

**ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACT ASSESSMENT OF  
BRICK MAKING IN BUDAKA TOWN COUNCIL, BUDAKA DISTRICT.**

**BY**

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**BU/UP/2021/3372**

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## **Dedications**

I dedicate my research report to my sincere loving parents Mr Ibanda George William  
and Mrs Kawoya Miryeri,

### Declaration

I MIREMBE MARTHA BU/UP/2021/3372, declare that this is my original work except where acknowledged and has never been presented by any institution /university for academic award.

SIGNATURE  DATE 29/08/2024

MIREMBE MARTHA

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### Approval

This is to certify that this research work is for MIREMBE MARTHA, 'Environmental and socio-economic impact assessment of brick making in Budaka town council, Budaka district has been under my supervision and is now ready for submission to the department with my approval.

Signature.......... Date..........

DR. TURYAHABWE REMIGIO

(SUPERVISOR)

### Approval

This is to certify that this research work is for MIREMBE MARTHA, 'Environmental and socio-economic impact assessment of brick making in Budaka town council, Budaka district has been under my supervision and is now ready for submission to the department with my approval.

Signature.......... Date..........

DR. TURYAHABWE REMIGIO

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## **List Of Abbreviations And Acronyms**

NEMA	National Environmental Management Authority
BTC	Budaka Town Council
NGOs	Non-Government Organisation
CWA	Clean Water Act
NWMCP	National Wetlands Conservation and Management Programme
MoNR	Ministry of Natural Resources

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## ABSTRACT

Bricks have been used for the last 5000 years. In Uganda, the practice of brick making is a long standing activity. An investigation on the Environmental and Socio-Economic Impact Assessment of Brick Making was conducted in Budaka Town Council, Budaka District. This was narrowed down to tackling impacts of the brick making on the biophysical environment in Budaka Town Council, raw materials used and the strategies that can be used to combat the negative effects of brick making on the biophysical environment environmental protection in Budaka Town Council. During the study a number of methods for obtaining raw data were used included observation, questionnaire and interview.

The study revealed the following; the raw materials used included clay, water, wood husks, saw husks, soil, glass, grass, oil, money and labour. The products from the industry were blocks, max pans, ventilators, roofing tiles, pompy and half bricks .Both gender took part in the activity, although brick laying has induced economic development. However , it has caused environmental deterioration , damage to human health ,creation of basins that act as breeding grounds for mosquitoes , shortage of raw materials ,destruction of vegetation ,impact on drainage ,loss of biodiversity ,loss of nutrients ,pollution and scenery alteration . Measures to reduce the impacts were not digging deep pits (basins), filling up pits, sensitization, recycling damaged products, tree planting and need to use other sources of energy.

Generally brick making has caused greater impact on the biophysical environment such as alteration of drainage systems, swamps destruction and deforestation. Therefore this calls for government agencies (local officials), NGOs and relevant stakeholders to ensure mitigation measures such as research, massive sensitization to reduce the impact for sustainable development.

## CHAPTER ONE: INTRODUCTION

### 1.1 Introduction

This chapter presents the; background of the study, Statement of the problem, objectives of the study, specific objectives, research questions and the significance of the study, limitations and delimitation.

### 1.2 Background of the study

Bricks have been used for the last 5000 years: the first brick was used in the Middle East between the Tigris and Euphrates Rivers in what is now Iraq. However, their bricks lacked durability and couldn't be used outdoors (Van Lemmen, 2013). The Babylonians were the first to fire bricks from which many of their tower temples were constructed. Later on during the 1200's, the Dutch started making bricks and exported them to England and during the 16th century. American people began to use bricks (Willie, 1989).

Burnt bricks have become the most popular and preferred type of blocks for building in World, with increasing demand currently estimated at 5000 billion per year (Kanamitsu et al., 2002). The availability of such cheaper and readily available local building materials positively enhances housing ownership, construction and delivery (Seyfang, 2010).

Moriarty (1980) identified four main stages in brick making, namely, winning the clay and preparing it, molding/shaping the bricks, sun-drying the green bricks and loading into kilns, and firing the bricks (Medvedev, Pugach, & Gaidukov, 2019). This industry employs low technology in World as manual and crude methods such as hand molding, sundrying and open clamp loading and firing it with logs of trees. In world leading brick producing countries like China and India, clay brick manufacturing is transforming into more energy-efficient production methods now than it was a few decades ago (Abbas et al., 2021).

Because of their methods and magnitude of extracting such materials, in the face of growing population, have significant implications for both environmental, economic

development and societal welfare. Thus, the need to be mindful of environmental preservation while extracting its resources for economic development and human also remains imperative (Ikpe, 2014).

Today, the most promising method of decentralized burnt brick production, vertical shaft brick kiln technology was developed in China (Okereke, Godwin-Egein, & Mordi, 2017). The reason for this transformation is that the modern brick manufacturing process adapts many practices intended to conserve resources and promote sustainability.

According to (Jodi et al., 2008), Brick making is recognized as one of the key contributors to economic growth in many parts of the world such as South Africa, Bangladesh, India and Ghana. Across the globe, bulk of brick production is attributed to unorganized small-scale industry that employs the use of energy inefficient traditional technique (Maithel, 2013). Large-scale brick firing in South Africa, is predominantly by clamp kiln technology, this could be attributable to its relatively simple and economic technological application, in comparison with other firing techniques. South Africa is known to be the largest producer of clay brick contributing over 70% of the total production volume for the Southern African Development Countries (SADC) (Aniyikaiye, Edokpayi, Odiyo, & Piketh, 2021).

In South Africa, about 100 brick making industries manufacture approximately 3.5 billion bricks annually with 73% from Clamp kilns. Contributions from other firing technologies include: tunnel (14%), Hoffman (4%), Vertical Shaft brick kiln (VSBK) (2%), Transverse arch kiln (6%), Bull Trench kiln (BTK) (1%), (O. B. Akinshipe, 2013)

According to (Uisso, 2007), in East Africa, it has been established that brick making activities cause soil, air, and water pollution, and agricultural land and settlement areas are degraded, in Morogoro Tanzania, there is air pollution, land degradation and water pollution due to brick making (Misra et al., 2020). In South Sudan, there is massive destruction of forests and ecosystems due to burning of the bricks (O. Akinshipe & Kornelius, 2017).

In Kenya, brick making was previously seen as an activity for poorly educated or semi-skilled persons in the community (Oteng'i & Neyole, 2007). However, due to rising demand and readily available market, the activity has now blossomed into lucrative commercial venture, with cheaply available human and material inputs. Illiteracy and unemployment have led to activities like brick making which affect the environment negatively in Kenya (Mwakesi, 2020).

Brick making is in the same category with settlement and cultivation which is referred to as threats on the environment (Osoro, Obade, & Gathuru, 2020). Digging of soil for brick making reduces agricultural land and settlement areas, the need for wood fuel to burn the bricks leads to destruction of forest cover thus increasing soil erosion while burning of bricks causes soil and air pollution (Nambatya, 2015).

In Uganda brick making is a long-standing socio-economic activity which has undergone phenomenal growth (Nakamya, 2008). It takes place mostly in valleys dominated by swamp, grassland and forest. Such areas include Kamonkoli, Wakiso and Mpigi among others. It's a low technology enterprise requiring manual labour. The raw materials for brick making include; clay, water, fuel wood, muddy soils and simple tools like; hoes, pangas, grass and transport for marketing (Mumford, 2004).

According to Five Talents International (2006), brick making in Uganda has helped poor people to raise their incomes and standards of living in a sustainable way (Mukiibi, 2015). It provides employment opportunities to both unskilled people and school dropouts. In addition, it is also an informal sector activity which has significant effect on the environment (Education, Division, & McLaughlin, 1989).

Bernard (2002) states that fired bricks are the main building materials in Uganda. Most brick making factories are by the road-side to ease transportation. Bricks are made from sandy loam that is usually found close to rivers. Solid and hollow bricks are made depending on the clay content. Different clays give different colours of bricks after firing, ranging from brown to vivid red (Zhang et al., 2017).

According to Nsubuga (2002), the growing of the construction industry in Uganda made brick making alucrative business (Kayamba & Kwesiga, 2017). However, this

brought an adverse effect on the country's wetlands, making them irreversibly destroyed in the process due to the activities that take place (Gopal, 2013). Wetlands in and around urban centers such as Kampala, Jinja, Mukono, Masaka and Mbarara are worst hit. In Uganda soils are depleted increasing flooding due to brick making activities (Buyinza, Bukenya, Bbale, & Ndemere, 2009)

In Kamonkoli, where this study was conducted, most of the poor people including the youths and school drop outs have been engaged in brick making as a way of reducing poverty. However, this has resulted into over exploitation of the natural environment such as clearing of the natural forest, destruction of wetlands and pollution of water bodies such as Lake Victoria and has also caused health problems in the area. Despite the economic importance of brick making, there was need for environmental conservation (Nakamya, 2008).

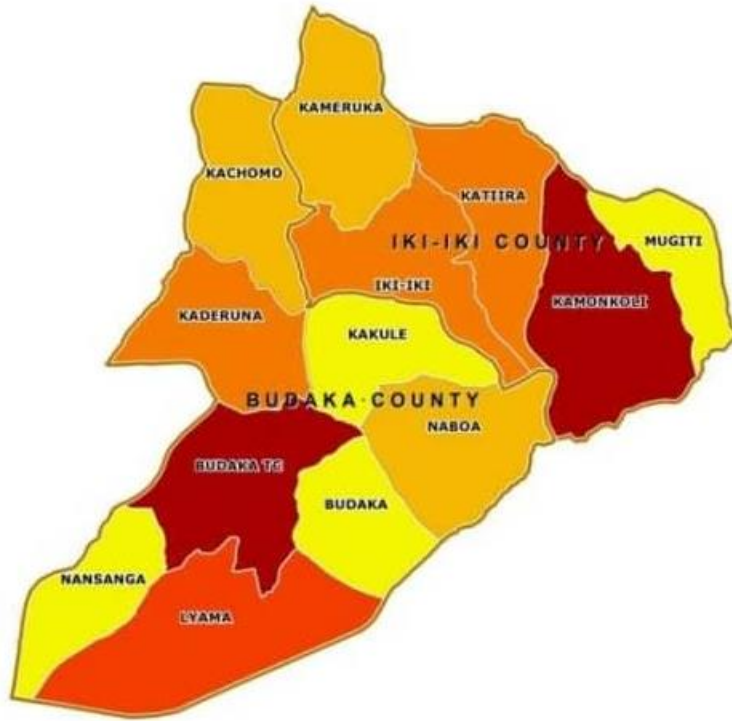
This investigation into brick laying production in World is timely due to its rapid expansion to meet the increasing demand and the environmental consequences on social welfare and ecological stability (Schweiker et al., 2021). The sporadic and unregulated nature of this industrial development, have degraded the ecology, destroyed property worth millions of Dollars.

### **1.3 Back ground of the area of study**

#### **1.3.1 Physical location**

Budaka Town Council is found in Budaka District, Eastern Uganda. The coordinates of Budaka Town Council are 1°04'40.0"N, 34°05'44.0"E (Latitude:1.075007, Longitude:34.095568). Budaka Town Council sits at an average elevation of 1,120 metres (3,674 ft), above sea level.





### **1.3.2 RELIEF**

The relief of Budaka Town council is relatively low and dominated by shallow seasonal wetlands. Its altitude ranges from 950-1300m above sea level with an average of 1150m above sea level. The interfluves are generally flat and the valleys are relatively wide. Budaka Town council's drainage system consists of rivers and swamp, which originate from Mt. Elgon.

### **1.3.3 CLIMATE**

Budaka Town council has two rainfall seasons, the first one starts from march to June and the second one from August to November. In the period of 1929-1970 the Town council received an annual average rainfall of 1470mm with a monthly average of 130.08mm according to the metrological Department. The Budaka Town council has an annual maximum temperature of 29.40 and a minimum of 17.30 for 19240 -1980 periods.

### **1.3.4 VEGETATION**

Budaka Town council's vegetation cover was dominated by savannah grassland and swampy vegetation in the wetlands. The forest reserves have been largely degraded by brick making and rice growing. Most of the swampy vegetation have been cleared to create space agricultural activities like the growing of rice. There has been massive cutting down of tree for timber, fire wood and other related purposes.

### **1.3 Statement of the problem**

Brick making has become a very common activity in many areas in Uganda today. The need for economic development has led to an increase in demand for bricks to carry out construction of industries, schools, hospitals, bakeries and homes. However, this has caused environmental damage.

In Budaka Town council, where poverty and increase in levels of school dropouts, has put pressure on natural resources for many years, this has caused environment deterioration through clearing of forests and swamps to create space for carrying out brick laying. This has led to soil erosion, floods, water pollution and loss of biodiversity. Such effects are environmentally unfriendly (Visso. 2007). This calls for effective conservation of the environment. Therefore, the study seeks to reduce the effects and suggest appropriate mitigation measures.

### **1.4 General objective**

Environmental and socio-economic impact assessment of brick making in Budaka town council, Budaka district.

### **1.5 Specific objectives.**

- (i) To examine the Socio-economic importance of brick making on the people in Budaka Town council.
- (ii) To assess the Impacts of brick making on the biophysical environment in Budaka Town council.

- (iii) To find out the strategies that can be used to combat the negative effects of brick making on the biophysical environment in environmental protection in Budaka Town council.

## **1.6 Research questions**

- (i) What is the Socio-economic importance of brick making on the people in Budaka Town council?
- (ii) What are the impacts of brick making on the biophysical environment in Budaka Town council?
- (iii) What are the strategies that can be used to combat the negative effects of brick making on the biophysical environment in environmental protection in Budaka Town council?

## **1.7 Scope of the Study**

The scope was discussed in terms of the geographical, content and time scope.

### **1.7.1 Geographical scope**

Budaka district is one of the district neighbouring Mbale City in the East, Tororo in the south Bukedi in the north and Pallisa in the west. Budaka district comprises of the following sub counties namely Naboia, Lyama, Nansanga, Kakule , Kaderuna among others

The study was carried out on the impact assessment of traditional brick laying on the environment and social-economic development of people living in Budaka Town Council. The study conducted in parishes like Chali, Macholi, and Namengo, where bricking was growing at a high rate.

The data collection and subsequent report writing lasted for 4 months spanning from January to April 2024.

### **1.7.2 Content scope**

The study examined socio-economic importance of brick making on the people of Budaka Town Council, impacts of brick making on biophysical environment and strategies that can be used to combat the negative effects of brick making on the biophysical environment in the environmental protection in Budaka Town Council.

### 1.7.3 Time scope

The research covered a period of four months from January – April ,2024. This period was selected because of rampant brick making and the business of saling bricks is at its highest peak.

## 1.8 Significance of the Study

The study provided a guideline on the formulation of by-laws regarding better brick making methods which have less effect on the environment.

The study promoted sustainability in the environment of Budaka Town Council, hence catering for the future generation.

And finally, the research enabled the researcher to get the award of a bachelor's degree

## 1.9 Justifications

Brick making activities cause adverse effects on the environment (Uisoo, 2007). The digging of the ground to extract soil creates gullies on the ground (GoK, 2008). Bricks in Budaka Town Council are burnt using wood fuel gotten from the vegetation cover within the county contributing to the loss of biodiversity and total depletion of forests. It is therefore, imperative to relate these variables and how they affect the environment.

## 1.10 Limitations

The research encountered a problem of limited tools especially the secondary sources. The literature on brick making was very scarce making the research difficult.

Inadequate financial resources and Limited time, the researcher faced a problem of shortage of funds and time to carry out the research and negatively affected on the data collection of the research hence reducing the reliability of the findings.

### **1.11 Delimitations of the study**

The researcher ended up borrowing money from her parents and friends around in order to carry out the research on time.

The researcher had to balance between the research study and other important demanding class work, and this was solved by doing the study outside my class time

## CHAPTER TWO: LITERATURE REVIEW

### 2.1 Introduction

This chapter depicts what has been put down in a view or with relation with findings with research related to impact assessment of traditional brick laying on the environment and social-economic development of people. The issues are discussed according to the research objectives.

### 2.2 Socio-economic importance of brick making on the people.

Brick making has helped in diversifying the economy. This is done alongside agriculture in many developing countries (Haggblade, Hazell, & Reardon, 2002). Many farmers have been frustrated with price fluctuations, land shortages, soil infertility and climatic changes. According to (Lopez, 2010), brick making has enabled the peasant farmers to make and sell bricks which has enabled them make the best earnings, build proper houses, improve their standards of living and reduce the levels poverty. This has sustained the economic development in many poor countries.

Brick making provides a source of income to land lords, firewood sellers, brick makers and transporters. It provides employment opportunities to unskilled people and school dropouts in rural areas. It also enables the construction of permanent and aesthetically pleasing buildings (Gudeman, 1992)

The activities of brick making have helped and given a chance to orphans of HIV/Aids to go to school (Organization, 2006). Through the use of profits got after selling bricks, these children are under brick making project in Masaka district, Western Uganda. The project also helped to reduce poverty by employing the rural poor people through making bricks. Also the earnings from bricks have helped to reduce child mortality through medical treatment, nutrition and good care (Giese, Meintjes, Croke, & Chamberlain, 2003).

Bricks made without burning help in the conservation of natural forests. Such bricks include the cemented ones (De Souza et al., 2016). These are made while mixing sand, cement and water then they are moulded and this results in durable bricks. It's an

environmentally sound building technology in the world today because it does not involve clearing of forests to burn the bricks and it also reduces pollution since the bricks are sundried. This fits well in environmental programmes that aim at sustaining economic growth (Vitadello et al., 2001).

Utilization of resources, some soils are infertile which limits the agricultural activities like the growing of crops impossible hence making it a site for brick laying. This helps to use all the resources in the environment with any difficult (Oteng'i & Neyole, 2007). Bricks provide raw materials for construction of houses, this has promoted development in the word since the building process requires bricks which are available in plenty and made from the local materials (Bates, 2014).

### **2.3 Impacts of brick making on the biophysical environment.**

According to World Bank (1996), health problems are caused by brick kilns, which are the prime cause of pollution and this has significantly contributed to increase in global temperatures by about 0.5<sup>o</sup>C (Mazumdar, 2018). Also the use of poor quality fuel, inefficient and out-dated technologies such as Bills, trench kilns are causing significant environmental and health impacts and many people have suffered from illnesses related to pollution such as respiratory system problems (Sanjel, Thygeron, Khanal, & Joshi, 2016).

Informal sector activities such as brick making have significant effects on the environment (Lelia & Maria, 2012). Such activities have caused environmental degradation and results into land degradation through soil erosion, flooding and pollution. This is because improved sector activities are not registered under the government and their impact on the environment cannot easily be identified and mitigated by environmental officers (Karkkainen, 2002).

According to (Mohankumar, 2005), radiation is present in the food we eat, water we drink and in construction materials used to build our homes. Such materials include bricks and these have higher natural radiation levels than houses made of other building material such as wood. High radiation may biologically kill the living cells in

our bodies and in turn cause cancer associated with higher dose exposure including leukaemia, breast, bladder, colon and liver cancers, all of which led to death.

Numerous malaria epidemics have occurred with increasing frequency over the past 20 years and many people are dying of malaria especially in Africa. This has been increased because of development activities such as brick making. The excavation of clay as a raw material used in brick making create pits which are filled with water when it rains. This water becomes stagnant and the pits become breeding places for mosquitoes, especially the Anopheles, which causes malaria to many people living around such areas (Ahmed, Hyder, Liaqat, & Scholz, 2019).

Inefficient production techniques reduce productivity and create excessive wastes. Improper brick and low quality inputs result in a high number of bricks that crack or break during firing and must be discarded. This decreases output and increases wastedisposal costs. Brick wastes require significant amount of space, leaving less landavailable for other socio-economic uses (Mitchell, 1999).

Species may be destroyed, either directly by clearing vegetation, or indirectly as a result of Stress resulting from loss of habitats and other consequences of imbalances in the ecosystems. Loss of species abundance may occur as a direct result of clearing vegetation or indirectly because of a shift in equilibrium of the ecosystem. Such as change in energy flow due to vegetation removal or loss of feeding for birds such as the harmer kop. Deep pits pose a danger to large terrestrial animals such as domestic stock, which may fall in (Bilotta, Brazier, & Haygarth, 2007).

After the firing process, not all the products will become out whole and fit for sale. There are breakages and rejects, these must be removed from the site and dumped elsewhere, fired pieces cannot disintegrate easily and mix up with the soil, this will lead to accumulation and the whole area will be rendered unsuitable for any economic activity (Saggar et al., 2013)

The removal of vegetation again has interfered with interception of rain water by the leaves in addition to eliminating water percolation into the soil. This could lead to loss of moisture in the soil. The presence of water pools could lead to evaporation from the

open waters as compared to evapotranspiration from the vegetated surface. Changes in such surface parameters could lead to changes in moisture flux which could be related to local conditions which govern the rainfall distribution (Prochnow et al., 2009)

The mining of clay itself is a big problem. After mining the clay deep, large pits are left uncovered, rendering the area affected unsuitable for any activity (Bansah, Yalley, & Dumakor-Dupey, 2016). The digging of clay goes deep and on a large area. This is usually on a wetland and as a result of this the water table will fall down hence reducing the size of the wetland. The clay products after drying are hardened by the firing process. The most economical fuel to these clay workers is wood felling of trees will therefore go on and with time the whole area will become bare which decertifies environment (Candeias, Ávila, Coelho, & Teixeira, 2018).

Bricks made in kilns require a lot of wood to burn them. It is estimated that 55% of forest and lands have been threatened with over exploitation to meet the demand for forestry products such as fuel wood firebricks. This has led to high levels of deforestation, reduction in water catchment areas, induced soil erosion, shortages of fuel wood and disappearance of herbal medicines. (Monjezi, Shahriar, Dehghani, & Samimi Namin, 2009).

#### **2.4 Strategies for environmental protection.**

New brick making sites have been environmentally assessed especially in relation to soil and water conditions in particular. The new sites have been confined as grassland areas which regenerate faster, avoiding the more complex and slow regeneration forest. The ponds should be interconnected to drain freely by cutting the earth boundaries and bridging channels to ensure easy walking. This will enable the clay deposits to regenerate for later uses like fish farming. (Avinash, 2008).

Processing involves sieving, washing and elimination of stones, sand, shells and roots. In line ceramics industry where large quantities of clay is processed the residue becomes a huge bulk. When it is dumped at any place, there will be no activity to be carried out on that land. The best way is to separate the residue such that the sand

and stones can be used in construction work, shells can go to the animal feeds industry and roots can be burnt. (David et al., 1995)

The major problem with firing is in getting cheaper fuel. So the alternative fuels to wood are coffee husks, rice husks, saw dust and of course electricity; Among this group of fuel, electricity is the best: For it can be used to fan air in the combustion of the other three. The broken fired pieces which have no market outside the industry can be group up and mixed with raw clay as grog. Grog is very useful in that it is used for adjusting the clay in case it is very plastic, it can be mixed to the correct consistency (Thomas et al., 1995).

For the open pit mining, it is better to do it while sloping towards the valley. This is done so that any water can drain down the lower end into the valley. Also by so doing, the water table is likely not to be interfered with and therefore will not fall. The same applies to mining sand for glass-making. Water should be allowed to drain into the adjacent lake or sea freely, quarrying to of cement should be done in such a way that a certain depth is kept. Otherwise pronounced irregularities in mining will not only interfere with the landscape, it will also cause a drainage problem and a fall in the water table (David et al., 1995)

It was therefore clear that man was the major user of natural resources and the survival of man significantly depends on sustainable exploitation of the numerous environmental resources, therefore, best practices must be put in place and maintained in the context of the processes, components and attributes of the biotic, biotic and human factors in any development on landscape (Baiden, Agyekum, & Ofori-Kuragu, 2014)

## **CHAPTER THREE: METHODOLOGY**

### **3.1 Introduction.**

The main focus of this study was the assessment of traditional brick laying on the environment and socio-economic development of people living in Budaka Town council, Budaka District. This chapter covers a detailed description of selected methodology to be used which will therefore involve research design, study population, target population, sample size determination, sampling technique, data collection methods and Data management and analysis.

### **3.2 Research design.**

The Cross sectional study designed and adopted qualitative and quantitative approaches. The benefit of the qualitative approach was that the information which was to be obtained was richer and contained a deeper insight into the phenomenon under study.

### **3.3 The study population.**

The study population consisted of all the members of Budaka Town Council brick making including the brick makers, drivers, Officers in charge of sales and marketing, among others. Among the study population, their education levels were captured as shown below,

**Table 3.3. 1: levels of education among workers in the study population**

LEVEL OF EDUCATION	FREQUENCY	PERCENTAGES (%)
Primary	18	34
Secondary	12	24
Vocational	7	14
Tertiary	3	8
None	10	20
Total	50	100

Source; Research field findings, February 2024

The above table indicates that most of the people who operate in this venture are those who have attained primary education and none (uneducated).

### **3.4 Sample Size**

The study targeted brick makers of different age and sex structure, with different education and social-economic backgrounds. 75 brick makers selected from the study area, questionnaires and interviews were administered on them. The research revealed that the sample size included both males and females as shown below;

**Table 3.4. 1: Gender issues in the brick making industry in Budaka town council.**

Sex	frequency	Percentages
Female	15	25
Male	35	75
Total	50	100

Source; Research field findings, February 2024

Much as some people would think this business was solely for males, few women also take part in the venture. Some of them even carry out more vigorous work than that done by men. However, women in most cases tend to do light work like supervising the labourers and heading departments in companies for instance in Uganda Clays brick making factory in Kamokoli Sub County.

### **3.5 Sampling Technique and Procedure**

Simple Random sampling method was used for selecting quantitative data. The simple random sampling method was used for generalization of the findings. The following respondents were purposely selected because they were the obvious sources of data; Brick makers, transporters, sales managers, Environment Officer among others.

### **3.6 Data collection methods**

#### **3.6.1 The questionnaire method.**

This involved the use of a set of questions printed in a definite order (Kothari, 2004). Respondents recorded their answers on the questionnaires. The questionnaires were collected at the respondents' convenience hence increasing chances of getting valid information. The questionnaires were used to obtain information on the age range of the people involved in the brick making in Budaka town council, Budaka district.

#### **3.6.2 The interview method.**

This comprised of interviews with individuals who were believed to hold important and essential information relevant to the objectives of the study. The justification for the interview method were that it provided in-depth data which was not possible to get using a questionnaire, it made it possible to obtain data required flexible than questionnaire because the interviewer adopted to the situation and got as much information extracted from the respondent by honest and personal interaction. This method was targeting to gather information on the income generated from those making bricks and its effects on the people's wellbeing.

#### **3.6.3 Observation method.**

Here the researcher employed vision to see what is happening in real life situation and then classify and record. The justification for observation method was that; it gave first-hand information about the objects; it provided additional, unexpected but useful information encountered during observation sessions. Researchers formulated their own version of what was occurring, independent of the participants, it reduced error

due to translation and provided a richer data set, subjects seemed to accept an observation intrusion better than they responded to questions (Maria, Benon, Joseph 2010). This method was used to collect data on the effects of brick making on the biophysical environment and their solutions in Budaka Town council. This was because some of the effects were observed by the use of naked eyes.

### **3.7 Data Management and Analysis.**

The Data which was obtained from questionnaires, discussions, interviews and field observations were analysed qualitatively and quantitatively. Statistical analysis took the form of simple descriptive statistics that is, frequencies and percentages with the findings presented in graphs and tables.

## **CHAPTER FOUR: DATA PRESENTATION, INTERPRETATION AND ANALYSIS**

### **4.1 Introduction**

This chapter presents the results and findings from the research conducted in Budaka Town Council in Budaka District. Results of the socio-economic importance of brick making on the people in Budaka Town Council, the impacts of brick making on the biophysical environment in Budaka Town Council and strategies that can be used to combat the negative effects of brick making on the biophysical environment in environmental protection in Budaka Town Council.

Information gathering was done by using questionnaire, observation, interview, recording and later on tabulation. As a Researcher, I went ahead to find out gender issues in the industry, levels of education and how work was done.

### **4.2 Socio-economic importance of brick making on the people in Budaka town council**

By guidance of the questionnaire which was given to respondents who new writing and reading as well interview methods used on the other class of respondents revealed that the following were some of the socio-economic importance of brick making on the people of Budaka Town Council including tax revenue, economic diversification, job creation, youth engagement, land utilisation and skill development. This was further represented on the table 4.1 for easier understanding of the information.

**Table 4.2. 1: social economic importance of brick making on the people of Budaka town council**

SOCIO-ECONOMIC IMPORTANCE OF BRICK MAKING ON THE PEOPLE	FREQUENCIES	PERCENTAGES
Job creation	15	54
Skill development	6	10
Economic development	4	2
Tax revenue	8	4
Land utilization	7	13
Youth engagement	10	17
Total	50	100

Source; Research findings as of February, 2024

Table 4.2.1 revealed that job creation was the major socio-economic importance of brick making in Budaka Town Council as evidenced by the largest percentage being 54%, this was attached to the presence of clay soils which is the best in brick making practises including portray work.

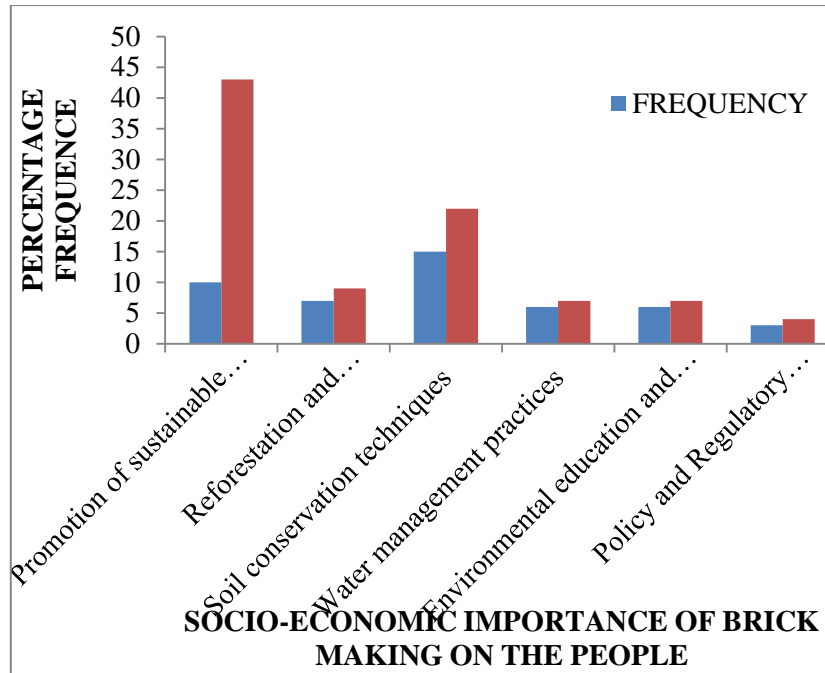
Existence of Uganda Clays Factory in Kamokoli found in Budaka District has contributed to development in skills in portray work, brick making and organising of brick kilns to mention but a few among the natives in the district (Somini 2007). This has created employment for them through which their living standards has improved.

Economic development through development of infrastructures like roads for example Mbale –Tiriny – Iganga high way through Budaka Town Council, hospitals like Budaka health center four, schools among others.

Revenue collections by government officials has increased through taxing on the incomes of individual workers and brick making companies as well (Aluogh Gileto 1997). The youths have also been engaged in the brick making productions which has also reduced on the rate of unemployed youths and generally the population of Budaka Town Council.

This information was further represented on the bar graph as shown below for easier understanding and interpretation.

**Figure 4.2. 1: Bar graph showing socio-economic importance of brick making on the people of Budaka town council**



In the research on the socio-economic importance on the people of Budaka Town Council, the raw materials used in brick making were discovered as being clay soil, water and oil, wood husks and saw husks, glass, grass, money and labour. This was as well represented on the table as shown below,

**Table 4.2. 2: Raw materials used in brick making.**

RAW MATERIAL	FREQUENCY	PERCENTAGE (%)
Clay soil	12	24
Water and oil	10	20
Wood husks and saw husks	8	16
Glass	2	4
Grass	8	16
Money	5	10

labour	5	10
Total	50	100

Source; Research field findings, 2024

The highly used raw material in this industry is clay soil as shown by its percentage (24%) in the table 4.1.1. Although the use clay goes hand in hand with the use of other raw materials either as ingredients or mixtures and sometimes as compliments. The research also revealed that a lot of extraction of soil always took place resulting in to depletion though the extent was gradual process. This was further more illustrated on the bar graph for better understanding and interpretation.

A column showing row materials used in brick making in Budaka town council

The research also revealed that the socio-economic importance of brick making on the people of Budaka Town Council was as a result of the ready market for the products obtained from brick making including blocks, max pans, ventilators, roofing tiles, pompy and half bricks. This is elaborated on the table below.

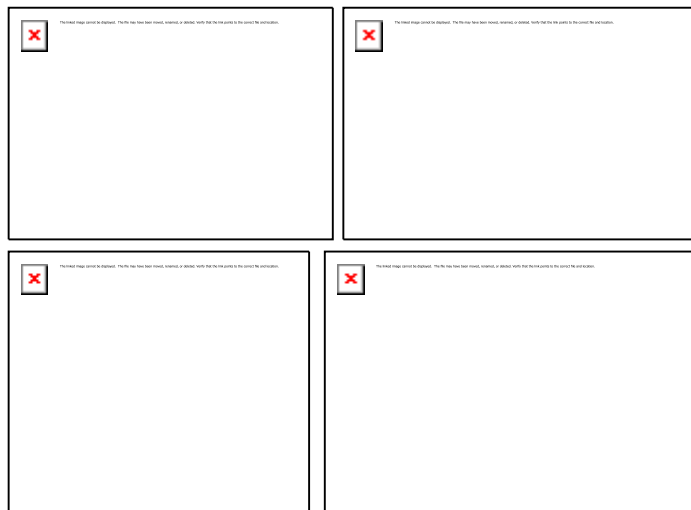
**Table 4.2. 3: Products from the brick making industry**

PRODUCTS	FREQUENCY	PERCENTAGE (%)
Blocks	15	30
Max pans	5	10
Ventilators	10	20
Roofing tiles	5	10
Pompy	5	10
Half bricks	10	20
Total	50	100

Source; Research field findings, February 2024

Blocks were the major product and least production as roofing tiles, pompy and max pans indicated clearly in table 4.2.0. The response from my research participants was that blocks are highly demanded in most of the construction sites which justifies why many people and companies like Uganda Clays in Kamokoli involved in brick making, highly profitable contributing to higher socio-economic development Budaka Town Council.

**Plate 4.2. 1: Products from brick making industry.**



Source; research field findings as of February, 2024

### 4.3 The impacts of brick making on the biophysical environment in Budaka town council.

To find out the impacts of brick making on the biophysical environment in Budaka Town Council, respondents were asked through the guidance of the research methods including questionnaire, interview, recording and observation as reflected in the appendices. The results were tabulated in table 4.2 below and further presented on the pie chart in the figure 4.2.0 for easy interpretation and comprehension.

**Table 4.3. 1: Impact of brick making on the brick making on the biophysical environment in Budaka town council.**

IMPACTSOF BRICK MAKING	EXPECTED POPULATION AGREEING TO THE IMPACTS	OBTAINED POPULATION	CHI-SQUARE ( $\chi^2$ )
Groundwater depletion	75	57	4.32
Deforestation	75	76	0.01333
Soil degradation	75	95	5.3333
Water pollution	75	45	12
Air pollution	75	27	30.72
Disruption of natural habitats	75	62	2.2533
Water bone diseases	75	33	23.52
Respiratory problems	75	25	33.3333
Biodiversity loss	75	88	2.2533

Source; Research field findings, February 2024

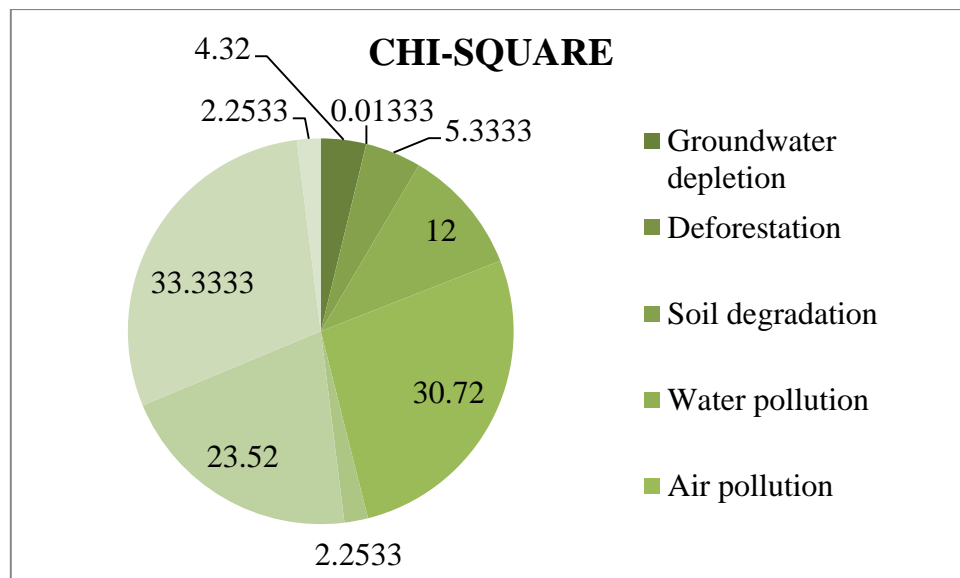
The research revealed that soil degradation took the lead among the impacts of brick making by 95% since vegetation destruction is evidenced through laying of bricks from the production grounds locally known as Kilombe, soils with humus are mixed up with deep clay in the preparation for brick laying followed by biodiversity loss

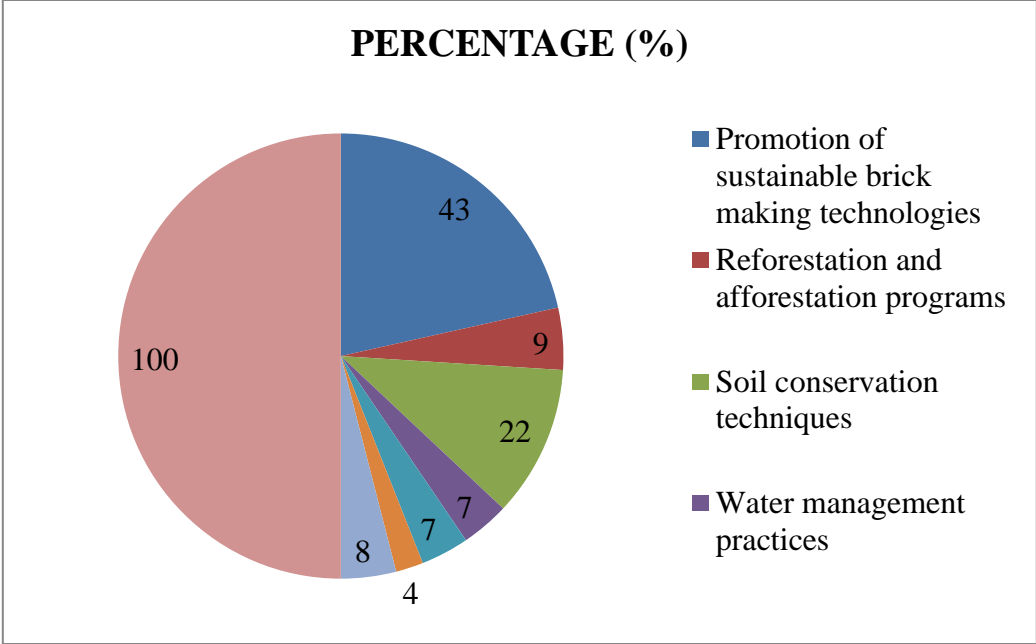
with a percentage of 88 including destruction of wildlife habitats, swamps and ecosystem.

Deforestation was revealed as another impact of brick making on the biophysical environment, this through cutting down trees for wood used to burn the bricks and shade for storing in bricks meant for drying and this was at 76%.

Other impacts of brick making which was as a result of drawing water for mixing of soil as to make a dough from which bricks are made and on continuous fetching of water from wells makes the water dirty hence polluting water impacts negatively on the biophysical environment, water born diseases resulting from dirty water surrounding the community of Budaka Town Council, ground water depletion as reflected in the table 4.2 above. This information was further represented on the pie chart in the figure 4.2 below

**Figure 4.3. 1: Pie charts showing the impact of brick making on the biophysical environment in Budaka town council.**





Respondents who actively participated in the release of information concerning the impacts of brick making in Budaka Town Council were ranging in ages of 15-46 plus years as shown in the table 4.2.1 below.

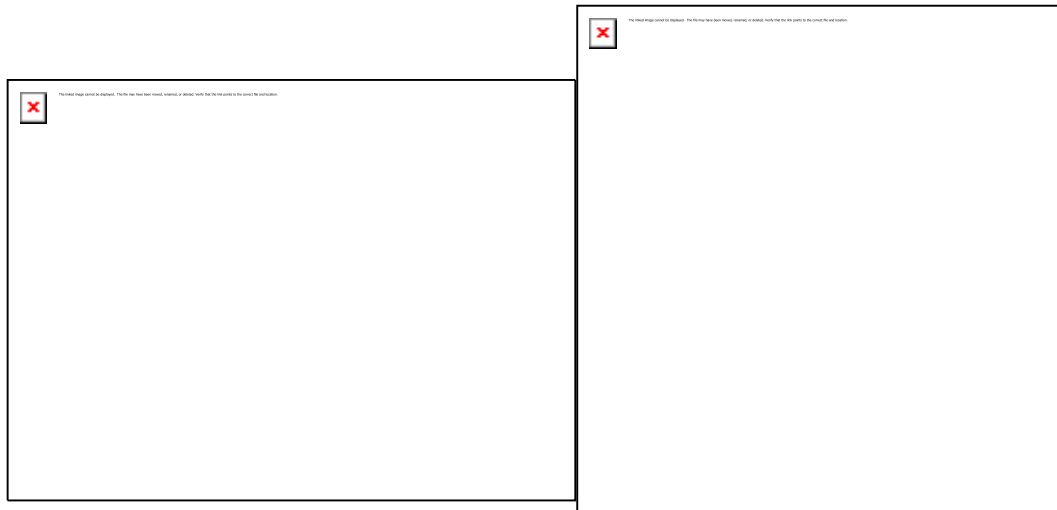
**Table 4.3. 2: Ages of people who always take part in brick making industry.**

AGE RANGE	FREQUENCY	PERCENTAGE (%)
15-25	12	25
26-35	20	44
36-45	15	26
46 +	3	5
TOTAL	50	100

Source; Research field findings as of February, 2024

The most active and productive age group in the brick making industry is the age group between 26-35 and 36-45 , least productive were those aged 46 and above.

**Plate 4.3. 1: Some of the impacts of brick making on the biophysical environment, particularly soil degradation, air pollution due to dust particles, dumping of wastes like broken brick products.**



Source; Research field findings as of February, 2024

Furthermore, and to be specific, the negative effects of brick making on biophysical environment in environmental protection for which the strategies were laid down for included as shown on the **Table 4.3.3**.

**Table 4.3. 3**

NEGATIVE EFFECTS OF BRICK MAKING ON BIOPHYSICAL ENVIRONMENT	FREQUENCY	PERCENTAGES (%)
Accidents	6	12
Shortage of raw materials	3	6
Damage to human health	12	24
Loss of nutrients	1	2
Destruction of vegetation	3	6
Pollution	3	6
Impact on drainage	4	8
Loss of biodiversity	8	16
Total	50	100

Source; Research field findings, February 2024

Brick making as an industry has greater damage on human health and public in general by (24%) as revealed in the table above, these effects are released by farmers themselves inform of back pain, chest pain and often malaria (malaria is due to stagnant water in the ponds created on extraction of raw which act as breeding grounds for mosquitoes).

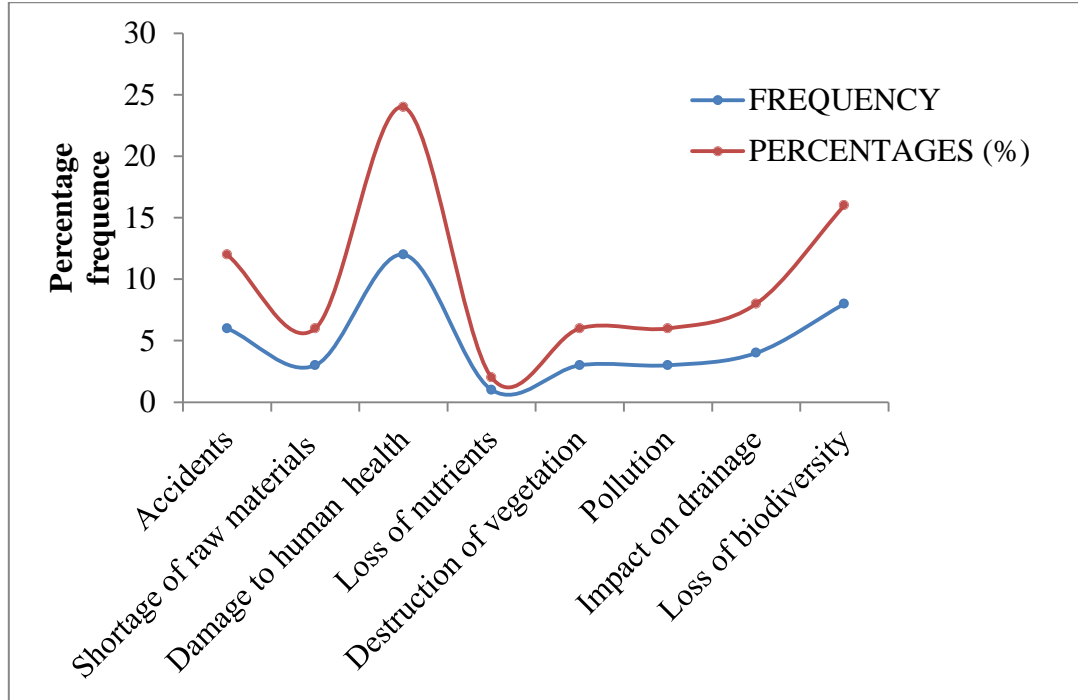
Accidents are equally very common to both the livestock that grazes in these wetland ecosystems and the humans themselves in so many ways like falling of bricks when drying them especially during turning of bricks in drying process, soil slump is equally a common accident. However, according to (Buyinza and Bukenya ,2002) the increased number of people taking part in brick making, large chambers of land have therefore been excavated living behind out large basins/ponds hence breeding grounds.

Pollution is another negative effect of brick making on the biophysical environment through fumes being emitted out from chimneys of the factories in the baking of bricks, dirty water resulting from dumping of wastes from bricking sector like in kamokoli factory in Budaka Town Council.

Loss of nutrients in soils found in bricking areas of Macholi, Kamokoli, Chali where fertility in soils is lost affecting crop production leaving natives of Budaka Town Council in the mentioned places with no option but turning to brick making as their best resort.

Destruction of vegetation was resulting of establishment of brick making factory like Uganda clays Factory producing products like maxpan, ventilators, Marseille redorange among others and also clearing sites for laying on bricks. This is in line with (Ashrafal,2006). Vegetation has been destroyed also through clearing of natural forests, destruction of wetlands as reflected by (Visso 2007)

**Plate 4.3. 2: Shows a line graph reflecting the negative effects of brick making on the biophysical environment in the environmental protection in Budaka town council**



**4.4 The strategies used to combat the negative effects of brick making on the biophysical environment in environmental protection in Budaka town council.**

According to this research, the respondents in the areas of kamokoli, Macholi, Namengo and Chali, revealed some of the following strategies through an interaction with Mr Wabomza Fredrick production officer of Uganda clays factory, local council leaders, brick makers and some drivers of blocks, max pans halfroofings among other products as reflected in the appendices. The results are further represented on the table 4.3.0 as shown below.

**Table 4.4. 1: Strategies used to combat negative effects of brick making on the biophysical environment in the environmental protection in Budaka town council.**

STRATEGIES USED	FREQUENCY	PERCENTAGE (%)
Promotion of sustainable brick making technologies	10	43
Reforestation and afforestation programs	7	9
Soil conservation techniques	15	22
Water management practices	6	7
Environmental education and Awareness	6	7
Policy and Regulatory measures	3	4
Research and development	9	8
Total	56	100

Source; Research field findings, 2024

Among the strategies used also included working in individually, Groups and companies. However, this research revealed that the higher percentage of the workers in these areas of kamokoli, Macholi, Chali in Budaka Town Council carries out work in groups and very few do it as companies. Those who do it in groups had the following reasons to back up their decisions;

Specialization, Ease work, there is little/no dodging, depends on one's income (amalgamation) and reduces the health risks that would accrue from heavy workload.

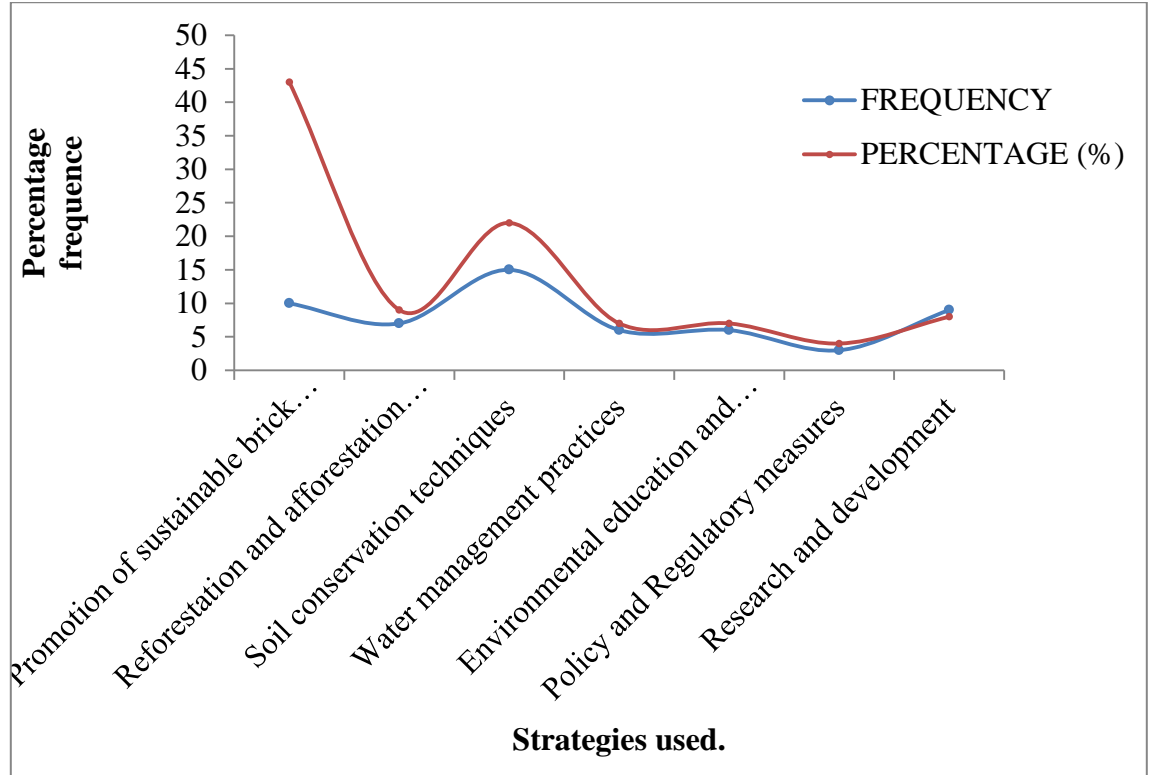
Promotion of sustainable brick making technologies like use of machines, pipes in sprinkling of water on soil softening it for brick production and vehicles to transfer already baked bricks to makert canters, attempts to solve effect of water pollution and vegetation destruction. It should be noted that this the best strategy as ranked by those in the brick making field to a percentage of 43% and it's in line with (Thomas etal, 1995)

Soil conservation techniques at a percentage of 22 was the second best strategy suggested including techniques like soil erosion control through terracing, reforestation, mulching which combats the effects of loss of soil nutrients and impact on drainage.

Environmental education and Awareness by educating people on the importance of environmental conservation and the negative effects of brick making on the biophysical environment including their health conditions as natives.

Water management practises provides room for taking good and clean water which reduces on chances of contracting water borne diseases like cholera, typhoid and policy including regulatory measures. Research and development would contribute to improvement in the quality of products produce like maxpan, Marseille redorange, ventilators and better easier ways of doing it (production).

**Figure 4.4. 1: Shows a line graph reflecting the strategies used to combat the negative effects of brick making on the biophysical environment in the environmental protection in Budaka town council**



**Plate 4.4. 1: shows development of Budaka town council and various economic activities traded.**

## **CHAPTER FIVE: DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Introduction**

This chapter presents the discussion of the findings, conclusions and recommendations from the research study conducted in Budaka Town Council, Budaka district.

### **5.2 Discussion**

#### **5.2.1 The socio-economic importance of brick making on the people in Budaka town council.**

Income Generation, Brick making provided a primary source of income for many families in Budaka. The sale of bricks generated revenue that supported household expenses and improves living standards, this was through Local business growth in the cells and wards of macholi, kamokoli, Namengo, chali and increased demand for bricks stimulates the growth of these related businesses, such as transportation services, tool suppliers, and food vendors who cater to the brick makers as shown in **plate 4.3.1**. Most households have gradually improved and developed steady due to the brick making industry and incomes earned from it thus educating their families leading to increase in education levels among the natives in attempts to grab jobs like in the **table3.2** and it generally took highest percentage of 78% according to this research, this is in line with the statements of (Drausma,2008) as in the literature review.

Investment in Infrastructure, Profits from brick making is often reinvested into local infrastructure. Many brick makers used their earnings to build better homes, contributing to improved housing conditions in the Budaka town council, construction of health center like kamokoli health center three near Uganda clays factory in Kamokoli along Mbale –Iganga –Kampala high way road by government and even other local roads by the Town council and according to (URF.2006) it should be noted that the profits earned also help to reduce child mortality through treatment , nutrition and good care as well.

Economic Diversification, Brick making diversifies the local economy. By not relying solely on agriculture, which was vulnerable to climatic changes, residents achieved a more stable economic base like reflected on **plate 4.3.1**.

Job Creation, the brick making industry provides direct employment for thousands of people in Budaka, including men, women, and youth, reducing unemployment rates. Job creation had a frequency of 15 and a percentage of 54% since most of the population attained primary education as their highest level of learning as revealed by the research in the table 3.2, this has left them with limited skills thus left with no option but to take on agriculture and brick making particularly in production section of producing bricks, catering which requires simple training and at times learning on job (Asante, Faibil, Agyemang, & Khan, 2022)

Skill Development, working in brick making has helped locals develop valuable skills, such as kiln operation, brick shaping, and construction techniques (Moore,2008). This was of much help to the Youths who are many by rakings in population basing on population census of 2014 who hold a percentage of 46% and through Engaging the youth in brick making activities has helped to reduce idle time among the youth, thereby decreasing the likelihood of engaging in anti-social activities like theft, robbery on high ways for instance on Mbale-Iganga-Kampala highway and promoting positive societal roles.

Community Development, Brick making fosters community cohesion as families often work together in the production process, strengthening social bonds and also Incomes earned from brick making allowed families to afford school fees and educational materials for their children, which contributed to higher literacy rates and better educational outcomes since families were able to support each other through lending of loans thus supporting communal development.

Empowerment of Women, Women participate significantly in brick making activities like supervisors, human resource, gate keepers, catering among others like in Uganda Clays factory limited that led to their economic empowerment and greater influence in

household and communities including in decision-making. These were similar statements with those of (Somini ,2001).

Generally, Brick making is a cornerstone of socioeconomic development in Budaka Town Council, Budaka District. It generates income, creates jobs, and fosters community development. Addressing challenges such as seasonal dependency and capital constraints further enhance its positive impact on making brick thus making a sustainable and vital industry for the people of Budaka Town Council.

### **5.3 Impacts of brick making on the biophysical environment in Budaka town council.**

Soil Degradation through Clay Extraction as Brick making relied heavily on clay soils. According to UNEP.1991, this process often led to soil erosion and loss of fertile top soil, which negatively affected agricultural productivity, Areas where clay was extracted became barren and unusable for farming or other vegetation and this is clearly shown in the table4.2.

Land Degradation, Research further revealed that Continuous clay extraction without proper land management practices can led to land degradation. This included the formation of pits and quarries that were left unrehabilitated, creating hazardous landscapes and reducing land usability.

Deforestation, Fuel for Kilns where Brick kilns since and till then when research was conducted used wood as a primary fuel source. This led to deforestation, as large quantities of wood were harvested to meet the energy demands of brick making. Deforestation contributed to loss of biodiversity, disruption of ecosystems, and increased carbon emissions (World Agroforestry 2020). Due to deforestation for fuel and clay extraction it resulted into destruction of habitats for various species, contributing to the loss of local flora and fauna and reducing biodiversity in the area.

Surface Water Contamination, the process of brick making often involved washing clay, which led to runoff that contaminated nearby water sources. This increased sedimentation and reduction in water quality, impacting aquatic life and making water

less suitable for human consumption and agricultural use (Environmentalist Jane weavier, 2017)

Groundwater Depletion, the water used in the brick making process, particularly during clay preparation and kiln cooling, strained local water resources and potentially resulted in to the depletion of groundwater reserves that is Macholi well in Macholi parish. After the firing process, not all the products always came out whole and fit for sale as this was related to (LLBR,1992)

Emissions from Kilns, Traditional brick kilns emit significant amounts of smoke and pollutants, including particulate matter, sulfur dioxide (SO<sub>2</sub>), and carbon monoxide (CO). These emissions contributed to air pollution, which led serious health impacts on local communities, including respiratory issues and other illnesses. Greenhouse Gas Emissions were as well as a result of emissions from Kilns, the combustion of wood and other fuels in brick kilns releases greenhouse gases such as carbon dioxide (CO<sub>2</sub>) in to the atmosphere which contributed to climate change and global warming (Johnson et al., 2016).

While brick making activities in Budaka Town Council, Budaka district plays a crucial role in the local economy, its impact on the biophysical environment was significant and addressing issues such as soil degradation, deforestation, water and air pollution, and promoting sustainable practices was essential to balance economic benefits with environmental preservation (Omagor N 1995). This was done through adoption of alternative fuels, energy-efficient technologies, and responsible land and water management, the negative environmental impacts of brick making were mitigated, ensuring a more sustainable future for Budaka Town Council, Budaka District.

#### **5.4 Strategies used to combat the negative effects of brick making on the biophysical environment in environmental protection in Budaka town council.**

According to Thomas et al ,1995 Sustainable Brick Making Technologies were promoted through adoption of Improved Kilns which encouraged the use of more efficient kilns, such as the Vertical Shaft Brick Kiln (VSBK) and the Hybrid Hoffman Kiln (HHK), which consumed less fuel and emit fewer pollutants compared to

traditional kilns and also through alternative Fuels which promoted the use of alternative, sustainable fuels like agricultural residues, sawdust, or biogas instead of wood and coal significantly reduced deforestation and greenhouse gas emissions.

Reforestation and Afforestation Programs, through Tree Planting Initiatives to replace the trees cut down for fuel which helped in restoring the local ecosystem, enhancing biodiversity, and improving carbon sequestration and also the natives were as well encouraged participate in Agroforestry as to Integrate tree planting with agricultural activities to provide a sustainable source of fuel wood and improve soil health (Baiden, Agyekum ,2014).

Soil Conservation Techniques was another strategy as suggested by respondents in this research that through controlled clay extraction and regulating the locations and methods of clay extraction to minimize soil erosion and degradation. Designation of specific areas for clay extraction and rehabilitation of used sites helped to maintain soil structure and fertility. Similarly, Contour Farming and Terracing, Implementation of agricultural practices that reduce soil erosion in nearby areas of Macholi, chali such as contour farming and terracing, protected the land from degradation due to runoff from brick making activities as suggested by (Davide.P.M. etal,1995) on similar statements in the literature review.

The research further revealed that Water Management Practices were other efficient Water Use strategies that promoted techniques that were water more efficient in the brick making process and water harvesting through construction of rainwater harvesting systems to provide an additional water source for brick making and other uses, thus reduced pressure on natural water source.

Environmental Education and Awareness, just in line with (Environmental Assessment of Brick Making, 1996) Community Education Programs through Conducting awareness campaigns and educational programs to inform the local population about the environmental impacts of traditional brick making and the benefits of adopting sustainable practices. Natives who participated in the brick making activities were as

well encouraged to undergo training for brick makers on sustainable techniques and the use of environmentally friendly technologies.

Policy and Regulatory Measure, the research from this area Budaka Town Council fronted the Strengthening the enforcement of existing environmental regulations related to brick making, including restrictions on deforestation and emission and Introduction of financial incentives such as subsidies or tax breaks, for brick makers who adopted sustainable technologies and practices recommended by the relevant authorities for example local leaders. This was in relation with (Ofori, 2014) who argued that these policies and regulatory measures also help in protecting health of natives surrounding brick making sites.

Research and Development Innovation in Materials where this was through investing in research to develop alternative building materials that reduced reliance on traditional bricks, such as compressed earth blocks or stabilized soil blocks (Maria, Joseph 2010). Monitoring and Evaluation was another mechanism under research and development through establishing systems to monitor the environmental impact of brick making activities continuously and evaluating the effectiveness of implemented strategies.

## **5.5 Conclusions**

Brick making has been a transformative force in Budaka Town Council, fostering resilience and shaping a brighter future for its residents. It should be noted that this research has provided a comprehensive examination of brick making in Budaka Town Council, Budaka district in Uganda. Through a combination of qualitative interviews and quantitative survey with local leaders and persons involved in brick making activities.

Economic Contribution, Brick making significantly contributes to the local economy by providing employment and generating income for many households of Kamokoli, macholi chali.

**Environmental Impact,** the brick-making process has notable environmental impacts, including deforestation and soil degradation due to the extraction of clay and the use of wood as a primary fuel source.

**Production Techniques,** Traditional brick-making methods are predominant, with limited adoption of modern, more efficient techniques.

**Market Demand,** there is a steady demand for bricks within Budaka and neighboring areas of Lyama, Nansanga, Naboa, Kaderuna, driven by ongoing construction projects.

## **5.6 Recommendation**

The study makes the following recommendations in relation to the conclusions including;

**Adoption of Sustainable Practices,** Encourage the adoption of more sustainable brick-making practices, such as the use of alternative fuels and improved kiln designs to reduce environmental impact.

**Training and Education,** Implement training programs to educate brick makers on efficient production techniques and environmental conservation.

**Financial Support,** facilitate access to microfinance and other financial services to help brick makers invest in better equipment and technologies.

**Regulatory Enforcement,** strengthen enforcement of environmental regulations to ensure sustainable extraction of raw materials and responsible production practices.

**Market Expansion,** explore opportunities to expand the market for locally made bricks, including establishing linkages with larger construction firms and regional markets.

**Community Involvement,** Engage the community in discussions about the environmental and economic impacts of brick making to foster collaborative efforts towards sustainable development.

## **5.7 Areas for future research study**

For the purpose of comparability, this research can still be replicated in Budaka Town Council using a large sample size like that of 130 respondents. Potential areas for future research study in Budaka Town Council include;

Investigating the use of low-emission fuels and their impacts on brick quality and production costs.

Assessing the effectiveness of existing environmental regulations on brick making practices and identifying gaps that need to be addressed.

Investigating the health impacts of traditional brick making on workers and nearby communities and evaluating the benefits of transitioning to cleaner technology.

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**Appendices**

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QUESTIONNAIRE: ASSESSING THE ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACT OF BRICK MAKING IN BUDAKA TOWN COUNCIL, BUDAKA DISTRICT.

A CASE STUDY IN BUDAKA TOWN COUNCIL, BUDAKA DISTRICT.

RESEARCHER: MADAM MIREMBE MARTHA

**BACKGROUND INFORMATION**

1. Information about the interviewee

NAME

.....

GENDER i)

Male.....

ii)

Female.....

ii)

Date.....

2. Residence

Name of the village /cell.....

Name of the

parish/ward.....

3. Interviewee work profile

Community leader

.....

Farmer

.....

Others specify

.....

**Part A: Environmental Related Issues**

- 1 (a) Are there some negative impacts of brick making on the biophysical environment in Budaka Town Council?

Yes.....

.

No

.....

- (b) If yes, what are these impacts?

A

.....

B.....

...

C.....

..

D.....

..

- 2 (a) From your own observation , do notice any change in the nature of vegetation ,soil cover and water quality in relation to brick making in this area (BUDAKA TOWN COUNCIL).

YES

.....

NO.....

...

- (b) What do think accounts to the above observations.

.....

.....

.....

.....

3. What are the strategies that can be used to combat the negative effects of brick making on the biophysical environment in environmental protection in Budaka Town Council?

**Part B: Socio-economic Related Issues**

1. (a) Is your community benefiting from the brick making activities socioeconomically

Yes

.....

No

.....

- (b) IF yes, how?

.....

.....

.....  
...

2 (a) Are there any conflicts arising amongst brick makers and neighbouring society?

Yes

.....

No

.....

(b) Give reasons to support your answer

.....  
.....  
.....  
.....

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INTERVIEW GUIDE ON: ENVIRONMENTAL AND SOCIO-ECONOMIC  
IMPACT ASSESSMENT OF BRICK MAKING IN BUDAKA TOWN COUNCIL,  
BUDAKA DISTRICT.

RESEARCHER: MADAM MIREMBE MARTHA

1. What is your name?
2. What is your occupation?
3. In which cell/village do you live?

4. Are you one of those benefiting from brick making activities in this community?
5. If yes, what are some of those benefits to you as an individual, also to the Environmental and socio-economic development of Budaka Town Council?
6. What are some of the impacts of brick making on the biophysical environment in Budaka Town Council.
7. Describe some of the strategies that can be used to combat the negative effects of brick making on the biophysical environment in environmental protection in Budaka Town council?

### **Observation Checklist**

- . *Nature of vegetation at the brick making sites*
- . *Nature of water quality*
- . *Stages and processes of brick making*
- . *How Klein is arranged.*