



BENCHMARK SURVEY OF QUARRYING ACTIVITIES, 2010



Conducted by Statistics Sierra Leone
With Funds from the African Development
Bank and ECOWAS

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ECOWAS

TABLE OF CONTENTS

	PAGE
Table of Contents.....	i
List Of Tables.....	ii
List Of Figures.....	ii
Abbreviations.....	iii
Acknowledgement.....	iv
1.0 INTRODUCTION.....	1
1.1 Background.....	1
1.2 The Objective Of The Survey.....	3
1.3 Rationale Of The Study.....	4
2.0 METHODOLOGY.....	4
2.1 Coverage.....	4
2.2 Data Collection.....	5
2.3 Survey Organization.....	6
2.4 Data Processing.....	6
2.5 Sample Achieved.....	6
3.0 DATA ANALYSIS.....	7
3.1 General Information.....	7
3.1.1 Locality of Establishments.....	7
3.1.2 Organizational Status.....	8
3.1.3 Year of Commencement of Operation.....	9
3.1.4 Registration Certificate/License.....	10
3.1.5 Belonging to an Association.....	11
3.2 Operating Characteristics.....	12
3.2.1 Employment Characteristics.....	12
3.2.2 Intermediate Consumption.....	13
3.2.3 Revenue Turnover by Locality.....	14
4.0 RECOMMENDATIONS.....	14

LIST OF TABLES

Table 3.1.1:	Distribution of Respondents by Locality.....	7
Table 3.2.1:	Employment Characteristics.....	12
Table 3.2.2:	Percentage Distribution of Intermediate Consumption by Locality.....	13
Table 3.2.3:	Percentage Distribution of Total Turnover by Locality.....	14
Table 4:	Percentage Distribution of Total Cost by Locality.....	15
Table 5:	Percentage Distribution of Gross Value Added by Locality.....	16

LIST OF FIGURES

Figure 3.2.1:	Distribution of Establishments by Ownership.....	8
Figure 3.1.3:	Year of Commencement of Operation.....	9
Figure 3.1.4:	Registration certificate/license.....	10
Figure 3.1.5:	Belonging to an Association.....	11

ABBREVIATIONS

ADB	African Development Bank
BSL	Bank of Sierra Leone
DFID	Department for International Development-UK
ECOWAS	Economic Community of West African States
GDDS	General Data Dissemination System
GDP	Gross Domestic Product
IMF	International Monetary Fund
NSDS	National Strategy for the development of Statistics
PRSP	Poverty Reduction Strategy Paper
SCB	Statistical Capacity Building
SSL	Statistics Sierra Leone

ACKNOWLEDGEMENT

This survey is conducted on the recommendation of the GDDS Consultation on National Accounts to estimate independently the contribution of quarrying sector. The output of this sector is not only counted as part of the mining and quarrying sector but also as an input of the construction sector. Since this is the first survey ever to be carried out in this country, the data collected will be used to establish benchmark indicators to be used in the estimation of GDP. The survey was planned since 2009 and incorporated into the 2010 Road Map; and carried out with funding from the Statistical Capacity Building (SCB) Project of the ADB and ECOWAS. The survey lays the foundation for subsequent surveys designed to capture indicators about the contribution of quarrying to GDP in the country. The main objective of the survey is to estimate the volume of sand extracted as well as the economic value of the extractive activity in the country to be included in the compilation of GDP, especially the quarrying sector; as well as to independently estimate the contribution of sand extraction and hence quarrying to the GDP.

This survey has been compiled by a dedicated Team of Statisticians and Data Collectors and Supervisors under my Supervision. SSL Management therefore acknowledges the immense contribution which the following people made towards the conduct of the survey: Abu Bakarr Turay, Head of National Accounts and Officer-in-Charge of Economic Statistics Division; and Samuel Turay, Head of Price and Labour Statistics.

We also wish to thank our Data Collectors, Supervisors and staff of Ministries, Departments and Agencies who took part in the data collection exercise

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Mohamed King Koroma
Acting Statistician General

1.0 INTRODUCTION

1.1 Background

Sierra Leone is a country rich not only in minerals but also in sand and other geological resources such as rocks. In the past the Sierra Leone economy has relied heavily on the mining sector in general, and diamonds in particular, for its economic base. In the 1970s and early 1980s, economic growth rate slowed because of a decline in the mining sector and poor macro economic policies. The revamping of the economy after the war would require major sectors like Mining and Quarrying to perform and to meet expectations.

Geological studies have shown that majority of rocks in Sierra Leone are of Precambrian age (over 600ma), made up mostly of granites, gneisses and greenstones (the Basement Complex), which very suitable for construction. Lying on the basement to the West and partly on the Freetown Peninsula is the Bullom Group, which is made up of poorly consolidated sands and clays, which is easily extracted. The Freetown Peninsula (Freetown Complex) lies in extreme West of Sierra Leone, made up of igneous rocks of the gabbro family; Atlantic coast line of the Peninsula fringed by a series of sandy beaches. The western area coast extends from Aberdeen to Kent then turning North East from Kent to beyond Tombo; a length of about 50km. All these features underscore the fact that quarrying is a suitable activity in the country; and the need to develop the infrastructure of the country under Agenda for Change Strategy means that it is also an economically viable activity. As a result there is need for such an activity to be accurately accounted for in our gross domestic product (GDP) estimation. Quarrying is not only an economic activity, but it is also an important input into the construction sector.

The quarrying part of the mining and quarrying sector of the gross domestic product (GDP) is currently being estimated as a percentage of mining output. In his last report the DfID/IMF General Data Dissemination System (GDDS) Consultant on National Accounts, Mr. Howard Murrad recommended in 2009 that SSL should begin to estimate independently the contribution of Quarrying to GDP. This benchmark survey has been planned since 2009, but due to lack of funds, SSL was unable to carry out the survey. Given the fact that Sierra Leone has fairly large deposits of sand, sand beaches and rocks throughout the country, these resources are exploited for construction of residential houses and business premises in the country as major economic activities. Both households and business enterprises are engaged in the extraction of sand. However, quarry as an economic activity (e.g. sand extraction and stone-breaking) is largely informal carried out by individuals. Apart from construction companies, there are only a few registered business establishments that are engaged in sand extraction and/or stone-breaking activities in the country.

Sand mining/extraction areas in the capital city Freetown are recorded as shown below:

Sand Extraction and Stone-breaking Sites

- Hamilton Beach
- Goderich Bololo
- Lakkah Beach
- Adonkia
- Sussex
- Number 2 River
- Tokey
- Big Water
- Black Johnson
- John Obey
- Mama Beach
- Tombo

- Tissana
- Martin Kay
- Waterloo
- Deep Eye Water
- Devil Hole
- Rokel
- Sugar Land
- Mamba Ridge Quarry (Kissy)

The survey covered 13 sites where sand and stone mining activities were mostly concentrated; so as to obtain fairly comprehensive and accurate estimates for this sector of our economy.

1.2 The Objective Of The Survey

The main objective of the survey is to estimate the volume of sand extracted as well as the economic value of the extractive activity in the country to be included in the compilation of GDP, especially the quarrying sector; as well as to independently estimate the contribution of sand extraction and hence quarrying to the GDP.

The specific objectives include:

- To develop benchmark indicators for estimating sand extraction and stone breaking activities for GDP compilation
- To measure the volume of sand extracted and stone quarried in metric tones
- To estimate the value of sand extraction and stone quarried in millions of Leones
- To investigate the number of persons working on quarrying activities

1.3 Rationale of the Study

This survey is conducted on the recommendation of the GDDS consultation to estimate independently the contribution of quarrying sector. The output of this sector is not only counted as part of the mining and quarrying sector but also as an input of the construction sector. Since this is the first survey ever to be carried out in this country, the data collected will be used to establish benchmark indicators to be used in the estimation of GDP. The survey was planned since 2009 and incorporated into the 2010 Road Map but SSL has not been able to carry it out up till now due to lack of funding. It is for this reason that it is being proposed to be undertaken under Statistical Capacity Building (SCB) Programme of the African Development Bank for 2010. The survey will lay the foundation for subsequent surveys designed to capture indicators about the contribution of quarrying to GDP in the country.

2.0 METHODOLOGY

2.1 Coverage

The survey covers all the sand extraction and stone-breaking sites identified above. It is mostly an informal survey, conducted on a one-to-one personal interview with persons engaged in sand extraction and stone-breaking activities in the study sites. Observation will also be made to detain the various measures of sand and stones. The survey is limited to Freetown, the capital city, where majority of the construction activities do take place.

2.2 Data Collection

This benchmark survey is conducted under the Statistics Act 2002, which makes it mandatory for individuals and/or business establishments operating in sand extraction and stone-breaking activities to cooperate Statistics Sierra Leone designated staff to collect the survey. The Act also provides for confidential of the information collection of respondents. A trained team of enumerators and supervisors designated by Statistics Sierra Leone (SSL) will undertake data collection in the selected sites in the Western Area of the country. At the beginning of the survey, all the field staff are expected to establish contact with the operators in the quarrying sub-sector, to explain the purpose of the survey and to locate contact persons in the area for subsequent visit. The survey spanned a period of six (6) weeks from December 10 2010-January 20, 2011. There were five (5) teams deployed to cover a total of twenty-four (24) sites in the Western Area. Each team comprised a Supervisor and 3 Data Collectors; and each team was given a number of localities to cover during the survey.

Statistical Unit

The statistical unit is the entity for which data is being gathered. For this sand extraction survey, the establishment was used as the statistical unit which was defined as a business or organization unit engaged in one activity and operating in a single location. Thus, a multi-activity firm or organization (otherwise known as the enterprise) with several units engaged in separate activities in the same location constitutes distinct establishments. Similarly, each branch of a multi-branch organization at a different location is conceptually a different establishment. So the reporting unit, the entity from which the data were gathered, may or may not have been the enterprise.

However, the survey covered the lowest level of a business unit for which separate records are kept for such details as revenue, expenses and employment.

For this survey, individuals engaged in quarrying activities were considered to constitute an establishment, which is in line with economic theory and concept of an enterprise.

2.3 Survey Organization

There are a total of 15 Enumerators that collected data from the sites selected for the survey under the supervision of 5 Supervisors, 2 Administrative staff and 3 National Coordinators. One Data Entry supervisor, 3 Data Entry Operators and 2 Coder/Verifiers will also be part of the survey. Most of these field staff will be outsourced.

2.4 Data Processing

A Data Processing programme was developed for the entering of questionnaires received from the field. The information in completed questionnaires was manually scrutinized, edited and coded before sending them for entry. Computer editing will also be done as a way of validating the data. The data entry process will last for about two weeks. A report will be produced for detail analysis of data obtained from the field.

2.5 Sample Achieved

A total sample of 260 operators in the quarrying sector was targeted; however, a total of 239 sand miners and stone breakers were successfully interviewed from 24 localities. This means a total of 21 operators were not interviewed due to outright refusal. The survey was done using face-to-face interviews with callbacks to completed interviews in some cases.

3.0 DATA ANALYSIS

This section presents the findings of the survey and highlights key issues for policy formulation.

3.1 General Information

The survey collected general information on the individuals and/or establishments operating in the quarrying sub-sector. The information collected ranges from name and address of business, registration status as well as organization status of the establishments canvassed in the survey.

3.1.1 Locality of Establishments

The locality of the establishments constitutes the address of the business covered in the survey; in other words, it expresses the location of the business canvassed.

This section presents the analysis of the data obtained from the field in simple frequency tables

Table 3.1.1: Distribution of Respondents by Locality

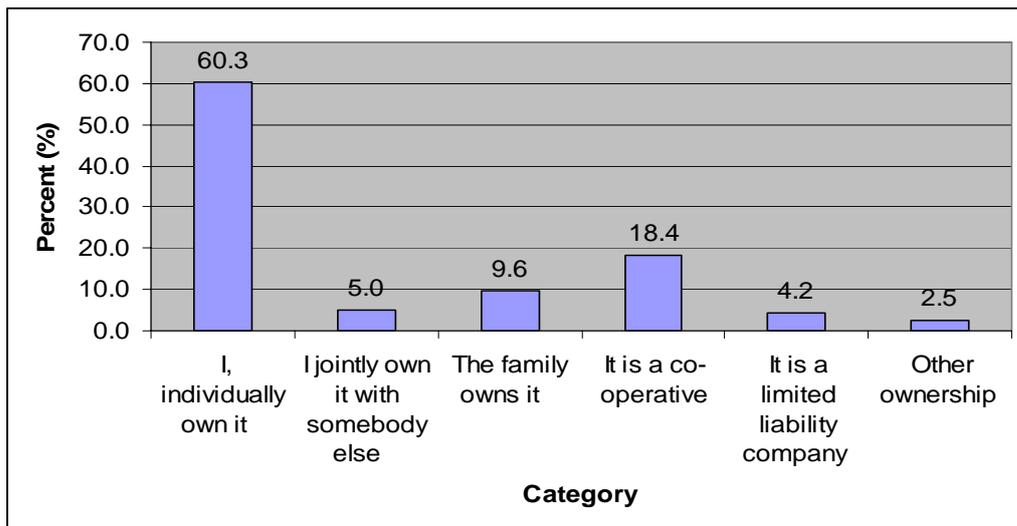
Locality	Frequency	Percent (%)
Adonkia	48	20.1
Bololo	18	7.5
Devil Hole	9	3.8
Fisheries	27	11.3
Hamilton	82	34.3
Hastings	3	1.3
John Obey	9	3.8
Kissy Dockyard	3	1.3
Lakka	17	7.1
Number 2 River	12	5.0
Rokel	3	1.3
Sugar Land	2	0.8
Sussex	6	2.5
Total	239	100.0

Table 1 show that most of the respondents were located at Hamilton Beach (29.7%); followed by Adonkia (20.1%) and Fisheries-Kissy Dock Yard Area (11.3%). These three localities are the sports were sand and or stone mining is concentrated.

3.1.2 Organizational Status

The survey collected information on ownership status of businesses and the results are shown in Figure 3.1.2. The results show that of the 239 establishments covered, 60.3% are individually owned, otherwise known as sole proprietorship.

Figure 3.2.1: Distribution of Establishments by Ownership



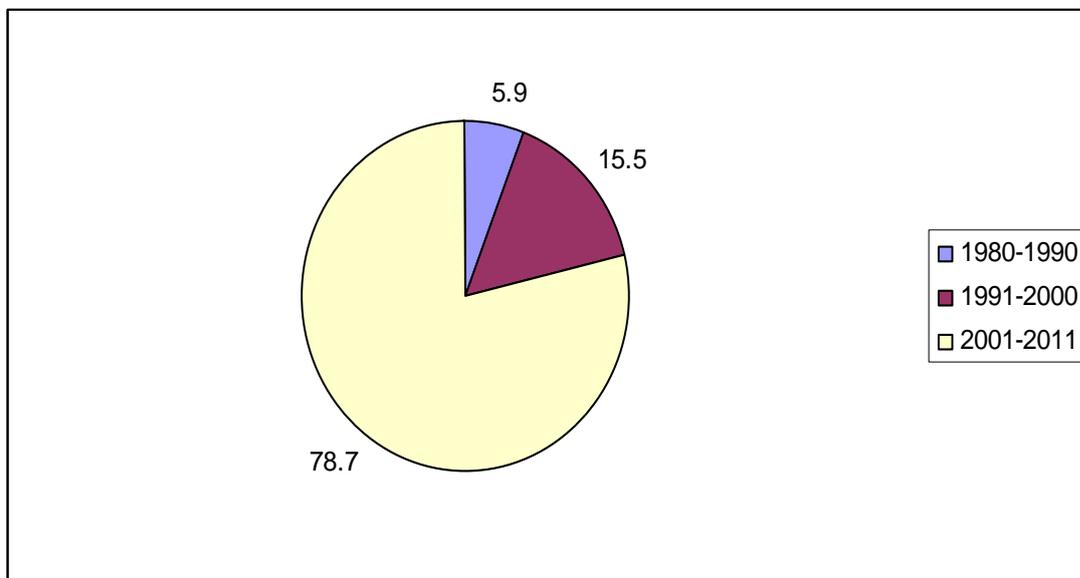
As shown in Figure 3.1.2, there were considerably more Sole Proprietorships (60.3 percent) than cooperatives/groups/association (18.4 percent), family owned businesses (9.6 percent) and joint ownership (5.0 percent). These results underline the small scale nature of business operations in the country and the informal nature of the economy which may be due to the unavailability of funds to undertake such capital intensive activities.

3.1.3 Year of Commencement of Operation

The year of commencement of operation was used to classify the 239 establishments canvassed into:

- 1980-1990
- 1991-2000
- 2001-2011

Figure 3.1.3 Year of Commencement of Operation



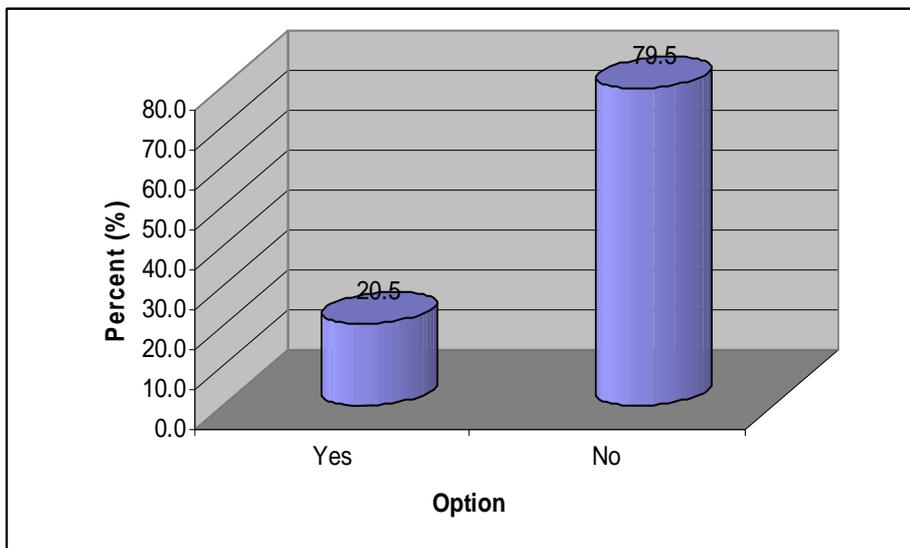
The classification was done in order to isolate the influences of major political decisions on the industrial sector.

Even though there has been marked increase in the number of establishments from era to era, the data in figure 3.1.3 shows that most of the businesses (78.7%) were established during the post war period (2001-2011). This may be due to increased demand for quarrying products as a results scaling up of construction activities in the capital city and the country as a whole.

3.1.4 Registration Certificate/License

The survey asked respondents whether or not their business were registered or licensed with the relevant authorities, which are in this case refers to the Area Chiefs and Local Council Authorities and the results are shown in Figure 3.14

Figure 3.1.4 Registration Certificate/License

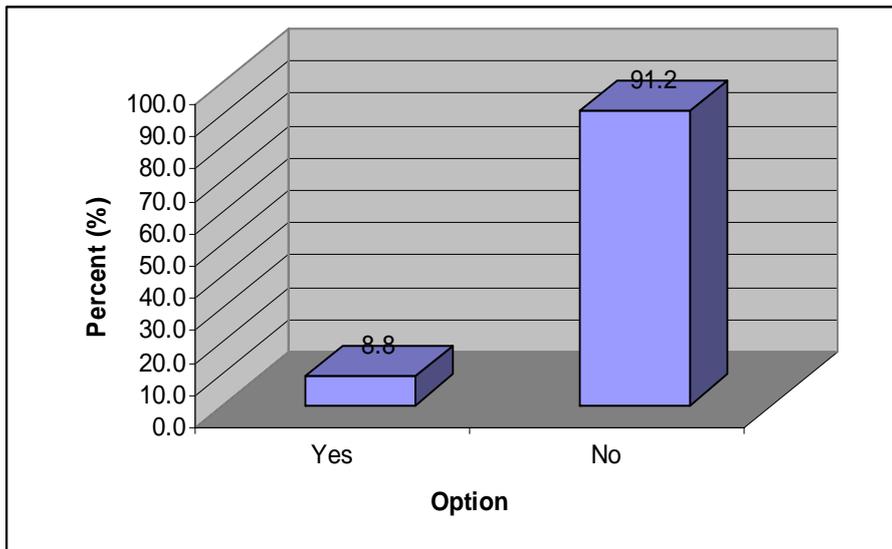


The results show that only 20.5% of the 239 establishments canvassed have registration or license certificate for operating in the quarrying sector. This means that 79.5% is underground and hence operating in the informal sector. It could be that the low capital base of these businesses is responsible for these vast informal operations in the sector.

3.1.5 Belonging to an Association

The survey asked whether or not the respondents belong to an association or a group, and the responses are shown in Figure 3.1.5.

Figure 3.1.5 Belonging to an Association



The data in Figure 3.1.5 shows that only 8.8% of respondents belong to an association or group; while 91.2% are individual miners and enterprises operating in the sector.

3.2 Operating Characteristics

This section analysis operating characteristics of establishments such as employment, operating revenue, operating expenditure, intermediate consumption and gross value added of establishments for the fiscal year 2010.

3.2.1 Employment Characteristics

The data shown in Table 3.2.1 shown the total and average number of persons engaged in quarrying activity by locality. The survey results show that there were a total of 6761 persons engaged in the various localities in quarrying. Of this total 6216 persons are employed in the Fisheries locality alone.

Table 3.2.1 Employment Characteristics

Locality	Total number Persons Engaged	Average number Persons Engaged	% Of Total
Adonkia	114	2	1.7
Bololo	30	2	0.4
Devil Hole	45	11	0.7
Fisheries	6216	266	91.9
Hamilton	158	5	2.3
Hastings	12	4	0.2
John Obey	21	2	0.3
Kissy Dockyard	30	10	0.4
Lakka	52	3	0.8
Number 2 River	28	7	0.4
Rokel	15	5	0.2
Sugar Land	2	1	0.0
Sussex	38	6	0.6
Total	6761	28	100.0

3.2.2 Intermediate Consumption

The concept intermediate consumption is used frequently in national accounts, and it means the value of inputs used up in the production of the product or service. In the case of quarrying, intermediate consumption includes the purchases of fuel, spare parts other instruments that have life-span of less than one year, and other goods and services used in the course of producing stones and sand products. The survey obtained data on the intermediate consumption of businesses engaged in sand and stone mining, and the information is presented in Table 3.2.2.

Table 3.2.2: Percentage Distribution of Intermediate Consumption by Locality

Locality	Total Intermediate Consumption (Le m)	Percent (%)
Adonkia	325.08	2.0
Bololo	109.80	0.7
Devil Hole	827.82	5.1
Fisheries	3,132.65	19.2
Hamilton	8,051.23	49.5
Hastings	213.48	1.3
John Obey	1,169.66	7.2
Kissy Dockyard	185.40	1.1
Lakka	0.0	0.0
Number 2 River	2,012.04	12.4
Rokel	127.08	0.8
Sugar Land	122.20	0.8
Sussex	-	0.0
Total	16,276.44	100.0

The data in Table 3.2.2 show that intermediate consumption of businesses survey valued at Le 16,276.44 Million in 2010. Of this amount 42.0% was associated with businesses/individuals operating in the Hamilton Beach locality. This means that Hamilton producers spend more on sand and stone production than any other communities.

3.2.3 Revenue Turnover by Locality

The revenue turnover is the amount of income received from the sales of sand and stones by the various establishments/individuals players in the localities. The value was obtained by multiplying the price of a trip of sand or stone by the number of trips sold. The results are shown in Table 3.2.3.

Table 3.2.3: Percentage Distribution of Total Turn over by Locality

Locality	Total-turnover (Le'M)	Percent (%)
Adonkia	43,336.80	28.9
Bololo	15,662.40	10.4
Devil Hole	3,622.32	2.4
Fisheries	20,666.88	13.8
Hamilton	33,804.16	22.5
Hastings	1,712.88	1.1
John Obey	3,981.12	2.7
Kissy Dockyard	2,527.20	1.7
Lakka	5,843.76	3.9
Number 2 River	10,264.80	6.8
Rokel	1,263.60	0.8
Sugar Land	468.00	0.3
Sussex	6,973.20	4.6
Total	150,127.12	100.0

The data in Table 3.2.3 shows that a total amount of Le 150,127.12 Million was declared as total turnover by operators in the various localities. Of this amount, 28.9% was declared by operators in the Adonkia locality; 22.5% is declared by operators in the Hamilton locality; 13.8% from Fisheries and 10.4% from Bololo.

Table 4: Percentage Distribution of Total Cost by Locality

Locality	Total cost (LE'M)	Percent (%)
Adonkia	20,234.32	17.0
Bololo	6,809.48	5.7
Devil Hole	47,496.78	39.8
Fisheries	14,046.88	11.8
Hamilton	18,202.93	15.3
Hastings	1,102.68	0.9
John Obey	1,556.54	1.3
Kissy Dockyard	1,449.00	1.2
Lakka	1,205.57	1.0
Number 2 River	5,103.96	4.3
Rokel	875.88	0.7
Sugar Land	153.40	0.1
Sussex	960.96	0.8
Total	119,198.38	100.0

Table 4 shows that a total cost of Le 119,198.38 Million was incurred by operators in 2010. Of this total, 39.8% was incurred in Devil Hole locality; 17.0% was incurred in Adonkia; 15.3% was incurred in Hamilton; while 11.85 was incurred in Fisheries.

Table 5: Percentage Distribution of Gross Value Added by Locality

Locality	Gross value Added	Percent (%)
Adonkia	43,011.72	32.1
Bololo	15,552.60	11.6
Devil Hole	2,794.50	2.1
Fisheries	17,534.23	13.1
Hamilton	25,752.93	19.2
Hastings	1,499.40	1.1
John Obey	2,811.46	2.1
Kissy Dockyard	2,341.80	1.7
Lakka	5,843.76	4.4
Number 2 River	8,252.76	6.2
Rokel	1,136.52	0.8
Sugar Land	345.80	0.3
Sussex	6,973.20	5.2
Total	133,850.68	100.0

Table 5 shows that the gross value added from the sector amounted to Le 133,850.68 million in 2010. Of this amount 32.1% came from Adonkia, 19.2% came from Hamilton; 13.1% came from Fisheries and 11.6% came from Bololo locality.

4.0 RECOMMENDATIONS

The Benchmark Survey of Quarrying Activities should be expanded to cover other sand extraction and stone-breaking sites outside the Western Area; this then required the provision of more funds for the survey; More formal establishments such as construction companies mining their own sand and stones should be included and ore investigated further.