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Maintenance Challenges in Public Housing Estates in Nigeria – A Case Study of Federal Housing Estate,Ado-Ekiti.

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Abstract: *the neglect of maintenance of existing stock of infrastructural facilities had almost attained a national culture status. Though in Nigeria housing deficit was estimated at about seventeen (17) million, concerted efforts had not been made on the maintenance of the existing Housing stock. The National Housing Policy only addressed new constructions. Thus, this research was aimed at studying the challenges of maintenance of public Housing Estates in Nigeria using the Federal Housing Estate, Ado-Ekiti as a case study. The data collection methods entailed the use of questionnaires, personal interviews and facilities' conditions survey. Fifty (50) questionnaires were administered, forty two (42) were retrieved and used for analysis. Statistical Packages for Social Scientists (SPSS) was used to analyse. Findings revealed that the command of current value of returns on investment underscored the need for maintenance; Reactive maintenance was the operative strategy and lack of maintenance standards was the most significant factor affecting maintenance operations in the Estate. There was no well-articulated maintenance policy to guide maintenance operations. Therefore, formulation of maintenance policy was advocated and the recruitment of specialist certified maintenance officers was recommended.*

Keywords: *Housing Estate, Housing Policy, Maintenance neglect, Maintenance Policy, Maintenance strategies.*

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I. Introduction

Housing deficit in Nigeria was estimated at about seventeen million. Yet, the existing stock was not given adequate maintenance attention. Huge sums are annually being budgeted for the construction of new public buildings which are afterwards neglected to go through premature deterioration, decay and, in some cases, ultimate collapse. Many people see maintenance operations as avoidable expenditure [1] with the view that a budget for maintenance could be put into better use,preferably, procurement of new infrastructures to score political point.

[2] defined Maintenance as "A combination of any action carried out to retain an item in or restore it to an acceptable standard." This is to ensure that buildings permanently retain the "As-Built" standard or upgrading to a currently "Acceptable" standard in the environment where the building situates. According to [3], this gave the assurance that the buildings were kept in safety zones all the time during their lifespan in order to derive the benefits.

Housing Estates abound in the country to provide conducive accommodation for the teaming populace with particular emphasis on the low income group. Thus, this research was aimed at examining the challenges facing the maintenance of the Federal Housing Estates in the country using the Federal Housing Estate at Ado-Ekiti as a case study.

II. Literature Review

2.1 Background: Good quality Housing is one of the three basic necessities of life. Its supply is in most cases inadequate to meet the desires of many people around the globe generally and, Nigeria in particular. The problem is more pronounced in the urban centres due to rural-urban drift in search of employment in both the formal and informal sectors of the economy [4].

This deficit syndrome of Housing stock underscores the need for the preservation of the existing stock in acceptable standard through adequacy of maintenance while concomitantly budgeting for the production of new facilities to increase the available number for occupation [5;6]. [7]noted with concern the very poor and deplorable severities of structural disrepair of buildings in most parts of Nigeria which are the direct results of long term maintenance neglect. He opined that formulation of quality maintenance policies and timely implementation of such on the existing stock of infrastructures would spur economic growth, social and technological advancement of any nation. A conducive accommodation for the productive group would have a direct bearing on the productivity of the labour force. Government going into the development of Housing

Estates, particularly in the public sector, is to avail the masses of the country the privilege of affordable quality housing.

2.2 Housing and Housing Estates: Housing is the process of providing large number of residential buildings on a permanent basis with adequate physical infrastructure and social services in planned, decent, safe and sanitary neighbourhood to meet the basic and special needs of the population; whereas, Housing Estate is defined as a group of individual dwellings or apartment houses typically, but not always, of similar design that are usually built and sold or leased by a management [8]. Therefore, Housing is the totality of the environment of the Housing Estate and not restricted to the dwelling units alone. It includes the buildings and all the other external infrastructural facilities. [9] listed the characteristics of a Housing Estate in order to define their uniqueness in providing features and facilities required for human convenience and safety.

2.3 Housing Policy: According to [10], a policy is a plan of action, a statement of aim and ideas or a statement of intent made to guide activities in a particular field of endeavour, for example, housing. It is a statement of vision and mission of an organisation. Therefore, a Housing policy is a statement provided by the organisation which is aimed at meeting the Housing needs of its citizenry through a set of appropriate strategies which involve fiscal, institutional, legal and regulatory framework.

The National Housing Policy [11] was formulated to fill the gap created by the inability of earlier policies and programmes to adequately resolve the backlog of Housing problems in Nigeria and to proffer more pragmatic solutions. The document spelt out the aim and objectives of the Policy as well as the implementation strategies.

The power to implement the Policy was vested in the Federal Ministry of Lands, Housing and Urban Development in Nigeria as it then was. The implementation is operated through two main parastatals of the Ministry; that is, the Federal Housing Authority (FHA) and the Federal Mortgage Bank of Nigeria (FMBN). While the Federal Housing Authority has the responsibility of preparation and submission of proposals on the National Housing Programme and making recommendations on all aspects relating to Housing programmes as approved by the Federal Government of Nigeria, the Federal Mortgage Bank of Nigeria was established as the apex mortgage Institution to assume a managerial role over the Contributory Savings Scheme known as the National Housing Fund (NHF) established by Act 3 of 1992 [12].

2.4 Housing Maintenance: Housing maintenance is all encompassing. In addition to the maintenance of the building infrastructures, the other facilities to be taken into cognisance include: the road network and associated drainages, pedestrian walkways, security post, police post, shopping facilities, purpose-built playground for children, parking spaces, Medical and Health Care Facilities, Open Spaces and Green Areas, Street light, Perimeter Fencing, Worship Centres, Functional Storm Water, Refuse Collection Bins and Disposal, Public Power Supply, Public Water Supply and many more[9]. Maintenance should be implemented according to BS 3811. It must be according to the prescribed procedure.

The United Nations Centre for Human Settlement noted that in many developing countries, poor maintenance that resulted in deplorable building conditions was not due to lack of resources, but, due to lack of workable strategies, methodologies and techniques for effective utilisation of available resources in a systematic and methodological manner. With most governments, the disinterest in maintenance activities is significant.

2.5 Maintenance Policy: The Nigerian Housing Policy has no provisions for the maintenance of existing Housing stock in the country. However, it contains framework for the provision of new Housing Estates. [13]recommended the need to develop a performance model for building maintenance in order to add value to the existing facilities. According to [14], maintenance policy is a tool in the hands of maintenance personnel to plan their appropriate strategies. Once there is a Policy, the programme will be prepared within the framework of the policy and this directs the focus of the maintenance officer. However, [15] considered the three parameters of choice of maintenance strategy, definition of maintenance standards and allocation of maintenance resources as indispensable in the formulation of maintenance policy.

2.6 Building Standards: As chronicled by [16], the standard of a building is related to statutory provisions contained in Byelaws, Codes or Regulations. The essential constituents include structural stability, dimensional stability, freedom from damp, adequacy of services, good internal arrangement, quality of materials of construction and general level of cleanliness. The surveyed conditions of the building infrastructure should be measured against these standards and any deviation to be recorded for prompt remedial actions.

III. Research Methodology

The object of this research was to seek information on maintenance practices at the Federal Housing Estate, Ado-Ekiti, Nigeria. Fifty (50) questionnaires were administered to the concerned stakeholders, who include the professionals at the Federal Ministry of Lands and Housing, Ado-Ekiti which is the supervising ministry, the Management of the Housing Estate and the occupiers of the facilities at the Estate. Forty two (42) were retrieved for analysis. Personal Interview Method was also used to complement the structured questionnaire to gather data on information that the questionnaire could not capture. Information on the staff

strength of the maintenance unit, the distribution and numbers of the professionals in the Unit as well as the academic qualifications of the staff in the Unit were obtained through the personal interview method. Condition Survey of the facilities on ground was also conducted to assess the severities of defects.

The primary data collected were analysed using SPSS and Microsoft Excel. Percentages and Mean Score Index were used in the analysis.

The Mean Score was calculated by the formula:

$$\text{Mean Score} = \frac{\sum W}{\sum F} \quad (1)$$

Where,

$\sum W$ = Summation of the weights, that is, weighting given to ranking range of 1-5 for the variables,

$\sum F$ = Summation of the responses.

In the investigation of considered factors, ranking in the range of 1-5 was used where 1= Strongly Disagree; 2= Disagree; 3= Undecided; 4= Agree and 5= Strongly Agree.

IV. Data Presentation and Analysis

4.1 Professionals in the Maintenance Department: Five different construction industry professions were represented in the Unit. These are Civil Engineering, Building, Estate Management, Quantity Surveying and Surveying and Geoinformatic. Their numbers were as presented in Table 4.1 below.

Table 4.1: professionals in the Maintenance Department

S/N	PROFESSIONALS	FREQUENCY	PERCENTAGE (%)
1	Civil Engineer	1	6.25
2	Builder	3	18.75
3	Estate Surveyor and Valuer	7	43.75
4	Quantity Surveying	2	12.50
5	Land Surveyor	3	18.75
	TOTAL	16	100

With the stock of professionals in the Unit, Direct labour, new construction as well as Maintenance operations could be effectively handled by the organisation. Even, where contracts were firmed out to contractors, these professionals could provide Consultancy Services to the management of the Estate at no extra cost over their salaries. However, a cursory look at the table revealed that there was no trained Maintenance personnel on the staff list. Maintenance Management is already a distinct specialisation at the postgraduate level in Nigerian Universities.

4.2: Qualifications of the professionals

The study investigated the academic qualifications of the professionals. Findings revealed a spread of certificates from the Ordinary National Diploma (OND), Higher National Diploma (HND), Bachelor of Science (B.Sc.) and Master of Science (M.Sc.) as contained in Table 4.2 below:

Table 4.2: Academic Qualifications

Qualification	Frequency	Percentage (%)
OND	2	12.5
HND	8	50
B.Sc.	3	18.75
M.Sc.	3	18.75
PhD	0	0
TOTAL	16	100

All the professionals were academically trained for the challenges in the building industry. The holders of OND had undertaken examinations and professional trainings to attain the Full membership status of their chosen careers.

4.3: The Need for Maintenance Operations

The level of awareness of the significance of maintenance in terms of the benefits and privileges that adequacy of maintenance could confer on the existing facilities was investigated by the questionnaire. Five of the factors obtained from literatures were studied on the ranking of 1-5 and the results were presented in Table4.3 below:

Table 4.3: The Need for Maintenance Operations

S/N	FACTORS	5	4	3	2	1	MEAN SCORE	RANK
1	To command current value of return on investment	01	02	0	09	30	4.643	1
2	To maintain currently acceptable standard in the environment	01	16	05	15	05	3.167	2
3	To attain the designed life of the facilities	04	14	14	08	02	2.762	3
4	To maintain conducive living condition	04	26	05	05	02	2.405	4
5	To satisfy organisational standard	28	0	06	04	04	1.952	5

The consensus of opinion of the respondents is that maintenance operations are needed to command the current value that comparable facilities in similar climes command. The response underscored the significance of the premium placed on the capital investment that was expected to generate a good return and sustain such a reward. A very low value was placed on the satisfaction of organisational standard. This could be as a result of the low economic situation in the country where high organisational standard may not fetch commensurate value of return on such an investment that would be tied down over a long time. The breakeven time may be delayed with the effect of inflation on capital invested and, perhaps, the instability of interest rates on loans taken from banks to finance the project might make this factor so unattractive.

4.4 Methods of Procurement of Maintenance Operations

The supervising Ministry adopts both Direct Labour and Contracting systems of procurement for the maintenance operations. The Direct Labour system was preferred by the majority of the respondents as 62% of them opted for it as contained in Table 4.4 below. This might be due to its ability to engage the labour force, reduce staff idleness and promote prompt attention to maintenance requests.

Table 4.4: Preferred Method of Procurement of Maintenance Operations

S/N	Procurement Method	Frequency	Percentage (%)
1	Direct Labour	26	62
2	Contracting	16	38

4.5 Strategies for Maintenance Operations

Three strategies were investigated. These are- Preventive, Predictive and Reactive maintenance strategies. As shown in Table 4.5, the commonest strategy in operation was the Reactive Maintenance in which defects were allowed to occur before maintenance operations would be undertaken to remedy the defaults. 55% of the respondents confirmed this. From the table, it could be inferred that only little attention was paid to the Preventive maintenance which demanded that the operators be proactive in order to engage in actions to prevent occurrence of defects and even take care of inevitable deteriorations on routine bases. The Predictive maintenance had a very low rating also. This had to do with the ability of the Maintenance Officer or Manager to forecast imminent or probable occurrence of defects and take actions to forestall actual occurrence. This is also a proactive measure.

Table 4.5: Strategies for Maintenance Operations

S/N	Maintenance Strategies	Frequency	Percentage (%)
1	Preventive	08	19
2	Predictive	11	26
3	Reactive	23	55

4.6 Factors Affecting Maintenance Operations

A set of nine (9) prescribed factors were tested in order to rank and determine the most severe as they affect the implementation of Maintenance operations at the Federal Housing Estate, Ado-Ekiti. Table 4.6 listed these factors and the responses.

Table 4.6: Factors Affecting Maintenance Operations in the Estate

S/N	**Factors**	**5**	**4**	**3**	**2**	**1**	**MEAN SCORE**	**RANK**
1.	lack of maintenance strategies	18	16	3	3	2	4.071	2
2.	***lack of maintenance standards***	***15***	***18***	***8***	***0***	***1***	***4.095***	***1***
3.	insufficient maintenance resources	13	16	6	4	3	3.762	3
4.	inadequate technical training for staff	6	8	8	15	5	2.881	8
5.	lack of innovation/technological advancement	5	5	10	18	4	2.738	9
6.	underutilisation of skilled manpower	8	12	0	18	4	3.048	7
7.	Users' indiscipline	8	17	2	13	2	3.381	5
8.	lack of statutory laws guiding maintenance operations	3	20	3	13	3	3.167	6
9.	lack of government enforcement of regulations	9	17	9	4	3	3.595	4

As indicated in the table above, lack of maintenance standards was chosen as the most important factor affecting maintenance operations in the Housing Estate. The absence of set standards for the maintenance of the facilities robbed the users the privilege of the expected value for their rental or lease fee which they could have agitated to be sustained for the period of their occupancy. Standards were supposed to be set for the building infrastructures, Electricity Supply, Water Supply, Road Network and all other external works and services that constitute the Estate.

V. Discussions of Findings

In the Maintenance Unit of the Estate, construction industry professionals were represented. The only one of note that was absent was the Architect the reason being that prototype drawings used across the Federation were produced at the National Headquarters where the Architects were employed.

On the need for the implementation of Maintenance, adequate pecuniary gain was the driving motive of the management. Respondents observed that the command of current value of return on investment took priority over other factors. That is, once the property still command current value as other comparable properties in the same environment, maintenance could still be deferred. However, negative signals would be sent in case prospective tenants seek alternative accommodation for same rental fee; thus, lowering the value of investment. Satisfaction of organisational standard was rated least among all the considered factors. It is believed that organisation should have a defined standard over which to place a value. Such definition should be captured in the Maintenance Policy of the Organisation, if it exists at all, by the Management to give an operative direction.

The foregoing informed the prevalence of Reactive Maintenance as the choice strategy in the Estate. Defects were allowed to occur before remedial actions were taken. And, due to incessant nonchalance in budgeting for maintenance operations, the cumulative neglect of maintenance reflected in the conditions of the buildings and civil engineering infrastructures in the Estate. Preventive actions were not taken even where cases of impending defaults were imminent.

Consequent on the Condition Survey of the facilities at the Estate, nine factors were investigated to determine which the respondents considered to be the severest. The lack of maintenance standard was rate strongest. A well-articulated Standard of maintenance operations for the organisation should form the basis for the realisation of the Vision and Mission of the organisation. The responsibility for developing maintenance programmes for the actualisation of the policy should be the exclusive preserve of the Maintenance professional. Unfortunately, there was no certified maintenance professional in the employ of the Estate.

VI. Conclusions and Recommendations

6.1 Conclusions:

i. There were qualified construction industry professionals in the Maintenance Department of the Estate to carry out basic Reactive Maintenance operations. However, a gap was left open for a certified Maintenance Manager whose responsibility it is to develop comprehensive maintenance programme within the purported policy of the Estate.
ii. There was no well-articulated maintenance policy to guide maintenance operations in the Estate; hence, the Reactive maintenance strategy that was operational at the Estate. The Housing Policy dwelled more on the construction of new Housing Estates in the country at the detriment of maintenance of existing stock.
iii. The Estate was operated not as a social service to satisfy the yearnings of the low income group; which was the original intention of the National Housing Policy, but to command current value of return on investment.
iv. Direct Labour Procurement Method took precedence over the Contracting Method.
v. Lack of Maintenance Standards was the major factor militating against the operations of maintenance in the Housing Estate.

6.2 Recommendations:

i. A well-defined maintenance Policy should be formulated by the management of the Federal Ministry of Lands and Urban Development; now Federal Ministry of Power, Works and Housing, the supervising ministry. Such a Maintenance Policy should be presented either as a distinct whole document to complement the National Housing Policy or to be incorporated as a complete section in the National Housing Policy as a revised document.
ii. Trained and certified Maintenance professionals should be recruited into the supervising ministry to avail their professional expertise advise as may be necessary in the cater for the maintenance needs of the Estates in the country.
iii. As had often been advocated, establishment of a replica agency of the Federal Road Maintenance Agency (FERMA) of Nigeria in Housing to be tagged Federal Housing Maintenance Agency (FEHMA). The

agency should be saddled with the responsibility to formulate the National Housing Maintenance Policy and should double as the Regulatory agency to enforce the provisions of the Policy.

iv. Though, maintenance resources was not identified as a major challenge, a Private Public Partnership with nominated Insurance Companies to pool funds specifically for Housing Maintenance Operations is hereby recommended.

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