %
Valid	Poor management	9	14.1	15.0	15.0
	Low Prices	5	7.8	8.3	23.3
	Sand Theft	3	4.7	5.0	28.3
	Lack of/low rain-fall	7	10.9	11.7	40.0
	Poor wages	4	6.3	6.7	46.7
	Corruption	16	25.0	26.7	73.3
	Political Interference	16	25.0	26.7	100.0
	Total	60	93.8	100.0	
Missing	System	4	6.3		
Total		64	100.0		

4.6 Influence of Communal Resource Extraction on Economic Development

Table 4 13: Pearson’s Chi-square Test of Statistical Significance

Dependent Variables	Independent Variable(Resource Extraction)			
	Value	d. f	P-value	Statistical Significance
Demand for Local goods	0.381	1	0.537	Not Significant
Employment	8.0	1	0.005	Significant
Income	0.686	1	0.408	Not Significant

The association of demand for local housing, employment and income with sand extraction in Mukogodo area was tested. The results presented in table 4.13 above indicate that neither the demand for local housing nor level of employment was statistically significantly associated with increased sand extraction.

In regard to the association between increased sand extraction and demand for local housing, the value of Chi which is 0.381 at one degree of freedom and P value of 0.537 does not fall within the critical region when alpha is 0.05. The critical value of Chi where there would be significance begins at 3. 841. As such, there is no statistically significant association between communal resource extraction and demand for local housing. Therefore, it can be inferred that increase in sand extraction in Mukogodo area did not raise the demand for local housing. This leads to the acceptance of the null hypothesis that increased communal resource extraction does not lead to increased demand for local goods.

Likewise, the Chi square value of Income obtained can be presented as $\chi^2 = 0.686$; $df=1$; $p=0.408$. This implies that there was no statistically significant relationship between sand extraction in Mukogodo and income level. The multiplier effect was examined by assessing the existence of income generating projects initiated by the cooperative in charge of sand extraction and related transactions. The null hypothesis that increased communal resource extraction does not necessarily lead to increased income per capita is thus validated.

On assessing whether there was an association between resource extraction and level of employment, the chi value which stands at 8.0 at 1 degree of freedom, yielding a P value of 0.005 which indicates a significant relationship. This leads to rejection of the null hypothesis that increased communal resource extraction does not lead to increased employment.

4.7 Discussion of Findings

4.7.1 How Sand Harvesting has Influenced Economic Development in Laikipia North

The selected indicators of economic development used in this study were employment, income and demand for rental houses within the locality. In this section, the effect of sand harvesting on the selected indicators has been discussed.

4.7.1.1 Failure of Forward Economic Linkages

To begin with, the study established that there was failure of forward linkages between the proceeds from the communal resource and the local economy. The multiplier effect of sand extraction business was limited to job increment but did not extend to creation of new income generating projects. From the findings of the study, LOATA cooperative has not invested in any projects within the locality that can provide returns or create income for residents of Mukogodo. In addition, from the study findings, it can be inferred that there is no effect of communal resource extraction on local investment capacity. The cooperative has not created structures that can facilitate the extension of credit to the locals. The Cooperative may have savings in bank accounts but it has not made the attempt to strengthen local youth and women groups. Boosting local investment capacity would contribute towards the development of the area.

Secondly, the study established that there is de-link between communal resource extraction and local economic development potential. This has been evidenced by the insignificance of the relationship between extraction and demand for rental houses within the locality. The increase in extraction of a resource should ordinarily be paralleled by an increase in demand for non-tradable goods such as housing. This is because the expansion of resource extraction activity paralleled by a proportional rise in employment affects local patterns of migration which in turn bears upon the demand for rental houses within the proximity of the extraction site. Compared to tradable goods, demand for non-tradable goods such as housing is less inelastic given that rental fees are not subject to determination by market forces of demand and supply.

Thirdly, the observations made during the study clearly indicate disconnect between communal resource extraction and critical infrastructural development within Mukogodo area. The total length of the road connecting the hinterland of *Ilpolei* with Nanyuki town is approximately 65 Kilometers. Only a stretch of 13 kilometers extending from Nanyuki has tarmac. Over 50 Kilometers is dirt road without murrum. This brings a major transportation challenge during the rainy seasons. Loaded Lorries cannot exit the sand sites until the dirt roads drain. The residents also cannot commute or access services offered in town during rainy seasons. The region has quarries where lateritic murrum bedrocks can be extracted and be used to surface the impassable sections of the dirt road. With the income the Cooperative makes, this can be done without much cost since the laterite murrum lies on communal land.

Under the same token, the cooperative has not made any attempt to strengthen local health infrastructure. Communal resource rents have not been expended towards initiation of capital projects such as communal health facility which can be funded from sand proceeds as a long term investment aimed at securing community health. The locals continue travelling for over forty five kilometers searching for health services yet the income and savings accrued can alleviate this type of challenge. Other related infrastructural linkages such as water pipelines are not in place yet proceeds from the resource are way above the cost of starting a community water project.

4.7.1.2 Bleak Backward (Production and Consumption) Linkage

Backward linkages are the channels through which money flows between LOATA Cooperative and local suppliers to create a web of economic interdependence. One of the major hindrances towards economic development is the existence of economically insignificant backward linkages. In this study, procurements made from within the locality were used as a proxy for level of demand for local goods.

From the study findings, a weak linkage between production and consumption obtains within the locality and hampers economic interdependence. Procurement of local goods and other inputs forms one of the major ways a Cooperative enjoying monopoly like LOATA can foster economic interdependence within a locality. Since the permanent

workforce and the operations of LOATA are not substantially significant, investing in new projects would be a way of increasing local procurements. Currently, the services procured by LOATA include food supply and catering services for workers, event management services, security services, vehicle repair and maintenance services and auditing services.

4.7.2 How Extraction and Regulation are situated Within the Politics and Economics of Intra-society, State-firm Dynamics and Ecological Patterns of Communal Resources.

4.7.2.1 Regulation is majorly the Reserve of LOATA Cooperative.

The study established that regulation of sand extraction in Laikipia North is largely a preserve of LOATA Cooperative. 53 % of the respondents pointed out that the cooperative is not only in-charge of determining where sand is to be extracted but also determines the charges and the average wage for loaders.

Further, the Cooperative is also in-charge of determining the redistribution of benefits. There is absence of a regulatory framework that can keep the Cooperative's activities at check. One of the major challenges of development mentioned by respondents is corruption in the cooperative. The absence of an accountability framework that can hold the managers of the cooperative answerable to the community affords them the audacity to embezzle and abuse communal wealth.

The County government of Laikipia has left the management of the resource and the use of resource rents entirely to the LOATA Cooperative. As such, the Cooperative decides the sites where sand is to be harvested without consultation with any government agencies that should be concerned with ecological preservation. However, by observation, the government cess office is fully operational and a receipt showing payment of cess is a mandatory prerequisite before the LOATA Cooperative officers can allow the buyers to proceed through to sand collection sites. This is the only association where the Cooperative and the County Government interact in the transaction of sand business within Mukogodo area.

The resultant effect is that exploitation of red-sand occurs with minimal concerns on the ecological cost incurred by the people of Mukogodo and the future generation. Observations show an increased riverine excavation of sand deposits which is occasionally accompanied by the clearance of acacia trees and other riverine vegetation. While it may not seem as a significant effect, given that the area falls within the arid and semi-arid areas (ASALs), continued clearance of acacia trees for extraction is inflicting an irreversible effect on the climate of the area. Neighboring ranches such as *Ol Jogi* are making efforts to intervene in the situation placing placards of caution along bridge-points with the message “NO SAND COLLECTION” but the effectiveness of such efforts is insignificant given that there is no supporting regulation framework and there is no willingness from the LOATA Cooperative.

Further, the exploitation pattern coupled with the subsequent failure to re-invest resource rents and other returns into capital investments spells doom on the economic future of Mukogodo and the neighboring areas. The rush to satiate a growing demand for red-sand within Mt. Kenya region has accelerated the extraction rate. Though the resource exists in abundance today, in the long run production is likely to decline in volume and returns are likely to fall. The natural cycle through which the resource is regenerated by weathering is a slow process that is not likely to keep pace with rapid exploitation.

4.7.2.2 The Intervening Factor of Politics in Control of Communal Resource Extraction

From the study findings, local politicians in Laikipia North have a role in the control of extraction of sand. It also emerged through Focus Group Discussions (FGDs) that local politicians influence the direction of the Cooperative’s internal activities. The politicians influence the election of directors in the cooperative and therefore enable the directors to exercise exorbitant control over the communal resource. FGDs also revealed that local politicians have construction companies and sand-sale sites and therefore take advantage of their influence in the region to exploit the resource without restrictions. Local council of elders also has an influence on what the cooperative does. The Cooperative is therefore not an independent actor.

The combination of political control and LOATA cooperative creates an enclave dominated by a close circle of individuals who determine the prices, wages and the patterns of red-sand exploitation. Information obtained indicates that a previous cooperative chairman was arraigned in court to account for the loss of eight million shillings in unclear circumstances. This is an indicator of a form of resource capture by an informally established network of patrons. The situation therefore calls for a strategy to reformulate the relations between the resource trustees and the community from one of clientelism to a horizontal level relationship where the community can define the regulative framework and secure its rights by virtue of resource ownership.

4.7.3 Challenges and Opportunities of Balancing Ecological and Economic Priorities in Extraction of Communal Resource Extraction

One of the major challenges of balancing ecological and economic priorities in communal resource extraction that surfaced from the research findings was the failure of resource-exploiting agent to offset the ecological cost in the run to satiate demand that is on an ascending path. Sustainable resource extraction can be achieved if resource rents obtained are expended towards payment of ecological cost incurred in the process of extraction. The major problem in Laikipia North is that the resource trustee either by ignorance or by deliberate action has not initiated any conservation program funded from resource rents. The environmental cost incurred as a result of red-sand exploitation should be offset by the beneficiaries of the proceeds in this generation to avoid transferring that cost to subsequent generations.

The second cause of an imbalance in economic and ecological priorities in communal resource extraction is the failure to channel resource rents into alternative income generating investments. It is important that resource rents be invested in new avenues for financial gains so as to lessen the dependence on natural resource. The study revealed that proceeds from sale of red-sand have not been invested in any new projects that can create employment and also form a source of income for the population of Mukogodo Area. As such, the economic welfare of the community is largely dependent on the extraction and sale of red sand. The concentration of economic activity on a single

resource and the subsequent dependence shifts focus from ecological destruction and directs it to community wants and needs.

The third challenge of achieving harmonized economic and ecological communal resource extraction is the lack of a coherent resource exploitation policy framework. Though this kind of resource is communally owned, there is need for a comprehensive framework of guidelines that can direct resource exploitation, benefit redistribution and also provide for environmental conservation. Currently, as the study findings show, regulation is haphazard and largely dominated by the cooperative. The Cooperative serves as an umbrella body for communal activities including overseeing the community ranches. The objectives of sustainable development cannot be achieved in such a set up where decision making is the reserve of a few. Without a coherent policy framework vices such as corruption and mismanagement are inevitable. Such a framework cannot be constituted by the Cooperative. There is therefore the need to constitute a Community Management Committee under which the activities of the cooperative can be placed. This will create a system of checks and balances and reduce the vulnerability of the community to the excesses of the LOATA Cooperative.

Other than the challenges discussed above, there are opportunities provided by the abundance of the resource that can be captured to promote sustainable development in the area. The alternative investments that can be funded from such a resource would include agricultural entrepreneurial activities. This could be by using the resource rents to set up a breeding center and procure livestock breeds that can be used to change the existing breeds into ones that can sustain livelihoods. This will empower the citizen individually and the community as a whole. Through this kind of program, the community can finally adopt a fully settled lifestyle and reduce the elements of nomadism that are inherent in the area. This will create the impetus to develop the land and even to conserve the environment.

Similarly, the resource rents obtained are enough to install a community water project. This water can then be used to irrigate community land thereby creating a new source of income and also ensuring food security for the inhabitants of the area. Other than drawing water from distant rivers which is also possible but more expensive, resource

rents can also be used to excavate dams where the land can be irrigated and still create an alternative source of livelihood.

CHAPTER FIVE

WAY FORWARD: TOWARDS SUSTAINABLE COMMUNAL RESOURCE

EXTRACTION

5.1 Introduction

In this chapter, a summary of the major findings is presented. Conclusions and Recommendations for sustainable resource extraction of red-sand in Laikipia North have also been discussed. The chapter concludes with a suggestion for further research.

5.2 Summary of Findings

This study was founded on the observation that poverty and general underdevelopment persist in areas endowed with communal resources yet exploitation continues. It differed from other studies in that previous investigations were geared towards state-led resource extraction and involved scarce but highly valuable resources such as oil while this one concentrated on communal resource extraction. The background also highlighted that economic development has been taking place at the expense of ecological wellbeing and this has resulted into widespread environmental degradation with adverse effects. This therefore raised the question; what is the contribution of communal resource extraction on economic development in resource rich-areas?

5.2.1 How Sand Harvesting has Influenced Economic Development in Laikipia North

A detailed investigation into the influence of sand extraction on economic development in resource rich areas such as Laikipia North was necessary. The study also sought to examine how extraction and regulation are situated within the politics and economics of intra-society, state-firm dynamics and the ecological patterns of communal resources. Additionally, the study investigated the challenges that are responsible for the imbalance in economic and environmental priorities in communal resource extr

Concomitantly, the study identified the opportunities available in sustainable exploitation of communal resources such as sand in Mukogodo area.

The findings obtained raised a number of factors that hinder potential economic development of Laikipia North from sand harvesting. One, there was failure of forward linkages that should emanate from the effect of resource extraction. The findings indicate that sand extraction has not resulted into any new investment that can create alternative sources of income and employment within the locality. Secondly, failure of forward linkage was also evident from findings showing that the extraction of red-sand has not raised the demand for non-tradable goods like rental houses. Local rental housing was used as a proxy for other non-tradable goods that are put in place when an area becomes prime for intensive economic activity.

Equally, resource rents obtained from communal resources have not been used in any way to subsidize the enduring infrastructural delink. There were no observable attempts to face-lift the dirt roads even within *Ilpolei* Center. Critical infrastructure such as community water pipeline and health facility is still missing yet huge resource rents are earned.

Further, findings also point to failure of backward linkages leading to stunted economic development. In this study, LOATA procurement records of tradable goods and services that were sourced from within the locality were examined. The findings indicate a weak and insignificant demand for local goods and services. The conclusion reached is that communal resource extraction did not raise the demand for local goods and services in a significant manner that can substantially affect economic relations.

5.2.2. The Regulatory Framework that Regulates sand Extraction, Benefit Redistribution and Ecological Impacts

In regard to regulation, findings indicate that there is a deliberately designed dominance of the LOATA cooperative in control of sand transactions. Participation of the people has not been factored in the decision making processes of the cooperative yet the cooperative acts as the peoples' trustee. Accordingly, there is an existing patron-client relationship that creates an enclave dominated by politicians and the propertied who do not even reside within the locality. There lacks a clear regulatory framework that can help redistribute the resource rents as well as direct community development from the pro-

ceeds obtained. In the absence of such a framework, ecological degradation is inevitable.

5.2.3 Challenges and Opportunities in Balancing Environmental and Economic Priorities in the Extraction of Communal Resources

In relation to the challenges of achieving a balance between economic and ecological priorities, three major challenges resulted from the findings. One, the failure of exploiting agents to offset ecological cost from resource rents. Second, failure to channel resource rents into alternative investments that can generate income. Thirdly, there is lack of a coherent communal-resource extraction policy framework.

Nevertheless, there are opportunities through which progressive sustainable development can be achieved. The great potential provided by the abundance of sand in the area and its scarcity in neighboring sub-counties can be converted into development. Given that there is an assurance of market, rents from the resource can be invested into hybrid-breeding of local livestock and also in agricultural projects to create new sources of income and lessen the growing dependence on income from sand extraction. This will also create the impetus for environmental protection because the residents will be able to focus on permanent settlements.

5.3 Conclusion

The study concludes that the underdevelopment that persists in Laikipia North is largely a result of improperly regulated extraction of communal resources. The study found that sand generates notoriously low rates of financial returns for the constituents of Laikipia North. Common problems shared by the inhabitants include rampant unemployment, poor housing and food insecurity in addition to the general low economic development. In addition to inequitable distribution of economic benefits, there has arisen the inevitable bio-physical impact of rapid sand extraction. The ecological costs of sand extraction have been borne by inhabitants despite them earning peanuts from the trade. Today, seasonal rivers that used to flow through Laikipia North to Lorian Swamp such as *Ewaso-ngiro* are faced with the threat of permanent displacement and riverine vegetation has been cleared to pave way for red-sand harvesting.

The case of Laikipia North depicts perennial inability of the state to direct industry towards economically efficient extraction of communal resources. It also points to the inability of the state to control ecological degradation. Though potential for development exists, there has not been any successful formal attempt by the County government of Laikipia to consolidate sand harvesting under an integrated policy framework. The relational dynamics between the County government and the construction companies that drive economically and ecologically exploitative patterns are unregulated free-flows hinged on cess fees and permit revenues. These systemic relations are largely generative of the observed economic and ecological failings in resource rich areas.

I reckon that without a complete reformulation of the existing systemic relations, without the indigenous communities claiming ownership and taking back control of communal resources through integrated decision making processes and enactment of regulatory frameworks, and without the destruction of the existing societal enclaves controlled by a few powerful individuals, sustainable development of areas endowed with communal resources will remain an elusive endeavor.

5.4 Recommendations

Needless to emphasize, there is dire need to reformulate the existing relations in the interest of directing communal resource extraction towards sustainable development. The following are the key recommendations proposed based on the study findings.

5.4.1 Recommendations to the County government and the County Assembly of Laikipia.

The study recommends the enactment of a Benefit Sharing Regime to regulate relations between the actors in communal sand extraction and the community of Mukogodo area within the five Group Ranches of Makurian, Mlupusi, Kurikuri, Munishoi and *Ilpolei*. This regime should be an agreement that also regulates the ecological impact of communal resource extraction. The BSR will be significant in guiding sustainable development.

The study also recommends the enactment of a concrete development policy plan at the County level targeting areas where land has not been adjudicated or where communal land ownership obtains. This is because areas that have not been adjudicated are largely under the control of communities. This will ensure the areas develop at an even pace with other areas. The major reason why such areas like Mukogodo and the larger Laikipia North lag behind in development is because the resources within these areas are either mismanaged or exploited to the benefit of a few. It is therefore paramount that the use of resource rents from resources such as sand be factored in the County Development Plan and be utilized to develop these areas. The county government of Laikipia needs to expand its role in the management of sand extraction from that of a revenue collector and include in its role development policy programs.

The study established that the cooperative managing communal resources in Laikipia North is largely ungoverned and the citizen's are not fully conversant with their rights in the cooperative. For instance, most of the respondents were not aware that they should be paid dividends from the cooperative and that they have the right to remove from office any of its board members. The study therefore recommends the enforcement of compliance to the Laikipia County Cooperative Societies Act. of 2014. Under the same token, the study recommends that the County Cooperatives' office take initiative to educate members of cooperatives on profitable investment, development and management of cooperatives. This will equip the citizens with knowledge on how to transform earnings from cooperatives into communal development.

5.4.2 Recommendations to LOATA Cooperative

The Cooperative should be managed by knowledgeable individuals who can be able to use its income in a way that it can develop the area. It's therefore important that the cooperative be managed by professionals majorly in management and accounting areas. This will ensure proper planning and use of income from red sand extraction and sale. This management should work hand-in-hand with the board of directors. The separation of management functions from the boards overall work will ensure proper functioning of the cooperative. This will also create room for accountability.

5.4.3 Recommendations to the Community

The study established that there was reluctance of the community to take action against the cooperative board. The society can either fold its hands watching as things go wrong or intervene. This being a community where a structure exists headed by elders who are involved in key decisions, it is important that the community form a development committee that can be involved in the appropriation of community wealth. This committee can be involved by the county government as its consultant. The study established that an ad hoc committee was formed to resolve the previous case of a cooperative worker stealing five million from the cooperative. The committee prosecuted the worker in a court of law. Such a committee can be made permanent so that it can represent the interests of the community.

5.5 Proposed Area for Further Research

The study recommends an examination of the contribution of group ranching in the economic development of Laikipia North. Other than the five ranches around Mukogodo used in the study, there are other group ranches dealing with economic activities in the North. These include Lekurruki, Iingwesi, Tie Mamut, Musul, Kijabe and Nkiloriti among others. These ranches are peculiar because they operate eco-lodges, conservancies and tourist sites. It would therefore be important to expand the scope of this study so as to encompass such ranches which are under community management.

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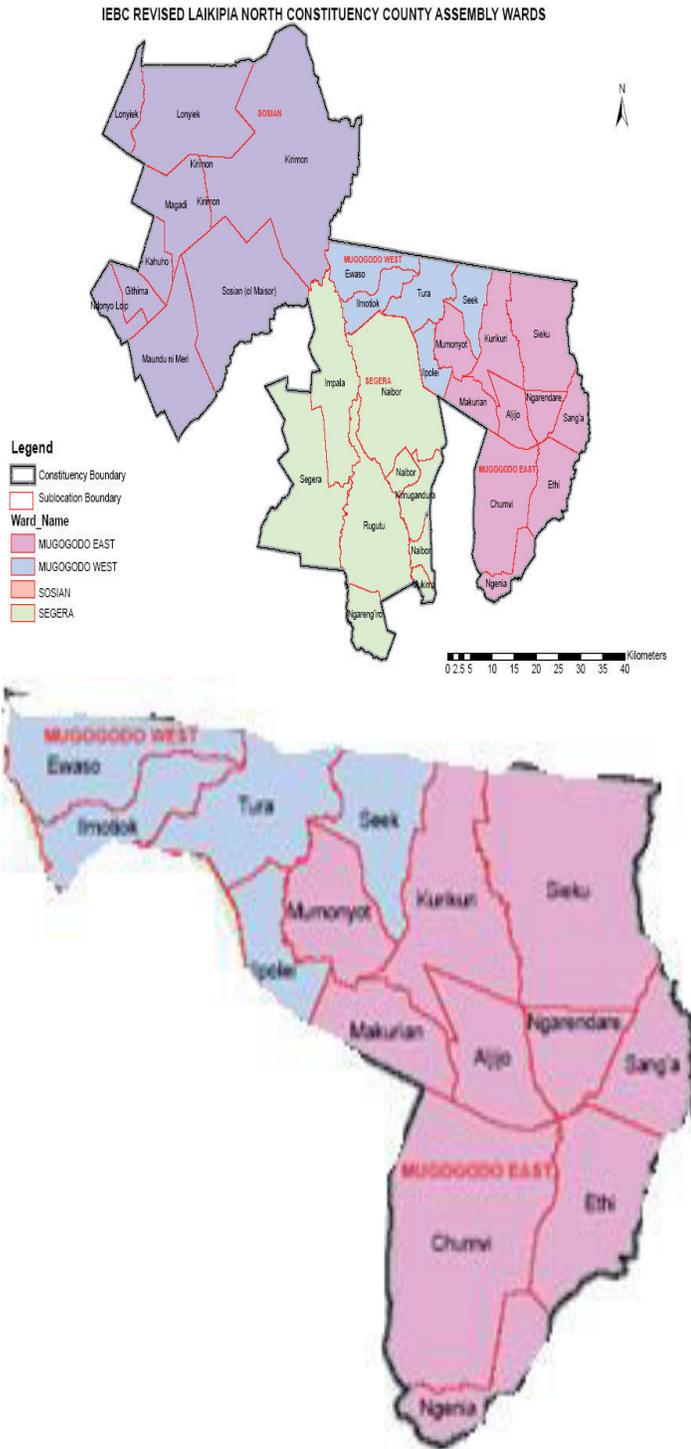
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Appendix I: Map of study Area



Source: IEBC (2012) with slight modification.

Sr. no	1A1
Date	
Completed	

Appendix II: Key Informant Interview Schedules

LOATA Cooperative Society Representative(s)

1. Are you a resident of Mukogodo/Laikipia North? If Yes in , how long have you been a resident of Mukogodo/Laikipia North? Record no of years.....
2. What were the major objectives of establishing this cooperative?
3. Is the cooperative in-charge of managing income from the sand harvested? If yes , how does the cooperative collect income?
4. What goods and services does the Cooperative Procure from Mukogodo area? (Records of procurement)
5. Are the cooperative’s functions linked in any way with Group ranching? If yes , how are they linked?
6. Are there any income-generating or community projects that have been initiated or funded by the cooperative using sand proceeds?
7. What is the average volume of sand harvested per year in Mukogodo? (Check Historical Records to record trend.)
8. Has there been any income or benefit-related complain or litigation to the cooperative from the members? If yes, what was it about and how was it addressed?
9. Is the cooperative concerned with environmental problems resulting from sand harvesting? If yes, what measures has it put in place to ensure sanctity of the environs within which sand is collected?
10. Is the County Government of Laikipia involved in the regulation of sand extraction? Yes/No. If yes, how.....(Notes)

Sr. no	1C1
Date	
Sex	
Resident	
Completed	

Sand Loaders/Buyers/Transporters

1. What is the highest level of education you have attained?
2. Is sand loading your main source of income?
3. How much on average do you make in a day as a loader?
4. Who determines the wages for loading?
5. What is the price of one lorry of sand? (B)
6. What implements do you use in extracting and loading?
7. How would you describe demand for local rental houses today compared to 5 years ago?
8. Do you have school going children who attend school within Mukogodo area?(Go to 10 if yes or skip to 11)
9. Do they receive any bursaries from LOATA Cooperative?
10. Have you ever participated in a strike, a riot, a demonstration related to sand harvesting? If yes, what was it about? Record verbatim.....

Sr. no	1C1
Date	
Sex	
Resident	
Completed	

Environmental Officer/NGO Representative/Group Ranch Representative

1. What do you think are the challenges of ensuring ecological preservation in sand harvesting areas?
2. What specific benefits does the Mukogodo community stand to gain in balancing sand extraction with ecological preservation?
3. Who is responsible for ensuring the sanctity of the environment in areas under communal tenure systems?
4. Are there any measures you are aware of that have been undertaken to ensure to stop environmental degradation resulting from sand extraction in Mukogodo?
5. In what ways do you think the cooperative can contribute to environmental protection?
6. What would you suggest as the best form of regulation that will ensure environmental protection and at the same time allow profitable extraction of sand?
7. Are you aware of Benefit Regime Systems? Do you think such a regime could be applied in Mukogodo area?
8. What role do you think the CGoL should play in regulating the sand business?
9. In your opinion, how should the environmental cost of sand extraction be shared?

Sr. no	1C1
Date	
Completed	

Appendix III: Focus Group Discussion Guide

Women and Youth

1. Are women involved in sand harvesting?
2. Does the cooperative provide bursaries for school going children? How much are bursaries worth if so?
3. Do women and youth groups obtain loans from the Cooperative?
4. Does the cooperative influence local politics ?
5. Do the officials of the cooperative or the local politicians own construction companies linked to sand harvesting in Mukogodo?
6. What goods and services does the Cooperative Procure from Mukogodo area?
Record suggestions.
7. In your opinion, is sand mining in this area destructive to the environment?
8. In what ways do you think the cooperative can empower women and youth from sand proceeds?
9. Does the cooperative disclose its annual income? Are you satisfied with the disclosed amount if any?
10. What development projects and Infrastructural installments has LOATA Cooperative initiated in the last 10 years?

APPENDIX IV: HOUSEHOLD SURVEY QUESTIONNAIRE

Sr. no	IC1
Date	
HHno.	
Respondent's Sex 1=M,2=F	
Resident 1=Yes,2=No	
Completed 1=Yes,2=No	
Callback :Date Time	

Section A: General Questions

No.	Question	Response	Comments/Notes	Coding Tab
	Age	1=18-25 2= 26-33 3=34-41 4=41-48 5=49-54 6=55+ 7=Other..... 97=No answer 98=Don't Know		
	Highest Level of education	1= None 2= Primary 3= Secondary 4= College 5= Undergraduate 6=Postgraduate 7= Other..... 97= No answer 98=Don't Know		
	What is your main source of income?	1=Sand harvesting 2= Farming 3=Livestock Keeping 4=Honey harvesting 5=LOATA Coop 6=Other (Record actual source)..... 97=No answer		

Section B: LOATA Cooperative and Economic Development

No	Question	Response	Notes/commen ts	Coding Tab
	Are you a member of the LOATA sand Cooperative?	1=Yes 2=No		
	If yes, for how long have you been a member?			
	What is the main economic activity in Mukogodo area?	1=Sand harvesting 2= Agriculture 3=Livestock Keep- ing 4=Honey harvest- ing 5=LOATA Coop 6=Other (Record actual source) 98=Don't Know		
	What are the major challenge facing the main economic activity in Mukogodo area?			
	Do you or a member of your family living in this household work in the sand mines?	1=Yes 2=No		
	If yes in , what is the average income per day?		
	What is the household's monthly expenditure?			
	What forms the main expense in the household's monthly expenses?			
	Does LOATA cooperative hold official elections?			
	Do you pay any membership fees or contributions to the cooperative?	1=Yes 2=No		
	If yes, how much per year?		
	Do you know of any income generat- ing projects or community projects initiated by the Cooperative?	1=Yes 2=No		

	If yes, list and explain.			
	Have you ever attended the Cooperatives members' AGM?	1=Yes 2=No		
	Do members of the cooperative receive any dividends from the cooperative?	1=Yes 2=No		
	If yes, how much per year?		
	Have you or your children ever benefitted from LOATA Cooperative bursary kitty?	1=Yes 2=No		
	If yes, how much was the bursary?		
	In your opinion, in what ways has the cooperative empowered women and youth in Mukogodo using proceeds from the sand business?	1=Loans 2=Grants 3=Facilitating training 4=None 5=Other 98=Don't Know		
	In your opinion, do you think the Cooperative could do more to improve the economic welfare of the community?	1=Yes 2=No		
	If No, why do you think so?			
22.	What is your response to the statement that "demand for local rental houses is higher today compared to 5 years ago?"	1=Strongly agree 2=Agree 3=Disagree 4=Strongly Disagree		

Section C: Sand Regulation and Environmental Issues

No.	Question	Response	Notes/Comments	Coding Tab
	Who determines where sand is to be extracted within this area?	1=Cooperative 2=Loaders choice 3=local authority 4=Council of elders 5=Other 98=Don't Know		
	In your opinion, has sand mining had negative ef-	1=Yes 2=No		

	fects on the environment in Mukogodo area?			
	If yes, which effects?		
	In what way do you think the cooperative can contribute to environmental protection?			
	Have you ever participated in a demonstration or a boycott seeking redress of any issues related to the management of the cooperative?	1=Yes 2=No		
	If yes in 28, were they related to environmental degradation?			
	If No, in 28 what was the major issue that led to the demonstration?			
	Are there any measures you are aware of that have been undertaken to stop environmental degradation resulting from sand extraction in Mukogodo?			
	In your opinion, what role should the County Government of Laikipia play in regulating sand business in Mukogodo area?			
	How can the community contribute to environmental protection in Mukogodo area?			