VEGETAL REMOVAL IN GWARIMPA SETTLEMENT: A MENACE TO THE ENVIRONMENT

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BEING A THESIS SUBMITTED TO THE POSTGRADUATE SCHOOL, FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF POSTGRADUATE DIPLOMA IN ENVIRONMENTAL MANAGEMENT.

DECLARATION

oluwaseun A. of the Department of Geography, School of Science and Science Education, ral University of Technology, Minna. Do hereby declare that this thesis "Vegetal Removal in impa Settlement: A Menace to the Environment" is an authentic research work conducted by nder the supervision of Dr P.S. Akinyeye. This work has not been presented either wholly or for any degree elsewhere. All references to previously published materials are fully owledge

Signature

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CERTIFICATION

This thesis titled: 'Vegetal Removal In Gwarimpa Settlement: A Menace To The Environment' by Oni Oluwaseun .A. (PGD/GEO/2005/339) meets the regulations governing the award of Post – Graduate Diploma (PGD) of the Federal University of Technology, Minna and is approved for its contributions to scientific knowledge and literal presentation.

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DEDICATION

This dissertation is dedicated to my parents Engr. & Mrs. S. O. Oni for their love and support in my life.

Secondly, to my siblings Mrs. O.Y. Dada, Busola, Ayodeji, Olayimika and Oyewole for their care and encouragement in the course of this programme.

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ABSTRACT

This study is an attempt to assess the removal of vegetal cover as a result of construction in Gwarimpa.

The data were collected through administration of questionnaire and field vegetal cover assessment.

The questionnaires were administered on the site engineers and the local inhabitants who were the original settlers of Gwarimpa. The result shows that the percentage of trees formerly presence in the area has drastically reduced when the construction started.

Before the construction, the original settlers explained that trees occupied 90% of total land cover in Gwarimpa area.

At presence, the result of the study shows that houses, roads and other services occupied over 80% of the same land. This is a clear indication that houses/road replace most of the vegetal cover.

The result of this vegetal cover removal shows that micro climate change occurred as a result of deforestation, and this leads to "heat Island".

There is also distortion of natural terrain and destruction of ecosystem thereby affecting other forms of life.

The project see to awaken and call on mankind to play its lead role and shoulder its responsibility by preserving and protecting the ecosystem especially when carrying out construction at site.

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CHAPTER ONE

1.0 INTRODUCTION

The planet earth which is a home to man also happens to be a home to millions of other living organisms whose fates are intricately interwoven and interdependent on one another.

Man's daily technological advancement (especially construction) spell environmental threat to the rest of the nature and man himself.

Construction is the instrument by which man provides himself and all the service area for man's daily activities such as offices, schools, market etc. by means of construction, access roads were put in place to linked all these areas of social and economic activities.

In the course of providing these infrastructures, trees, plants and animals lost their natural status in the environment.

Environmental degradation as a result of construction of residential houses, dams, and road network is rampant and what happened to the environment when there is mass construction work going on in an area is the main target. Gwarimpa-Abuja is once a beautiful place full of varieties of tree-fruits and beautiful terrain. Today, these natural gifts are lacking. Every where is been occupied by buildings, road network and other infrastructure.

The project analyses all the negative impact of construction as it affect the environment.

1.1 DEFINITION OF BASIC CONCEPT

Construction can be defined in various ways as:

- Oxford dictionary defined construction as 'Making up by ways of bringing together different components into place.
- Construction can be refer to as "an act of bringing or putting in place, a thing or structure that is never in existence in a place.

1.2 AIMS AND OBJECTIVES

The aims and objectives and objectives of this project are:

- To assess the extent of environmental degradation as a result of construction in Gwarimpa.
- To outline the positive/Negative impacts of construction.
- To identify when construction become environmental degradation.
- To recommend appropriate approach to construction/environment friendly.

1.3 GEOGRAPHICAL BACKGROUND OF THE STUDY AREA

- Gwarimpa is a village located North-West of the central Area of Abuja. Bounded in the North by Dutsen-Alhaji, South of Kado, west by Deidei, and the East by the Katampe District.
- Gwarimpa project site stretch from Katampe to Dutsen Alhaji, occupying an estimated area of 850 Hectares of land, to accommodate over 4,800 units of different types of residential quarters.

Relocation of Federal Government, Federal Ministries and parastatals, increased the demand for accommodation. Gwarimpa estate is HFA'S response to the demand for decent and affordable accommodation in the FCT.

In Gwarimpa there is basically two seasons. The rainy and dry seasons. The season for April to October marks the reasonably cool period of the year, sunshine goes down to average, humidity is rather high at this period.

The dry season is from November to March, the harshest dried period of hammattan and hottest period of February to mid – April.

The average annual rainfall of the area is between 1820 to 1890mm. The minimum average rainfall is recorded at 1622mm and normally short from April.

This amount of water vapour air can hold at a particular period and temperature is prominent. The relative humidity is very low but rises up to 50% in the dry season around February.

Highest temperature is being recorded daily, the dry season due to cloudless sky. The temperature rises as high as 370 in March.

The sun's rays striking the surface is low due to thick vegetal cover. This was recorded before the commencement of the housing project.

The direction of wind is North-East and South-West cardinal directions. Before the construction commenced, the area experienced no local wind due to thick vegetal cover which serves as breaker.

There exist river like the Gwarimpa River diving estate into two. Other smaller stream named locally Kodo and Gbomngo exists closely.

The topography is fairly undulating and well-drained with seasonal streams crisis-crossing the estate area providing natural drainage channels. Some rock outcrops exists within the estate area.

1.4 STATEMENT OF PROBLEMS

Information's about the area before commencement of construction work, could not easily reached due to the fact that majority of the original inhabitant had relocated to different part of Abuja.

The most dominant species of trees and life forms cannot be obtained from the Gwarimpa field office.

Also, the occupation of original settlers is farming but no trace of farm land in this report because everywhere is taken over by construction work.

1.5 JUSTIFICATION

This project is justifiable because of absence of other component of the environment, which provides man with natural comfort, nut being destroyed.

A typical village setting is an example of man environment friendly. Gwarimpa is an example of man environment at war.

CHAPTER TWO

2.0 LITERATURE REVIEW

The natural environmental setting covers the atmosphere, lithosphere and biosphere. There are numbers of interaction that propelled the different types of human related activities.

According to Oyebanje (1995) the biosphere, which include man and his society, is the real life layer where numbers of events thrive.

The most interesting project of the Nigeria government is the creating of new federal capital, an idea which was mooted in 1975. The reasons given for the clamour was congestion in housing and intolerable condition of living in Lagos.

In all human societies provision of housing is considered as one of the necessities of life. Thus one of the worst characteristic features of destitution and neglect is homelessness.

Human development in all ramifications essentially requires decent shelter. Also yardsticks measuring of a successful life in most societies is acquisition of own's own house.

One needs a house to start a family, to be creative. The provision and acquisition of a decent shelter is one of the challenges of life. But then what makes a house?

2.1 GOVERNMENT INVOLVEMENT IN HOUSING CONSTRUCTION

The colonial enterprise brought in its wake the need for skilled labour force to man government establishments and infrastructure such as railways, ports etc.

The labour force came from various part of the country to Lagos and other cities such as Enugu, Kaduna, Ibadan, Port-Harcourt. These people needed houses close to their place of work since it was not possible to go back to their homes or origin at the close of work daily. To address this vital problem, construction work started of government quarters at places like surulere in Lagos and railway quarters across the country.

Throughout the colonial period involvement of government in housing delivery was restricted to construction of official quarters for its personnel who occupied same as long as they remained in its service. In other words the colonial governments across the country did not initiate any mass-housing policy basically because the colonial enterprise was not about deliberate provision of welfare services to the Nigerian populace. The job was left for the indigenous governments that took over with the passage of time the problem of rural-urban migration resulted in infrastructural facilities and housing crises especially in the urban areas.

The Federal Government during the first Republic was for most of the time handicapped by political crises and concentrate in resolving these. It was actually only after the civil war, precisely in October 1972, that

the then Federal Military Government decided to squarely address the acute housing problems facing the country which was aggravated by the civil war. Housing consequently became an integral part of the last war and the policies of the 3R's, VIZ; Reconstruction, Rehabilitation and Reconciliation.

The Federal Military Government initiated the construction of 54,000 housing units – 10,000 units were to be built in Lagos while 4,000 units were for each of the then remaining 11 states of the Federation. The houses were scheduled to be delivered by the end of September, 1987. this signaled a new era in government active involvement in housing the citizenry of this country. In order to realize this laudable objective, the government constitutes a high-level special implementation Task Force made up of five (5) permanent secretaries.

The special Task Force recommended the establishment of a new organization with the status of a corporation that would be saddled with the responsibility for execution of the proposed National Housing Programme. It was submitted that the new organisation was more dangerous than the use of normal government machinery because it could obtain technical staff and facilities much more quickly and adequately. It was against the above backdrop that Federal Housing Authority was established with the promulgation of Decree No. 40 of October 1973. The Decree charged the Authority with the following responsibilities vis-à-vis housing delivery:-

a) The preparation and submission from time to off proposals for National Housing programmes to the Federal Government.
b) The making of recommendation to the government on such aspect of urban and regional planning, transportation,

communication, Electrical, Sewage and water supply, development as may relevant to the useful execution of housing programmes by government.

c) The execution of such housing programmes as may be approved by Government.

2.2 The phased relocation of Federal Government ministries and parastatal and the final relocation of sit-of government to Abuja has immensely increased demand for accommodation for all income groups.

The FCDA embarked on construction of staff quarters in the city since early 80's Garki district cover 570 Hectares of land.

The construction of houses and roads in Garki has resulted in deforestated and rubbed the environment of its natural beauty. Likewise Maitama and other areas where FCDA housing accommodation.

2.3 **KUBWA/LUGBE HOUSING ESTATE IS FHA'S response to the** demand for decent accommodation in the Federal Capital Territory following mass movement of Federal government staff and people in general, from other parts of the country to Abuja.

There are 422 housing units in kubwa while Lugbe has 3500 units. There is also, J.T Useni housing estate kado with a total of 477 units. All these estates are the products of national housing programme as executed by the Federal Housing Authority.

2.4 **INNOVATIONS**

Gwarimpa estate should inculcate

(1) Planning concept of simple neighbourhood cluster known as community

(2) Each community should accommodates about 500 – 1000 housing unit and about 200-250 species of tree, shrubs and life-forms to indicate man-environment friendliness.

(3) Other life-forms should be allowed to exist as to provides recreational services.

(4) Rock outcrops and streams valleys should be left to provide sites of scenic significance and green belt respectively,

(5) Natural drainage's should be allowed to exist, while constructed ones should linked natural ones for free flow without blockages.

CHAPTER THREE

3.0 DATA AND COMPUTATIONAL TECHNIQUE

3.1 DATA TYPEDS AND AVAILABITY

3.1.1 DATA

The types of dada required for this project are the degree of destruction of trees, shrubs, grasses, animal life and distortion of topography within area affected by the development. These information's are available at site and be obtained in many ways.

3.1.2 METHOD OF DATA COLLECTION

The specific method of data collection is through vegetal cover survey, administration of questionnaire to some engineers randomly selected, and the villagers who were residing in the area before construction work commenced.

Other method employed were field conservation and information from environmental monitoring (Field) office Gwarimpa.

3.1.3 COMPUTATIONAL METHOD (TECHNIQUES) ADMINISTRATION OF QUESTION.

In the interview sequent oral interview was conducted among the people living in the area. Some engineers and villagers of Gwarimpa (original setters) were interview and their responses recorded. The result was an identification of vegetal cover types of which the survey will also identify.

3.1.4 FIELD OBSERVATION

When conducting the interview, I was personally making observations of some land features such as rocks, hills and the natural terrain or

topography and how it relates to the general environment after construction work.

3.1.5 VEGETAL COVER SURVEY

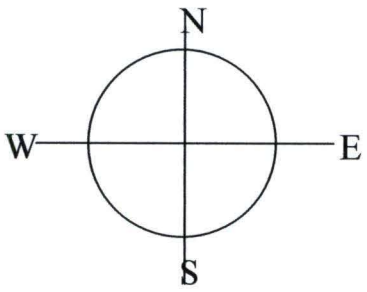
This is the most important method used for data collection and computation.

At site, for conspicuous positions were selected for the purpose of the survey. The four positions were named A, B, C and D.

In position O, a survey of the first quadrant is taken and the result recorded and likewise quadrant 2, 3 and 4. the survey is to enable you give scores to the most dominant vegetal cover in each positions.

Specially, trees, grasses, shrubs life forms and diagram (houses or rocks) were the main items surveyed. Also in each of the quadrant, the most dominant is chosen, the next, up to the last item in the list and percentage scores are given to each of item depending on it numbers in that quadrant.

In each of the positions, four quadrants were formed as shown:



Quadrants	**1**	**2**	**3**	**4**
Trees Shrubs Grasses Farmland Bareground				

CHAPTER FOUR

4.0 ASSESSMENT OF EXTEND OF DEGREDATION DURING PRE AND POST CONSTRUCTION PERIOD.

4.1 DATA ANALYSIS.

The data collected was analyzed by finding the average percentage of each vegetal cover in each of the quadrant.

Below are the percentage score in position A, B, C and D and also percentage scores of each quadrants.

POSTION A.

Quadrants	**1**	**2**	**3**	**4**
Trees	5	5	10	5
Shrubs	5	10	5	5
Grasses	5	5	5	5
Farmland	0	0	0	2
Bareground	85	80	80	83
TOTAL	**100%**	**100%**	**100%**	**100%**

POSITION B

Quadrants	**1**	**2**	**3**	**4**
Trees	20	5	3	5
Shrubs	10	5	5	5
Grasses	5	5	5	5
Farmland	0	1	0	1
Bareground	70	84	87	84
TOTAL	**100%**	**100%**	**100%**	**100%**

POSTION C.

Quadrants	1	2	3	4
Trees	5	3	5	2
Shrubs	3	5	5	3
Grasses	3	5	5	3
Farmland	1	0	1	1
Bareground	88	87	84	91
TOTAL	**100%**	**100%**	**100%**	**100%**

POSTION D.

Quadrants	1	2	3	4
Trees	1	1	1	1
Shrubs	3	2	1	1
Grasses	5	4	2	1
Farmland	1	2	1	0
Bareground	90	91	95	97
TOTAL	**100%**	**100%**	**100%**	**100%**

AVERAGE % SCORE

Quadrants	1	2	3	4
Trees	6	3	4	3
Shrubs	5	5	4	3
Grasses	4	4	4	3
Farmland	0	0	0	1
Bareground	80.32	80.55	80.60	830.81
TOTAL	**100%**	**100%**	**100%**	**100%**

4.2 IMPACTS OF CONSTRUCTION ON THE ENVIRONMENT

The first stage of construction process is the site clearing which involved mass-destruction of trees, grasses, shrubs in order to pave way for construction.

4.3 NEGATIVE IMPACT

(1) Deforestation trees, grasses, shrubs, which provide natural beauty.

(2) The construction of houses/road had deprived other life-forms the right to exist and form part of the natural environmental setting.

(3) Distortion of natural environmental setting, gave rise to miniclimate change, which developed as a result of the constructions.

(4) Construction of the housing estate, had deprived man and other animals, access to fruit-food, obtainable from economy trees and shrubs.

(5) The construction word affected the water-cycle of the area as observed in the changed in water table of the down streams and wells.

4.4 NEGATIVE IMPACT OF ROAD CONSTRUCTION

Use of bitumen in road construction and maintenance techniques such as surface dressing entails spraying the graded road with a thin film of binder (Bitumen) and followed by application of a stone-chippings. The road is then rolled to embedded chippings into the surface.

Negative effects of bitumen on the health of workers and public include the followings:

1. Contamination of Rivers/Streams by run-off from roads sides, kill aquatic life and insects due to toxic contents.
2. Burning skin due to hot temperature of operation and dangerous inhailing of gas released by hot bitumen.

3. Bitumen spillage in an area, kills grasses, shrubs and insects as the vegetal cover badly survive the toxic chemical of the bitumen.

4.5 INTERNATIONAL AGENCY REPORT

The international agency for research on cancer (IARC) Iyon, France, and agency of the World Health Organization (WHO) has concluded in a published monograph on poly-nuclear aromatic compound part 4 (1985), that bitumen coal tar and derived products that petroleum bitumen to contain small quantities of 4-6 ring high boiling polycyclic aromatic compound, some of which have been shown in animal testing to have carcinogenic properties.
Use of bitumen therefore has negative impact on man and his environment.

CHAPTER FIVE

5.0 SUMMARY OF RESEARCH FINDINGS.

Investigation conducted reveals that the greatest threat to environment is as a result of construction of houses and roads.

Interview conducted also shows that man is not complete if trees, shrubs and grasses are not around him to provide presence of nature.

All the interview responses were against the deforestation. The vegetal cover survey, which is the main instrument for identifying the dominant species in the area, also shown that over 80% of the 850 hectares is covered by houses and roads.

Below is the summary result of the vegetal survey:

Quadrants	**1**	**2**	**3**	**4**
Trees	6	3	4	3
Shrubs	5	5	4	3
Grasses	4	4	4	3
Farmland	0	0	0	1
Bareground	80.32	80.55	80.61	80.81
Total	**100%**	**100%**	**100%**	**100%**

Vegetal Cover	**%**
Trees	4
Shrubs	4.25
Grasses	4.25
Farmland	0.25
Bareground	80.57
Total	

5.1 RECOMMENDATIONS

Since construction of houses/roads is to satisfy man's desire to conquer the environment and provides shelter, I wish to recommend the following:

1. The designing and planning of residential estate like Gwarimpa should be done interwovenly, integrating and not substitutionally. That is to say that houses/roads should not completely replaced other vegetal cover but should integrate it as we integrate other features of development.
2. In execution of construction work, deforestation and afforestation should be compatible integral component. When you clear your site for the purpose of construction efforts to ensure that other plants are regenerated around the site to replace the removed ones at the same time.
3. Attractive neutral features such as Rivers/Streams, rocks etc should be allowed to exist hand in hand with man to induced nature presence. River/stream should not be blocked in other to create artificial water channel or terrain.
4. For every ten lives destroyed during construction, at least five (5) should be given the right to live long with man. They are source of food and joy to man.
5. Modern technology should be enhanced to construct alternative shelters to other life-forms that are being displaced as a result of development.

5.2 CONCLUSION

From the investigation and findings in course of this research, I will be optimistic to conclude that, man as the head of animal kingdom is now realizing the importance of other elements of the environment, as shown by numerous international agencies spring up to challenge unwarranted attacks on the environment.

However, man should know that the similarity in the environment and the human being is quite interesting. Both are conceived, nurtured in pregnancy, delivered and nursed through growth stages to maturity in quite same way.

If for any reason natural or artificial, something goes wrong with these stages, the environment like human being will fall sick and will require hospitalization.

Construction as an indices expressing man's technological advancement should be mild on the environment.

Surely, this planet earth (which constitute the environment) is not only a home to man, but also home to millions of other life forms.

Destruction of trees (deforestation) had taken the life of thousands of tree species in Gwarimpa without afforestation.

New approach to construction of mass residential houses should be introduced and effort should be geared toward public awareness on environment.

FEDERAL UNIVERSITY OF TECHNOLOGY MINNA
QUESTIONNAIRE FOR DATA COLLECTION ON NEGATIVE IMPACT OF CONSTRUCTION OF GWARIMPA HOUSING ESTATE ON THE ENVIRONMENT.

1. How do you feel in the absence of trees, shrubs and other life forms around you?
2. How can you rate the effect or negative impact of this construction on environment components such as:

   Trees_____

   Grasses_____

   Shrubs_____

   Other life-forms_____

   Topography_____

3. Do you prefer seen this tree, grasses/shrubs and animals being cut away or what do you think should happen to it?

   _____

   _____

4. Before this project, how was the area in terms of:
   i) Thick forest
   ii) Purely farmland
   iii) Mixed forest
   iv) Other forest reserve
5. Do you observed any changes in Rivers/Streams as regards water and its colour?

_____

b) What causes it?_____

6. Do you consider absence of that component, (trees/shrubs) as degradation?_____

   If yes why?_____

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