

Identification of Slum Areas for Improvement Inputs in Lafia Town, Nasarawa State

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Abstract—One of the United Nations Millennium Development targets is to 'achieve significant improvement in lives of at least 100 million slum dwellers, by 2020'. To monitor progress on this target a first step is to develop an operational definition to identify slum settlements. The indicators selected are: access to water and sanitation, sufficient living area, a house with durable material on a non-hazardous location and with tenure security. This paper describes the techniques of identifying slums and applied the techniques in identifying slum in Lafia town. The methodology used was selection of one district in Lafia town for this study and the district was zoned into four units. The total of 10% sample size out of 2,482 households of 250 questionnaires was administered using systematic sampling method based on proportion of houses at each zones as 90, 70, 40 and 50 respectively. The result shows that the area is a second order degeneration that needs a major improvement. Recommendations were made in this regard for urgent intervention in improving or upgrading of housing and infrastructural facilities.

Keywords—Urban slums, security, safety, degeneration, upgrading.

I. INTRODUCTION

RAPID urbanization has led to the migration of people from rural to urban areas in search of better opportunities like employment and services. This has increased the demand for affordable housing in urban areas. However, most of the urban economies of the developing countries are unable to meet these demands making people to move to the slum areas where they can afford thereby contributing to the growing number of slum population [1].

According to [2], the biggest proportion of world's total slum population is from the developing world. Every year the world slums population increases by approximately 70 million people, leading to a greater demand for the provision of shelter, employment and urban services [1]. According to the United Nations, the percentage of urban dwellers living in slums decreased from a massive 47 percent to 37 percent in the developing world between 1990 and 2005. However, due to rising population, and the rise especially in urban populations, the number of slum dwellers is rising. Surprisingly, it is currently estimated that one billion people worldwide live in slums and the figure is projected to grow to 2 billion by 2030 [3], [4].

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Currently many organizations throughout the world, such as the World Health Organization, World Bank, and U.S. Agency for International Development, are striving to upgrade existing slum conditions while also attempting to stop the urbanization of poverty from increasing. The biggest group who is investing in defining and upgrading slums though is the United Nations (UN, specifically the United Nations Human Settlement Programme (UN-HABITAT)). In fact, the UN has even created a set of Millennium Development Goals (MDG), which set a worldwide standard for "combating poverty, hunger, disease, illiteracy, environmental degradation and discrimination against women" [1].

The increase number of slum dwellers poses a threat to the environment and thus requires more intervention efforts in this direction. The provision of suitable intervention requires adequate information about slums through effective detection for monitoring and also to understand the different phases of slum development.

II. NEED OF THE STUDY

It is implicitly or explicitly assumed in poverty studies that slums account for most of the poor in the cities. Indeed, most of Nasarawa State's urban poor live in overcrowded and unsanitary settlements, commonly known as slums and squatter settlements, and usually do not have access to safe and secure shelter and basic infrastructure and services. They are forced to live in illegal and informal settlements because they cannot afford formal shelter, being excluded out of the housing markets. It is, however, important to realize that slums do not house all the urban poor, nor are all slum dwellers always poor. Income and employment deprivation may go together with deprivations in the area of housing, services (education, health and environment); such that the combination of deprivations makes it very difficult for households to get out of poverty.

Reference [5] have used index of multiple deprivation derived from the data available in the Census 2006 to identify location of urban poor for four districts in Zaria city and noted that the assumption that poverty is concentrated in slums is not correct and concluded that poverty needs to be recognized as diverse in different locations, requiring differential approach to deal with it.

Reference [2] introduced the concept of 'housing poverty' which includes individuals and households who lack safe, secure and healthy shelter, with basic infrastructure such as piped water and adequate provision for sanitation, drainage and the removal of household waste.' The term 'slum', thus has wider connotations implying a wide range of low-income

settlements with poor living conditions. Urban development's being a state subject; governments at the state level/local level have the responsibility of declaring an area as a 'slum'. There being no standard tangible indicators for notification, there is lot of subjectivity in notification of slums. An area can be designated as a 'slum' under the State Slum Clearance / Improvement Act when the Competent Authority is convinced that the area is a source of danger to health safety and convenience, or when buildings are found to be unfit for human habitation due to dilapidation, overcrowding or lack of ventilation, light or sanitation facilities. The definition of 'slum' under the Act is quite loose and a liberal application of the law may cover substantial parts of cities as 'slums'. On the other hand, 'declared slums' may not include newer squatter settlements and settlements outside the municipal boundary and therefore may result in underestimation of the slum population.

III. BACKGROUND OF THE STUDY AREA

A. Location of Nasarawa State

Nasarawa State was created in 1996 within the former structure of Plateau State, Nigeria. Nasarawa State is bordered by Kaduna, Kogi, Benue, Taraba and Plateau States as well as the Federal Capital Territory (FCT) Abuja. The State consists of Thirteen (13) Local Governments and has an estimated land area of 27,107.8 sq. Km with Longitude 8° 08' 38" East and Latitude 8° 24' 17" North.

B. Location of Lafia Town

Lafia is the capital town of Nasarawa State and the second largest town in population size. Lafia town is situated on Longitudes 08° 30' East and Latitude 08 ° 31' north. The area is located in the middle climatic belt that is generally very warm and humid with dry and rainy seasons. It has a mean temperature range of 26°C to 30°C, a mean rainfall of 1120mm to 1500mm relative humidity of 60-80% and falls within the guinea savannah kind of vegetation; [6], [7].

IV. METHOD OF RESEARCH

Lafia town has five districts namely; Lafia city, Akunza district, Lafia West, Lafia East and Lafia North. Lafia city district which is the core traditional settlements has been selected for this study. The eastern bank of River Amba and railway enclose the old town which was walled. It is southwest of the railway and on the North edge of the river Amba. The central elements of the sector are the Emir's palace, central mosque, market and cow market at Shinge. Additionally, the old town is characterized by narrow streets which are winding and irregular in width. This is in line with the non-motorized transport technology of the time of establishment of the settlement. The indigenous cultural values of the dominant inhabitants are Kambari, Hausa-fulani and others.

The Lafia city district comprises of neighborhoods which formed part of the old structure of Lafia town. Four neighborhoods were selected and zoned during a reconnaissance survey. The Zones are; Zone A, is Ungwar

Maina which is the core area of Lafia was delimited for this study, Zone B, is Kofar Pada which was equally delimited using physical features of land marks such as roads, streets, stream, etc. Zone C, is Ungwar Doka which was delimited and Zone D, is Sabongari/Shinge which has more organized structures compared to other zones was also delimited for this study. The total of 10% sample size out of 2,482 households of 250 questionnaires was administered using systematic sampling method based on proportion of houses at each zones as 90, 70, 40 and 50 respectively.

V. TECHNIQUES USED TO IDENTIFIED SLUM AREAS IN LAFIA TOWN

A. Rough Screening or Quick Method

This is a technique that is employed to identify slum or physically degenerated part of a town. The technique requires physical inspection and subjective identification of a slum area. The procedure is as follows:

- Set primary or secondary criteria of roughness
- Conduct inspection survey of the area and delimit slum area
- Divide the area into identified units
- Examining the building conditions
- Examining the environmental condition
- Using (d) and (c) make a final classification into different grades of blight e.g. first grade slum intensity area; second grade slum intensity areas etc.

The technique can be conducted using the following steps:

- Conduct a quick reconnaissance survey of the study area to identify serious degeneration
- Based on that survey, the areas are divided into blocks of different degree of degeneration using physical features such as road, streets etc. as boundaries.
- Examine the physical conditions of buildings (roof, window, wall, floor, etc). Here also, existing facilities and their adequacy were determined. Using this background,
- Based on examination in (3), the various buildings are rated or ranked into grades of physical conditions as follows:

Score 3 = If more than 60% of structures are affected

Score 2 = If 30% - 60% of structures are affected

Score 1 = If less than 30% of the structures area affected

- Assess environmental conditions of each blocks by taken notice of the condition of drainage, condition of roads, overcrowding, sewerage condition, general cleanliness, building setbacks, plot size, etc. Based on the assessment you proceed as follows:

i. *Mark X* = If entire block/zone is affected

ii. *Mark /* = If half of the block/zone is affected

- Make a final classification using the evaluation on step 3, 4 and with environmental condition assessed in step 5. Therefore, when the two are brought together you have an area with 3X or 3/, 2X or 2/, 1X or 1/, etc. Based on the classification 3X will be the worst and 1/ is the least degenerated. The worst can be considered as the first

degree of degeneration and least as the sixth degree of degeneration.

B. Multiple Index Method

This method is as follows:

- In this method the slum area is zoned
- The indicators are weighted on percentage (in negative form) e.g. percentage of house without water, electricity, toilet, and without some communities facilities
- These are then converted into an index for each of the factors as observed in each zone. This is done against base values. The index is given as

$$\text{Index} = \frac{\text{Observed value} \times \text{Weight}}{\text{Base Value}} \times 100$$

Find the average of the total factor index for each zone.

Evaluate as follows:

79 - blight setting in

79 – 80 marginal blight area

> 80 – High intensity blight area

TABLE I
EXAMPLE OF CALCULATION OF MULTIPLE INDEXES FOR ZONE A

Variables	Weight factor	Base Value	Observed value	Index
% without water	43	40	20	150
% without electricity	32	50	30	120
% without toilet	62	30	25	167
Total index				477
Average				159

The value 159 > 80, therefore the zone is a high intensity slum blight area.

C. Weight And Exponent Method

This is modification of the rough screening method. The procedure is as follows:

- Undertake procedure as itemized in rough screening method
- Weight is then assigned to each of the blight or slum indicators from 5 to 1 scores as the indicators in the respective unit or zone. The lower the total score, the higher the slum intensity.
- Produce a sliding scale against which graduation of intensity could be made of.

TABLE IV
PHYSICAL INFRASTRUCTURAL FACILITIES

Attributes of Selected zones	House holds	Water Supply		Electric Supply		Sanitation		Drainage	
		Yes	No	Yes	No	Yes	No	Yes	No
Zone A Ungwar Maina	40	29	11	13	27	26	14	9	31
Zone B Kofar Pada	90	37	53	62	28	24	66	16	74
Zone C Ungwar Doka	70	40	30	51	19	32	48	14	56
Zone D Sabongari/Shinge	50	13	37	35	15	21	39	7	43
Total	250	119	131	161	89	103	167	46	204

Source: Field survey, 2012

TABLE II
GRADUATION WEIGHT OR EXPONENT METHOD

Scale	Intensity	Type of slum
0 to 20	Very poor	First order
20 to 50	Poor	Second order
50 to 90	Fair	Third order
> 90	good	Fourth order

VI. ENVIRONMENTAL CONDITIONS OF THE AREA

A. Data Analysis

TABLE III
PHYSICAL CONDITIONS OF THE SELECTED ZONES IN LAFIA TOWN

Characteristic s	Items	Zone A (%)	Zone B (%)	Zone C (%)
Age of houses	0-9 years	5	1	2
	10-19 years	5	2	5
	20-29 years	8	4	8
	30-39 years	24	8	15
	Above 40 years	58	85	70
Building types	Compound type	72	89	80
	Rooming type	16	11	18
Construction materials wall	Flat	12	-	2
	Cement	50	10	35
	Mud	16	80	50
	Mud block	24	10	13
	Brick	10	-	2
Floors	Cement	82	75	80
	Mud	10	25	18
	Tiles	3	-	1
	PVC	5	-	1
	Zinc	97	96	99
Roof	Asbestos	3	-	1
	Timbers	-	1	-
	Thatch	-	1	-
	mud	-	2	-
	Every 6 months	7	2	5
Level of maintenance	Yearly	30	8	11
	After 2 years	26	10	20
	When affordable	42	68	52
	No repairs	7	12	12

Source: Field survey, 2012

House condition is one of the determinant factors regarding the slum environment. House condition in slums has been considered on the basis of all the other parameters selected. Table III exemplifies that out of the 2482 houses, only 46 houses (1.9%) fall under very good condition, 221 houses (8.9%) are under good condition, 582 houses (35.3%) having medium condition, 693 houses (23.4%) having bad condition and 940 houses (37.9%) having very bad conditions.

1. Condition of Water Supply

In the study area 131 households (52.4%) doesn't have the piped water connection. Availability of water to houses is highest in Ungwar Maina where more than 72.5% houses have water connection and condition is the same in Ungwar Doka. But in Kofar Pada and Sabongari/Shinge the situation is really bad.

2. Electric Supply

In the study area, out of total 250 households surveyed, 161 houses (64.4%) have electric supply; whereas 89 houses (35.6%) do not have this facility. Though it has been observed that in some houses the overall condition is very bad, but electricity is available.

3. Sanitation Condition

The slums of study area show medium to better sanitation condition as 103 houses (41.2%) in the area have sanitation facility and 167 houses (66.8%) without sanitation. But if we take the slums individually into account, it reveals an interesting picture.

4. Drainage Condition

In the area under study, it has been observed that out of 250 households surveyed 204 houses (81.9%) don't have any drainage facility. Wherever drainage facility is available in 46 houses (18.4%) and all the drains are open drains. Wherever open drains are available, though either they are too narrow or half the portion is filled up with garbage.

VII. APPLICATION OF SLUM IDENTIFICATION TECHNIQUES IN LAFIA TOWN

The analysis of the results from Table V shows that the total score of conditions is as follows:

3X = First order of degeneration - Kofar Pada

3/ = Second order of degeneration - Ungwar Doka

2x = Third order of degeneration - Ungwar Maina

2/ = Fourth order of degeneration - Sabongari/Shinge

TABLE V
 ROUGH SCREENING TECHNIQUE USED IN SELECTED ZONES IN LAFIA TOWN

Condition Items	Zone A Ungwar Maina	Zone B Kofar Pada	Zone C Ungwar Doka	Zone D Sabongari/Shinge
	1, 2, 3, 4, 5	1, 2, 3	1, 2, 3, 4	1, 2, 3, 4, 5
Cracks on wall	1, 2, 3, 2, 2	3, 3, 2	2, 3, 2, 1	1, 1, 1, 1, 1
Floor condition	1, 3, 3, 1, 1	3, 3, 2	1, 1, 2, 2	2, 1, 2, 2, 2
Roof condition	2, 2, 3, 2, 3	2, 3, 2	3, 3, 2, 1	2, 1, 1, 2, 2
Physical condition				
Window and door	1, 2, 2, 2, 2	3, 2, 2	3, 3, 1, 1	2, 1, 2, 2, 2
Peeling paint	1, 2, 3, 2, 2	2, 2, 1	3, 3, 2, 1	1, 1, 1, 1, 1
Toilet/bath facilities	3, 1, 3, 2, 1	2, 2, 1	2, 2, 2, 2	2, 2, 2, 2, 2
Summation (mode)	1, 2, 3, 2, 2	3, 3, 2	3, 3, 2, 1	2, 1, 2, 2, 2
Road conditions	/, x, x, /, x	X, x, x	X, x, x, x	/, /, / x, /
Drainage condition	/, x, x, /, /	X, x, x	X, /, /, /	/, x, x, x, /
Open spaces	/, /, /, /, /	/, /, /	X, /, x, /	/, /, x, /, /
General cleanliness	/, /, x, /, x	X, x, /	/, /, /, /	/, /, /, x, /
Environment al condition				
Setback of building	x, x, x, /, x	X, x, /	X, /, /, /	/, /, /, x, /
Sewage condition	x, x, x, x, x	X, x, x	/, /, /, /	/, /, /, /, /
Overcrowding	x, x, x, x, x	X, x, x	X, x, x, x	X, x, x, x, x
Summation (mode)	/, x, x, /, x	X, x, x	X, /, /, /	/, /, /, x, /
Total Grade (mode of 1st & 2nd sum)	2X	3X	3/	2/

Source: Field survey, 2012

TABLE VI
WEIGHT AND EXPONENT TECHNIQUE USED IN SELECTED ZONES IN LAFIA TOWN

Factors considered	Assigned weights	Zone A		Zone B		Zone C		Zone D	
		Score	Weight score	Score	Weight score	Score	Weight score	Score	Weight score
Facilities, Utilities and services	4	1	4	0	0	0	0	1	4
Building condition	3	1	3	0	0	1	3	2	6
Building maintenance	2	1	2	1	2	0	0	2	4
Road condition	5	0	0	0	0	0	0	1	5
Drainage condition	2	0	0	0	0	0	0	1	2
Overcrowding	2	1	2	1	2	1	2	1	2
Environmental quality	2	1	2	0	0	1	2	1	2
Total		5	13	2	4	3	7	13	25

Source: Field survey, 2012

Note: The assigned weights show that: 5 = index which residents preferred most, 1 = Index which residents preferred least.

Total weighted scores for zones = 13 + 4 + 7 + 25 = 49

TABLE VII
DEGREE OF DEGENERATION AND POSSIBLE ACTION

Weight Scores	Intensity	Type of slum	Possible action
0 to 20	Very poor	First order Degeneration	Redevelopment
20 to 50	Poor	Second order Degeneration	Major improvement
50 to 90	Fair	Third order Degeneration	Moderate improvement
> 90	good	Fourth Order Degeneration	Management arrangement

Given that the total weight scores for the four zones of Lafia town shows 75, and when evaluated against the Table VI above implies that Lafia town falls under the second order degeneration and the possible planning action that could be applied is major improvement or upgrading.

VIII. CONCLUSION

In conclusion, slums improvement is very necessary in our cities which suffer from deprivation of good life that manifest in urban crime and violence, this in turn will ensure safety and security of urban dwellers. The techniques utilized in this study are not all the techniques for identification and mapping of slum areas for improvement. But there are many other more sophisticated techniques that can be employed to identify and map out slum in our urban areas. There are also many concepts in urban renewal or improvement in the new millennium which has not been discussed in this study that can help alleviate the problems faced by slum dwellers in Nigeria and other part of the world if fully utilized.

IX. RECOMMENDATIONS

In the process of improving slums areas the residents of such areas should be seen as the clients. A "hand me down" approach would not work. They should be fully consulted and their views taken into consideration. As most of them knows and are able to appreciate the gravity of their plights better than anyone else.

A process of improving slum areas should be embarked upon where the public are involve from the start to completion. The strategy of upgrading and not relocation should be used. This would result in minimal upheaval compared to relocation. However in certain circumstances for

example in cases where continued occupation results in lives being exposed to serious risks then relocation would be the only option. However in such cases efforts should be made to ensure that relocation is to a close by area. Experience has shown that relocation to out of city areas apart from being costly is often unsuccessful as people often miss their social connections and economic activities. They often return back to the city and occupy new or existing slum areas.

Economic Improvement

On the economic front this study recommends amongst other things the provision of informal forms of credit such as micro finance initiatives should be encouraged to operate within the area as part of the improvement program. The expansion of income generating business activities should be incorporated into the improvement program, as a large amount of respondents are already engaged in business and this is the main source of income. There should be government supported incentives for employers who show a willingness to provide work experience opportunities providing the necessary skills and experience needed to enable those interested in taking up paid employment.

The new rents of the improved units should be affordable to the urban poor, if not the residents will be price out of the improved units by those who can afford the rent. The government should consider the provision of a rent subsidy for those who will not be able to afford the new rent.

Social Improvement

Amenities such as health centre, schools, adults training schemes and nurseries should be provided as part of the improvement program. Improved access to slums should also be given priority by the Government at all level (Federal, State and local) and Nongovernmental organization. Properly laid down roads and pathways should be included in the design of the program. The current situation of most slums being inaccessible by vehicles is a health and safety hazard. The provision of child caring facilities, schools, youth training programs and adult educational facilities as part of the improvement program is recommended. The provision of day care facilities would enable parents to take part in skills and adult vocational training courses. This can also be used to

address the high level of illiteracy within the settlement. Adult education classes should also be provided.

The lack of availability of social amenities is an issue that should be fully addressed as part of the improvement program. The new design should include the provision of amenities such as government offices, technical training facilities, well laid out roads and paths, decent sanitation and drainage facilities, access to clean water within 100 yards and health care facilities are a few of the social amenities that are currently lacking. The management and maintenance of such facilities should also be provided for as part of the improvement program.

Physical Improvement

The quality of roads and availability of clean water, access to decent toilet facilities, less polluted form of lighting and adequate recreational facilities should all be included as part of the improvement program. Water pipes should be made of a more durable material to help with their current problem of water pollution. A more organized system of solid waste disposal should be set up and residents should be educated and encouraged to use more acceptable methods of waste disposal. This might be an opportunity to get unemployed youths engaged in an income-generating activity that also improves their surrounding at the same time. Residents of slums and informal settlements should be trained on the use of locally available materials in housing constructions. The provision of building centre in slum areas has been suggested as a means of such skills being made available to the residents.

On a final note, the improvements would only be successful if they have the full backing of the residents.

APPENDIX



Fig. 1 Informal settlement around in zone D (Shinge)



Fig. 2 Condition of Water in Zone D



Fig. 3 Shanting structures in Part of Zone D



Fig. 4 Dilapidated structures in Zone C (Ungwar Doka)



Fig. 5 Degenerated environments in Zone B (Kofar Pada)

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