

**AN ASSESSMENT OF THE CONTRIBUTION OF NATURAL RESOURCES USE
CONFLICT TO POVERTY ALLEVIATION WITH SPECIAL REFERENCE TO SAND
HARVESTING IN MAKUENI COUNTY - KENYA**

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ABSTRACT

Many studies confirm conflict-poverty nexus for high value natural resources but scanty information is available on the low value resources. This study, therefore, examined one such low value resource – sand. The specific objective of this study was to assess the contribution of natural resources use conflict to poverty alleviation with special reference to sand harvesting in Makueni County. This study mainly employed descriptive and historical designs. The study used a conceptual framework borrowed from Neo-Malthusian Theory and Resource Curse Theory and Poverty Theories. The study sample comprised targeted 420 sand harvesters. Key informants in the study included sand brokers, sand transporters, area chiefs, OCPD, NEMA officers, landowners, community elders and County Commissioner. Data collection was done using questionnaires, interviews, focus group discussions and observation. Presentation of data was done using both quantitative and qualitative approaches. The study established that conflict contributed to the increase in poverty in Makueni County. Test for variable measuring poverty such as lack of opportunity, lack of capability, security and empowerment showed a positive correlation. To reduce poverty as a result of sand harvesting conflicts, the study suggests that youth in Makueni County engage in alternative means of earning income such as livestock rearing and horticulture.

(200 words)

Key words:

Sand harvesting, poverty alleviation, resource use conflicts

INTRODUCTION

1.1 Background to the Study

Natural resources exploitation is not only associated with conflict, it is also linked to poverty. Of the six billion people living in the world today, more than one billion barely survive on less than one Dollar a day (Fosu, Mwabu & Thorbecke, 2009:1; Ikejiaku, 2009:15). Interestingly, over 60% of the world's poorest people live in countries rich in natural resources which have high value on the market and which generate wealth through their exploitation (Khodeli, 2009:5). African continent is the most indulged with natural resources but also has the poorest people (Bujra and Solomon, 2004:14). Karimi (2003:61) has argued that conflicts negatively impact on life chances and livelihood of households and communities as a result of the destruction caused by conflicts.

Very few studies have been done in relation to low value resources in order to understand how they can be exploited while avoiding poverty. An example of such low value resource is sand. Sand is a natural resource that is increasingly becoming important, not only in Kenya but the whole world.

Makueni County with 64.3% of its population living in absolute poverty was ranked number 178 out of 210 in poverty index (Government of Kenya, Ministry of Devolution and Planning, 2013:95). According to the Government of Kenya, Ministry of Planning (2005:35) the youth in Makueni County accounted for 224,335 or 25.4% of the total population of 884,527 in the 2009 Population and Housing Census. The County, being well endowed with sand can use sand harvesting as a means of youth employment, which in turn will help in alleviating poverty.

1.2 Statement of the Problem

Studies on natural resource use conflicts and poverty suggest that conflicts and poverty remain intrinsically intertwined and that resource use conflicts have been the 'single most important determinant of poverty and human misery in Africa, affecting more than half the countries of the continent during the past two decades' (Draman, 2003:5).

In Kenya, conflicts associated with sand harvesting have mainly affected Makueni County, where in the recent past, there has been an increase in injuries, maiming, destruction of property and deaths, factor which call for urgent intervention. Despite this knowledge, however, there have been no efforts in terms of research to understand the significance of these conflicts in influencing poverty alleviation initiatives.

1.3 Research Objective

The objective of this study was to assess the contribution of sand harvesting conflicts to poverty alleviation initiatives in Makueni County.

2.0 LITERATURE REVIEW

Prior to the 1980s, the conventional wisdom was that natural resource abundance was a contributing factor to economic growth. Rostow (1971) argued that natural resource endowments would enable developing countries to make the transition from underdevelopment to industrial "takeoff" just as they had done for countries such as Australia and the United States.

Resource use conflicts have been touted as the 'single most important determinant of poverty and human misery in Sub-Saharan Africa, affecting more than half the countries of the continent during the past two decades' (Jalloh, 2013:67). Though sand is an important natural resource, there is general lack of information on its economic potential. This has been attributed to the fact that sand harvesting is considered as informal and hence is not mainstreamed as a major national economic activity (Bannon and Collier, 2003:46).

The importance of small scale mining in job creation and poverty alleviation, contrast significantly with findings by some scholars who have argued that that small scale mining (where sand mining falls) in their current form cannot be regarded as contributing to sustainable livelihoods, but they provide emergency poverty relief and daily sustenance and as such there is usually no net generation of wealth (Hoadley and Limpitlaw, 2004: 1). Similar views are echoed by Agustina *et al.*, (2012:30) who opine that artisanal and small scale mining (ASM) is often a short-term coping mechanism in the face of shocks and stress and is a hand-to-mouth activity and does not promote long-term sustainability. The benefits provided by these activities are outweighed by the cost.

The Culture of Poverty Theory whose proponent is Oscar Lewis (1961) and Edward Banfield, suggests that poverty is created by the transmission over generations of a set of beliefs, values, and skills that are socially generated but individually held (Karger and Stoesz, 1998:142). Poverty is a subculture of poor people, where they develop a shared set of beliefs, values and norms for behaviors that are separate from but embedded in the culture of the main society. Once the culture of poverty has come into existence it tends to perpetuate itself. By the time slum children are six or seven years old, they have usually absorbed the basic attitudes and values of their subculture. Thereafter, they are psychologically unready to take full advantage of changing conditions or improving opportunities that may develop in their lifetime (Bradshaw, 2006:6)

Sand harvesting in Makueni County presents an opportunity for the youth in the County to change the conditions and improve the opportunities of their life. The County is said to have 64.3% of its population living in absolute poverty (Government of Kenya, Ministry of Devolution and Planning, 2013:95). Instead of the youth in the County getting embedded in the culture of the main society, they can take advantage of the County's endowment with sand and change their fortunes.

3.0 Research Methodology

This study used both descriptive and historical research designs. In advocating for descriptive research design, Mugenda and Mugenda (2003:160) and Kombo and Tromp, (2006:71) argue that descriptive research determines and reports the way things are. Historical research design is the study of a problem that requires collecting information from the past (Mugenda & Mugenda, 2003:166 and Okoth, 2012: 37-55) view. Given that historical the design aims at arriving at conclusions concerning causes, effects or trends of past occurrences that may explain present events and anticipate future events, the design was chosen mainly because in Makueni County, sand harvesting remains illegal since 26th April, 2013.

The study population entailed all those people involved in sand harvesting in Makueni County. Kombo and Tromp (2006:77) define population as the entire group of persons or elements that have at least one thing in common. The population thus involved: key informants in the study namely sand brokers, sand transporters, private land owners bordering the rivers, Makueni County

Commissioner, area chiefs, area OCPD, NEMA officer, community elders and Makueni minister for environment and natural resources.

To come up with the study sample, sand harvesters were grouped into eleven clusters based on the site they did their harvesting. Snow ball sampling was used to identify the harvesters based on the previous known sand harvesting site. The study also used purposive sampling to select key informants. The main strength of using purposive sampling lies in selecting information rich cases for depth analysis related to the central issues being studied. (Babbie, 2001:179; Kombo and Tromp, 2006:82).

A pilot study done on 8th of December, 2014 identified eleven sites where commercial sand harvesting was done in Makueni County. From each region, snow ball sampling was used to select respondents (sand harvesters) to be interviewed. As suggested by Kasomo, (2006:31), Kombo and Tromp, (2006:78) and Gay (1987:119) on standards rules of sampling in the descriptive design, the sample was picked from 10% of all people involved in sand harvesting. Using this formula, a sample of 420 respondents was arrived at.

A two days detailed reconnaissance of the study area was undertaken to familiarize with the study area. The study collected two categories of data, primary and secondary. Primary data were collected through questionnaires, interviews, focused group discussions and observation. Sources of secondary data, which is data collected by someone else and which had already passed through the statistical process (Kothari, 2004:95), included desktop reviews, documentation, archival records, former interviews and previous direct observations.

The questionnaire items were dichotomous, some requiring yes or no answers, multiple choices or having alternative answers listed or open ended questions. Out of the 420 questionnaires issued, 360 were fully filled. This showed a response rate of 85.71% which was considered sufficient for analysis. Mugenda and Mugenda (2003: 83) have argued that the response rate of 50% is adequate, 60% is good and 70% and over is very good.

In this study, the interviews were conducted with sand transporters, sand brokers, area chiefs, OCPD, County commissioner, NEMA officer, private land owners, community elders, and Makueni minister for environment with the aid of an interview schedule. This offered a possibility of modifying line of inquiry, follow up interesting response and investigating underlying motives. The focus group discussions were carefully planned using an unstructured guide. A group consisted of 6 people who shared common characteristics such as age, years of involvement in sand harvesting, and region harvesters come from. Two focus group discussions were conducted: one comprised of men sub-brokers and the second comprised of women involved in sand harvesting at Kasikeu and Mangara where majority of sand harvesters come from.

The primary goal of observation in this study was to describe behavior. Naturalistic observation provided the first step in discovering why people behaved the way they did (Shaughnessy *et al*, 2003:88). The observation checklist had three observation items.

To ensure effectiveness of the data collection tools, a pre-test was carried out to test for their validity and reliability. To test for reliability of instruments, a test-retest method was used (Shaughnessy *et al*, 2003:151). This involved administering the same questionnaire twice within an

interval of one week. Validity test checks whether or not the measurement tools collect the data required to answer the research question (Somekh and Lewin, 2005:216). A one day tools validation seminar was held on 19th October, 2014. Six people attended the seminar including one of the supervisors and the researchers' from different universities who were at various stages in their doctorate studies. After going through all the tools and making adjustments, comparative scoring was done. The results showed a reliability coefficient of 0.85, this implies that there was high a degree of reliability of the tools (Mugenda and Mugenda, 2003:96; Shaughnessy, *et al.*, 2003:151).

Selection of research assistants was based on their ability to communicate well and fluency in English, Kiswahili and Kikamba (the local language in Makueni. The research assistants were trained for one day before questionnaire pretesting was done.

To enable data analysis, field data were coded, classified and tabulated so that they were amenable to analysis (Kerlinger, 1973:34). Quantitative data was analysed using the Statistical Package of Social Science (SPSS) – version 17. Two types of analysis were made descriptive (by use of means, modes, percentages and frequencies) and inferential analysis. In qualitative data analysis, content analysis was used to identify emerging patterns using themes that emanated from the response. Integrating qualitative and quantitative methodologies was expected to result into better analysis, better policy recommendations and better action (Carvalho and White, 1997:18).

Ethical consideration was informed scholars such as Kombo and Tromp, and Mugenda and Mugenda (2010:12-15; 2006:106; 2003:190). They advise that participants are given full information about the research including the reasons they were chosen and the implications of their participation. In addition, the researcher ensured that the participants' privacy, confidentiality and anonymity were guaranteed by either concealing their identity or changing their names. Consent forms and a covering letter were provided to participants. As a condition for any research in Kenya, the researcher obtained a research permit from the National Commission for Science, Technology and Innovation.

4.0 FINDINGS AND DISCUSSION

The discussion of the findings was divided into subsections which discuss: (i) sand harvesting and poverty alleviation, (ii) inequalities in benefiting from sand harvesting, (iii) sand harvesting and promotion of cooperation, and (iv) effects of conflicts on poverty.

4.1 Sand Harvesting and Poverty Alleviation

The respondents were asked whether they had benefited from sand harvesting in any way. The study found out that 242 respondent representing 67% indicated that they had benefited from sand harvesting while 118 or 33% indicated that they had not. The findings are as presented in Figure 4.1 below

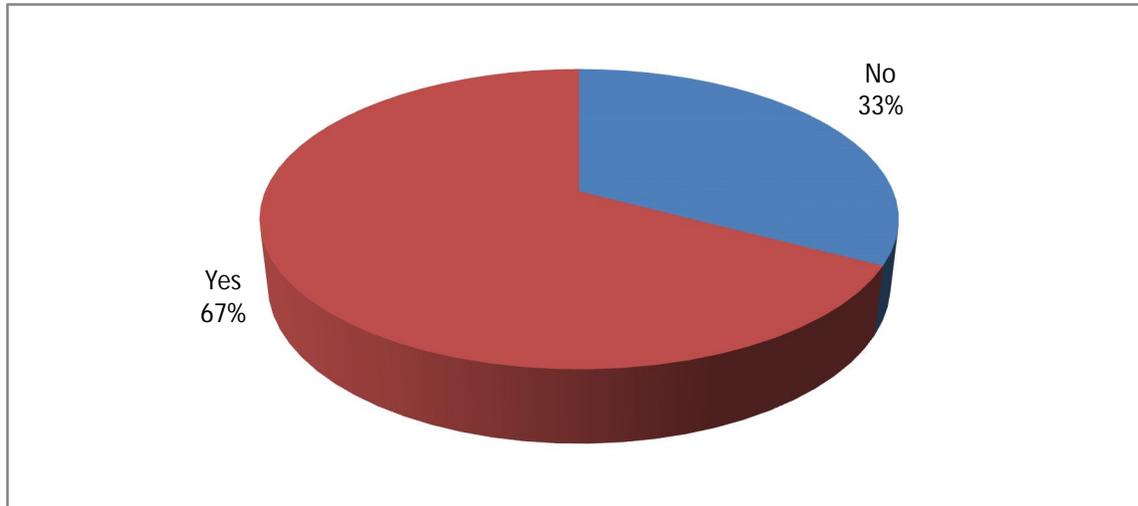


Figure 4.1 Benefits from Sand Harvesting
Source: Field Data, 2015.

Asked to explain their answers, those who had benefited from sand harvesting mentioned that the income from sand harvesting helped them acquire assets such as land for cultivation, acquire motorbikes, start livestock farming, build houses, educate children and start business. Those who mentioned that they had not benefited cited not spending their income generated from sand harvesting wisely. Failure to spend income generated from sand harvesting wisely resonates with Barbier (2003:265) argument that people may not get maximum benefit from natural resources assets if the same are not channeled into productive investments elsewhere (Barbier, 2003:265).

From focus group discussion, a man who said he had benefited from sand harvesting elaborated how he hoped to see his children joining colleges from selling sand. In his own words:

Sand harvesting is not a bad business. I know with the money I'm making, I will be able to send my children to colleges to do marketable courses. All that is required is that I manage the money I get well. All we are asking for is that the sand resource should be well managed and we know the benefits will be more (Focus Group Discussion with Sub brokers at Kasikeu on 4th February, 2015).

Another man commenting on how sand harvesting has assisted him to acquire property explained that:

Before I began sand harvesting, I owned grass-thatched houses. After being in sand harvesting for some time I used the money from sand harvesting to build myself a semi-permanent house. I know of many others who have upgraded their houses from semi-permanent to permanent (Focus Group Discussion with Sub brokers at Kasikeu on 4th February, 2015)

The researcher agrees with the above comments because on average, sand harvesters are paid Ksh.400 per person per lorry that they sell. The groups of sand harvesters can load an average of 5 Lorries in a day per site when the building sector is at the peak. This translates to Ksh.2000 per day.

Interviews and focus group discussions, gave a glimpse on estimate value of sand in Makueni County rivers. Based on the estimates of a community elder whose land touches the river, a distance of a half a kilometer has a potential of giving the community about Ksh.100 million if the sand was sold in the local market. The community elder explained the logic further:

One time we sold sand to a contractor. Based on the lorries we sold on a distance of half a kilometer, we established that if we had sold the same sand by ourselves at market rate, we would have made not less than 100 million Kenya Shillings (Interview with a Community Elder at Musaani on 12th February, 2015).

An official of the Sand Transporters Association (STA) official confirmed the potential of sand harvesting intimated further:

On average if 200 trucks could get their sand from Makueni County and paid levy of Ksh.2000 per day, this will translate to Ksh.400, 000 per day and Ksh.12,000,000 per month. This translates to Ksh144, 000, 000 per year. To this income, I have not included the price of sand to sand to transporters, which is Ksh.14,000 for big lorries (FVZ) and Ksh.7,000 for small lorries (FSR). This is the revenue Makueni County is missing by stopping sand harvesting (Interview with Official of Sand Transporters Association at Mlolongo on 13th March, 2015).

When the researcher shared these figures and concern with the county finance officials, they appeared initially doubtful about the same. However, though these figures were based on estimates, they are a correct representation of what actually happens in the sand harvesting business. It is unfortunate therefore that Makueni County has not benefitted from sand harvesting and that resources from sand harvesting have benefited a few people.

An official of Makueni County complained of how Makueni County missed an opportunity to make 'not less than one billion' from sale of sand to China Road and Bridge Corporation who are the contractors of the Standard Gauge Railway line. The researcher was told that the same is a subject of a protracted court case (case No.91 of 2014) pitting Green Plan Kenya and Government of Makueni County following suspension of sand harvesting through executive order number 1/013 on 26th April, 2013 by the Governor.

The argument that sand harvesting benefits sand harvesters is also supported by a study by Arwa (2013:62), who found out that 48% of the respondents, said that sand was a source of income whereas 43% derived no benefit from sand harvesting. Six percent of the respondents said they benefitted from revenue generated when lorries pass through their farms. Two percent used proceeds generated from sand harvesting to take the children to school.

A NEMA officer and Makueni County officer also supported the argument that sand harvesting is an important activity for development. This is because:

Sand harvesting employs many youth temporarily to load trucks manually. There are also some permanent jobs for lorry drivers and turn boys. Sand harvesting activities are also a source of income for lorry owners and their companies. Other people who benefit indirectly

from sand harvesting are lorry dealers, tyre dealers, petrol stations, lorry spare part dealers and mechanics (Interview with a NEMA Officer at County Headquarters on 18th February, 2015).

The above arguments, on the benefit of sand harvesting contrasts significantly with findings by Hoadley and Limpitlaw (2004: 1) who argue that small scale mining (where sand mining falls) in their current form cannot be regarded as contributing to sustainable livelihoods, but they provide emergency poverty relief and daily sustenance and as such, there is usually no net generation of wealth.

4.2 Inequalities in Benefiting from Sand Harvesting

The respondents were asked to mention whether there were groups benefiting from sand harvesting more than others. The study found out that 254 respondents accounting for 70.6% indicated that there were groups benefiting more than others while 106 respondents, equivalent to 29.4% indicated, that they benefited equally.

Asked to explain why some groups benefit more than the others, they mentioned that brokers are few and share large amount of money among them as they buy at a lower price and sell at high prices. They claimed that the brokers are more connected to many buyers than the sand owners. The study established that there was not a single woman broker. A lady in a focus group discussion explained:

We should do away with brokers. The way this business is structured by the brokers is that they make it difficult for one to know how much they earn from sand. You cannot tell at what price they buy sand from landowners and how much they sell to sand dealers. They make the whole business of sand harvesting obscure. They do this because they do not want any sand harvesting to be regulated for they fear their shady deals will be known. The challenge at the moment is we cannot do without them for they are the ones who have connections with the sand dealers (Focus Group Discussion with Women at Mangara on 27th February, 2015).

An interview with one of the area chiefs further confirmed that brokers followed by transporters are the main beneficiaries of sand harvesting. The area chief further confided that:

On average sand harvesters are paid Ksh.400 per person per lorry. Landowners get Ksh.800 to 1000 per lorry. A broker gets between Ksh.1000 to 2000 per lorry depending on the negotiated price with the buyers. All this money belongs to them. If they can sell say 20 lorries in a day, this translates to between Ksh.20,000 to 40,000 in a day. Unfortunately all this money is misused in the bars and with call girls at Emali, Sultan Hamud and Salama' (Interview with the Area Chief at Kiongwani on 2nd February, 2015).

Whereas the researcher agree with the opinion of the lady in the focus group and the chief, sometimes it was difficult to distinguish the boundary between genuine concern about brokers benefiting more and jealousy from members of focus group. Experience from Grameen Bank microfinance, which targets the poor demonstrates that, it is possible to increase economic return for poor people by changing nothing more than their access to information about better market prices (Narayan, 2002:53).

Concerning the issue that transporters benefit more than the sand harvesters, the area chief lamented that:

Sand transporters are making a kill from our sand because of our ignorance. Imagine they buy sand from us at Ksh14, 000 and easily sell it in Nairobi to contractors at Ksh 60,000. This is rip-off. In addition they don't even help us in fixing the roads and the bridges they destroy (Interview with one of the Area Chief at Kiongwani on 2nd February, 2015).

The sand transporters association official however, denied the allegation that they are the main beneficiaries of sand harvesting arguing that:

People think that we get a lot of money from selling sand and that we are millionaires. On the contrary, we face many challenges and what we make in profits is very modest. We have loans to pay, we have to pay the bribes demanded by the police and county administrators, and we pay county levies and salaries. Apart from these, there are frequent lorry breakdown because of poor maintenance of road and our drivers disappear with daily collection. Sometimes flashflood destroys our vehicle and some other times sand harvesters burn our vehicle. Tell me, with all these expenses what is left for us? (Interview with a Sand Transporter Official at Mlolongo on 26th June, 2015).

The researcher was able to confirm some of the challenges transporters go through from the evidence they provided. Key among them were demand notes from banks for the unpaid loans. The researcher visit at Leacky Auctioneer's yard based at Industrial Area, Nairobi proved that many lorries had been repossessed. Further, sand transporters provided photos as exemplified in plate 4.1 where their lorries had been swept by flash flood as they carried out sand harvesting. In situations like these, insurance companies usually did not pay the transporters for the loss unless they had special cover for what the insurance companies consider an 'act of God.'



Plate 4.1: Sand Transporter Lorry Swept by the Flash Floods
Source: Field data, 2015.

Further, Mwaura's (2013:2) study concurs with the finding that the sand transporters, users, and contractors are the main beneficiaries of sand harvesting. Mwaura (2013) however, blames lack of documentation on economic impact of sand harvesting as contributing to unequal sharing of resources from sand harvesting. He further argues that it is because of lack of data on benefit of sand harvesting why the local leadership keeps on banning sand harvesting.

Further interview with the lorry drivers established that there is a lot of corruption involved in sand harvesting. One lorry driver canvassed that:

Bribery begins immediately one comes from the river (to get sand). The administration police demand a bribe of Sh.500 because they know we have harvested in an area without NEMA approval. Besides, they know sand harvesting should be done between 6 am to 6 pm. From there, we have to pay various roadblocks manned by the police various fees-Malili-Ksh.200, Makutano Ksh 200, Athi River-Ksh.200, and road patrol Ksh.300. At the Mlolongo weighbridge, we pay between Ksh.1000-Ksh.2000. Police officers treat sand transporter as though they are transporting drugs. One early morning at around 5, a weighbridge police officer was nabbed by anti-corruption police officers and by that early hour, he had already collected Sh.80,000 as bribes (Interview with Lorry Driver at Mlolongo on 13th March, 2015).

The above observation on corruption by the police officers is corroborated by recent media report that shows that police officers are receiving as much as Ksh.600,000 in corruption at the Mlolongo weighbridge. The Daily Nation reported that four corporals, a senior superintendent of police, two chief inspectors and 21 constables had received up to Sh.600,000 each a month through mobile money transfers (Daily Nation, 30th May, 2015). This perhaps could account for the explanation why in recent police vetting exercise in Kenya, police officers had a lot of money in their bank account some of which they could not account for.

Another lorry driver based at Mlolongo narrating police impunity and extent of corruption said that police officers sometimes use brutal force and live ammunition on the transporter. He said that:

When they stopped me, (Administration Police) I refused to give them a bribe. They were very angry with me for this. They shot at my lorry and eventually managed to burst three tires. I however did not stop which made them to shoot directly at me. Somehow I managed to escape. When I reported the matter to the senior officers, my case was dismissed because the involved police officers argued that I had stolen sand from the river and I was escaping (Interview with a Lorry Driver at Mlolongo on 13th March, 2015).

The above observation seems to follow a common Kenya police trend where they frequently use brutal force on the citizenry instead of protecting them.

Plate 4.2 shows a lorry, which got an accident as it was trying to escape police and weighbridge official who waylaid it and wanted to shoot at it. The police had alleged that it had carried excess load of sand. The accident happened at Small World area along Mombasa road on 9th July, 2015.



Plate 4.2: Sand Transporter Lorry Accident
Source: Field data, 2015.

Police officers have also been involved in manipulation of the charge sheets so that the offending transporters who carry excess load go scot free. They have also been implicated in reducing sand from lorries, which the courts have kept in their custody at the police station. They do this so that upon request of re-weight by the courts, there will be a discrepancy and cases will be dismissed. They do this at a fee ranging from Ksh.50, 000 to Ksh.100, 000. The attached police charge sheet shows how instead of writing that the lorry required load capacity was 24,000 tons, they wrote 2,400 tons thereby rendering the charge sheet defective. Because of the said discrepancy, the lorry owner and the driver were set free instead of paying the fine of Ksh.400, 000. Figure 4.2 below shows the manipulated charge sheet.

POLICE 5 THE KENYA POLICE POLICE CASE NO. TCR/476/2012.
CHARGE SHEET DATE TO COURT ...17/08/2012
COURT FILE...818..... 10. 823/12

CHRISTOPHER MURIEL MURIEL MURIEL	Names	Identit y K	Sex MALE	Nationality/Tribe KENYAN	Age A	Address
CHARGE	1. USING A MOTOR VEHICLE ON A ROAD WITH A LOAD GREATER THAN THE LOAD SPECIFIED CONTRARY TO SEC.56(i)AS READ WITH RULE 41(2)OF THE LEGAL NOTICE NO.118 DATED 12/9/2008 OF THE TRAFFIC ACT CAP 403 RULES OF KENYA.					
PARTICULARS OF OFFENCE (See Second Schedule of CPC.)	On the 16th day of August year 2012 On the 16 th day of August year 2012 at about 12.17pm along MOMBASA road at Athi River mobile weigh bridge in Machakos County within Easter Province being the driver of motor vehicle Reg No.KBL 026K make isuzu lorry you used a motor vehicle on the road with a greater load than the specified load by carrying 36100KGS instead of the legal limits of 2400KGS an over load of 12100KGS as per the attached Kenya National high way authority weighing report.					
If Accused Arrested	Date of Arrest	Without/With Warrant	Date App. to Court.	Bond or Bail And Amount	Is Application for Summons to issue	

Figure 4.2: Defective Police Charge Sheet
 Source: Field Data, 2015

4.3 Sand Harvesting and Promotion of Cooperation

The study found that 106 respondents or 29.4% of the respondents indicated that there were instances where sand harvesting promoted cooperation while 254 respondents, representing 70.6% indicated the there were no such instances. The findings are as presented in Table 4.1.

Table 4.1 Instances where Sand Harvesting has acted as a Source of Cooperation

Response	Frequency	Percentage
Yes	106	29.4
No	254	70.6
Total	360	100

Source: Field Data, 2015

Asked to explain why it is difficult for sand harvesters to work together, a broker argued that:

There are so many reasons why we can't work as a team. First we are so divided and suspicious of each other. Secondly, each group blames the other for their woes. We also steal each other's sand, brokers short change each other, and we sell sand at poor prices. The same reasons we can't work together are the same reasons which affect our national politics (Focus Group Discussion with Sub brokers at Kasikeu on 4th February, 2015).

The researcher though partly agreeing with the above observation on why sand harvesters cannot work together, partly blames lack of extra resources and busy schedules by the sand harvesters. In support of this argument, M^ckinlay (2004:163) argues that in the day-to-day effort of trying to eke

out subsistence, poor people do not have any surplus resources left to devote to organizational activities. A woman for example who has five children to care for, water and firewood to fetch and a field to tend cannot get time to go to meetings in the neighboring village (M^ckinlay, 2004:163).

However, the real reason why sand has not acted as a source of cooperation and which get support from Heemskerck and Wennink (2004) points to the challenge of social capital among sand harvesters. They explain that social capital refers to the value of connectedness and trust between people. Conflicts destroys the capacities of individuals and communities to influence and destroy social capital through the reduction of trust and trustworthiness, break up social networks and reduce the capacity of institutions to solve social conflicts which also affect disproportionately the poor (Restrepo *et al*, 2008:18). Narayan (2002:15) commenting on social capital has argued that for the poor people, the capacity to organize and mobilize to solve problem is a critical collective capacity that helps them overcome problems of limited resources and marginalization in the society. Justino (2009:11) has however, demonstrated that Conflicts can cause community relations and norms to strengthen during the conflict. These effects can create important community ties to cope with violence.

4.4 Effects of Conflicts on Poverty

To test the extent of the influence of different aspects of conflicts on poverty, the respondents were asked to indicate the extent to which different aspects of conflicts contribute to poverty. This was tested on a five point likert scale of 1-5; where 1 represented 'No extent at all', 2 represented 'Small extent', 3 represented 'Neutral', 4 represented 'Large extent' and 5 represented 'Very large extent'.

A standard deviation of > 1 represented a significant difference in the responses given. The findings are as presented in Table 4.2.

Table 4.2 Effect of Different Aspects of Conflicts on Poverty

Aspects of Conflicts	N	Mean	Standard Deviation
Duration of conflicts	360	3.59	1.328
Intensity of conflicts	360	3.68	1.291
Frequency of occurrence of conflicts	360	3.62	1.308
Parties involved in conflict	360	3.54	1.425

Source: Field Data, 2015.

The findings on Table 4.2 show that all the aspects tested including duration of conflicts, intensity of conflicts, frequency of occurrence of the conflicts and parties involved in the conflicts contribute to poverty to a large extent (mean score between 3.1-4.0). There were significant differences in all the responses given (Standard deviation>1). From the findings, it is clear that the aspect that contributes the most to poverty is the intensity of the conflicts (mean score 3.68) while the least among the factors was parties involved in the conflicts (mean score 3.54). These findings concur with the findings of a study done by Collier (2008) who found out that conflict is development in reverse. The study revealed that conflicts weaken the economy and leave a legacy of atrocities. The

findings are also in line with that of Matovu and Stewart (2001) who found that during conflicts, a lot of properties are destroyed which affects people economically.

Further, to establish the effects of conflict on poverty especially during conflict times, multidimensional variables to test for poverty such as opportunity, capability, security and empowerment were tested in order to see how they influenced poverty. The respondents were asked to indicate the extent to which the conflicts led to different outcomes. Table 4.3 gives the findings.

Table 4.3 Effects of Conflicts on Poverty

Poverty Indicators	Effect	N	Mean	Std. Deviation
Opportunity	Loss of income	360	3.94	1.404
	Loss of property e.g. houses	360	3.03	1.342
Capability	Reduced capability in terms access for education for children	360	3.41	1.591
	Reduced capability in terms access to health	360	3.10	1.564
Security	Injuries	360	4.26	1.178
	Deaths	360	2.36	1.294
Empowerment	Diminished group work	360	3.65	1.372
	Effective problem solving strategies	360	2.72	1.533

Source: Field Data, 2015.

Table 4.3 shows that the conflicts led to injuries to a very large extent (mean score 4.26). The study also found out that the respondents were neutral with the effects that the conflicts led to deaths (mean score 2.36). There was a significant difference in all the responses given (Standard deviation >1).

These findings are supported by the findings by The Office of the Prime Minister (2012:11), which found out that in Makueni County though sand is a major source of income, incidences of conflicts have ‘escalated to critical levels with very heavy implications’. The Standard Newspaper also observed that in some of these conflicts, lives and property worth millions of shillings, including sand transporting lorries had been lost in the conflicts witnessed from time to time (Standard Newspaper, 14th April, 2013).

Justino’s (2009:8) related studies found out that violent conflicts had various effects on various groups. Conflict affects household economic status, wealth and residence. Conflicts also have indirect impacts on local markets, indirect impact on community relations, indirect impact on political institutions and finally indirect impact on economic growth and distribution.

From focus group discussions, there were nonetheless plenty of accounts of people’s economic and social ingenuity and resilience in contexts of enduring poverty and violence. When crisis occurs such as when sand harvesting is stopped, household responded by adopting a three prong approach: expenditure minimizing, changing dietary habits and cutting back purchase of non- essential goods. Those who had substantial savings, spent their saving while retaining their capacity to re-

accumulate their saving by doing casual labor. Those who had neither strong network nor stable earnings were forced to sell their assets and sometimes resort to high interest debts.

5.0 Summary, Conclusion, Recommendations and Suggestions for Further Research

The findings on the contribution of sand harvesting to poverty alleviation in Makueni County showed that 242 respondent representing 67% indicated that they had benefited from sand harvesting while 118 or 33% indicated that they had not. The study found that 106 respondents or 29.4% of the respondents indicated that there were instances where sand harvesting acted as a source of cooperation than conflict. The greatest consequence of conflict was injuries and loss of income.

The study concludes that sand harvesting was an important resource which enabled many young people to come out of poverty. It has also supported people in small businesses indirectly. Proceeds from sand harvesting supported contributed to better living standards in many families. However due to conflicts associated with sand harvesting, harvesters did not realize the full benefits. This exacerbated poverty in the County.

5.2 Recommendations

The study recommends that the county government should do away with middlemen. Sand should be harvested by the county government and kept in a central place where the transporters can buy instead of going to the river. Revenue generated from sand harvesting should be shared equitably amongst all stakeholders. Further, the youth should be encouraged to start alternative income generating activities instead of relying on sand harvesting.

5.3 Suggestions for Further Research

There is need to carry out research to determine the impact of sand mining on the health of the sand harvesters. This is because sand harvesters use basic tools for their activities, work in dusty environments and do not adhere to health and safety standards. This will help determine the health hazards that this activity exposes them.

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