

An Evaluation of the Public Housing Estates Beneficial Sustainability Factors in the Niger Delta of Nigeria

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Abstract

Sustainability of public (social) housing estates is fundamental to all stakeholders within and external to that estate environment. It determines and influences the outlook of the built environment and whether it has an appropriate and effective post-construction management practice. The public (social) housing estates provided, however, have had the pitfalls of sustainability, such that the issues that bring about sustainable housing estates are not well understood and integrated into a desirable state. The imperative to meet the Millennium Development Goals and sustainable development agenda in terms of housing needs, accessibility and affordability is diminished. This paper aims to evaluate public (social) housing estates beneficial sustainability factors in the Niger Delta of Nigeria. The paper used both qualitative and quantitative approaches in data collection and analysis. The findings indicate that the identification, understanding, and inclusion of the sustainability factors were negligible in the current practice. It further reveals that the importance and relevance of these factors in achieving sustainable housing estates were predicted to be very high. The paper further shows that these beneficial factors have strong relationships to continuous successful inflows and outflows of benefits. Therefore, more effort is needed in their integration in the housing management approach. The paper recommends that while the implementation of the sustainability factors are all feasible; transparency, accountability, partnership and good governance should be considered as underpinning these sustainability factors' successful implementation in sustaining social (public) housing estates and the benefits.

Keywords: Benefits, Estate Management Method, Post-Construction Management, Social Housing Estates, Sustainability Factors

Introduction

Many social project developments and their post-construction management are undertaken with the intent of accomplishing immediate social, economic, financial and aesthetic benefits or returns, but they are executed with minimal concern for sustaining these benefits thereafter (Ihuah and Fortune, 2013; Ihuah and Eaton, 2013). The sustainability of social housing estate projects after completion is a concern that should not be overlooked in the built environment since housing estates provide shelter to human beings. It is also one amongst the four basic human needs that harmonise the other basic needs through the opportunity of providing comfort, security and safety to people. The social housing estates prominence is sustained with appropriate post-construction management and other beneficial sustainability issues are tackled with respect to the built environment, economic growth and enhanced development in a country (Ihuah and Eaton, 2013). Therefore, the imperative to ensure that social housing estates returns are continually accomplished and enjoyed by all stakeholders should be the objective for any development organisation to achieve. Social housing estates in this study context are

the same as public housing estates that are built, owned and post-construction managed by the National and State Governments in the Niger Delta region of Nigeria. According to the Nigerian National Housing Policy (2011) Social Housing is defined as:

“the response by the governments in the housing challenges of ‘No and Low’ income earners. Even though the production of such housing can be facilitated by market forces, governments must use subsidy mechanisms for its distribution. It is therefore seen to promote an equitable and benevolent society and to restore the dignity of man. By this discharge of government social responsibility to the vast majority of the population who ordinarily would not have been able to afford them, it stabilizes the society from the insecurity challenges occasioned by homelessness.” (NNHP, 2011).

Therefore, the intended goal in the development of social housing estates is to ensure that the target population have access to housing. The ultimate intention is to significantly improve the well-being of the poor, the needy and other vulnerable groups in the society such as women, single mothers, the elderly, widows and widowers, the physically challenged, the homeless and a critical mass of citizens who fall into this group (NNHP, 2011). It would also provide a sustainable way of reducing the housing deficit in the country, estimated at about 16-17 million units nationwide (Ebie, 2012) and at the same time, provides a window of opportunity for governments at all levels to demonstrate their commitment to the provision of social housing as a social responsibility to the citizenry, thereby institutionalizing an efficient, responsive and sustainable mechanism for housing delivery. The social housing intention is to further facilitate socio-economic development and unlock other complementary benefits to the economy in the realm of wealth creation, employment generation, stimulation of investment flows and value-additions arising from the use of alternative building materials and the adoption of home-grown technologies (NNHP, 2011). In addition, it would enhance efforts including: promoting the delivery of social housing with secure tenure and facilitating access to funding for social housing from a variety of sources, including social housing financiers, ‘philanthropists and other interested parties; facilitating the redevelopment and upgrading of urban slums for sustainable urban renewal and regeneration; reducing rural-urban migration, and stemming the consequential loss of precious rural assets and human capital, such as farmers and the youth, towards optimizing the contribution of the rural areas to national development; fostering peace and stability and promoting human dignity, social cohesion and environmental sustainability; and to incorporate micro-enterprises (such as agro-allied ventures) into the housing scheme with a view to generating employment opportunities and enhancing the ability of beneficiaries to repay their loans over a reasonable period with less strain (NNHP, 2011). The goals, objectives and benefits of social housing estate provisions are well articulated, however, effort is required to ensure that the sustainability of its social and financial benefits after their creation, are achievable. The purpose of sustainable development or the sustainability agenda is to ensure that any development has the potential to continuously provide evidence as in the case of housing, that it is: cheap; safe; accessible; comfortable; and secure tenure; for the people (Ihuah and Fortune, 2013; Cooper and Jones, 2008).

The public (social) housing estates provided in the Niger Delta region of Nigeria, however, have incurred the pitfalls of sustainability such that the beneficial and essential issues that bring sustainable housing estates, benefits and effective management are not well understood and integrated into this desirable state; and the imperative to meet the Millennium Development Goals and sustainable

development agenda in term of housing needs, accessibility and affordability is diminished. The purpose of this paper is to identify and evaluate the public (social) housing estates beneficial sustainability factors in the Niger Delta region of Nigeria as well as establishing their influence, magnitude and significance to their integration into the post-construction management of these social housing estates. This was achieved through the body of knowledge reviews of the beneficial sustainability factors and a fieldwork evaluation and assessment to establish these factors, their rate of influence, relevance and significance in social housing estates post-construction management and benefits sustainability.

Consequently, the purpose of the paper is to evaluate the essential and beneficial sustainability factors that would improve public (social) housing estate sustainability in the Niger Delta region of Nigeria. Hence, the objectives of the study are as follows:

- To identify the awareness and understanding of sustainability concepts, in relation to public (social) housing estate post-construction management;
- To assess the essential and beneficial sustainability factors; their relevance/importance; and current utilisation; in social housing estates post-construction management for sustainability;
- To make recommendation on what and how best practice in these factors can promote and enhance sustainability of public (social) housing estates.

The paper should therefore, inform and be recognised by the government, policy-decision makers, practitioners and other relevant stakeholders on how best in a proactive practice to ensure that these beneficial sustainability factors are understood, and utilised fully in the social (public) housing estates post-construction management for the sustainability of their benefits to the economy.

What and Why is Sustainability in Public Housing Estates Post-Construction Management

Sustainability is pictured in dissimilar ways (Brandon and Lombardi, 2011; Edum-Fotwe and Price, 2009; Worika, 2002), predominantly in the perspective of: environmental issues (Bruntland, 1987); economic (Ding, 2008); social (Ding, 2008); political developments (Worika, 2002); and sustaining created asset benefits (Franks, 2006). There are today over 300 definitions of the what and the why of sustainability available in literature, this symbolises results of varied world examinations and rival interests in the field (De Vries and Peterson, 2008). Franks (2006) asserted that it means everything the writer has need of, nevertheless indulgent in what and why sustainability and un-sustainability is essential in any project management and post-project management system. Cooper and Jones (2008) opined that sustainability is when attention is given much more to issues including: greater community engagement; deliberative forums to help people live more sustainable lifestyles; investigating ways in which stakeholders can influence decision-making; new commitments to support education and training in sustainable development; and responses to key environmental issues. The World Commission on Environment and Development (WCED, 1987) defined sustainability as improvements that “*meets the needs of the present generation without compromising the ability of future generations to meet their own needs*”. Therefore tackling this struggle requires inclusive economic growth whilst recognising ecological constraints. Abu Bakar, *et. al.*, (2009) while adopting the commissions definition of the what and the why of sustainability in any development

project opine that the significant social and economic sustainability problems were to be tackled equally. Sustainability concepts at first focused on environmental phenomena, but today has gone beyond the boundaries of environmental issues to include a consideration of social, economic, political, and development issues (Brandon and Lombardi, 2011; Edum-Fotwe and Price, 2009; De Vries and Peterson, 2008). This means that sustainability is related to the ‘simple ideal’ of ensuring a better quality of life for everyone now and for generations to come. It is also clear that while the concept of sustainability is well acknowledged and generally considered in applications, there is no common understanding and approach for it (Ihuah and Fortune, 2013). But, the what and the why of sustainability in the definition given by the WCED is tailored to their perceptions of the goal/objectives targeted to accomplish a particular endeavour. Therefore, what constitutes sustainable development is very much more context-specific and the conditions and practices may not be applicable everywhere. Hence, sustainability is seen as having its diverse implications in every corner of the world and in every sector of the economy (Bell and Morse, 2003). It is in this light that Lutzendorf and Lorenz (2005) argued that sustainable development is ‘*a journey towards a destination: that ‘sustainability’ and its ‘triple-bottom line’ is a concept involving balancing economic and social development with environmental protection. The products and services are expected to be sustainable, if the ability to meet current and future requirements, as well as their capability of keeping current and future impacts, expenses and risks within certain limits, are both positive. In this case, sustaining the products and services in social housing estates so that the accruable benefits from the housing estate are continually reaped by the respective stakeholders is an imperative. Sustainability in social housing post-construction management provides the opportunity that the housing estates condition remains tenable to any future possessor or resident/tenant of such housing estates. Policy support factors remain one of the beneficial sustainable factors (Perry-Jones, et al, 2001; Ihuah and Kakulu, 2014; NNHP, 2011).*

The level of politics and its dynamic nature in a country is a core issue of sustainability and particularly pertinent to social (public) housing estate provision and post-construction management (NHP, 2011; Ihuah and Kakulu, 2014). The political system of the country must have a total commitment to providing an encouraging atmosphere for the development of social housing estates; otherwise the possibility of not meeting the social housing demand and other objectives is highly visible. However, it is necessary to understand that policy formulation is multi-dimensional and dynamic in nature, by which the necessary technology and resources must be available and the appropriate stakeholders must be capable of utilising the technology and resources to achieve the successful deliveries of the projects. Furthermore, there must be institutions and personnel to drive policy implementation; stakeholders that adhere to policy and strategy guidelines; a consistent regulatory and legislative framework; and adequate financial resources (Ebie, 2012; ADB, 2005; Kennedy, 1997).

Another beneficial factor in sustainability of social (public) housing estates is dependent on the institutional and organisational set-up, particularly the maintenance strategies/practices put in place. According to the 2011 Nigerian National Housing Policy, the institutional framework forms the structure of the entire housing delivery system and the structure within which housing policy is implemented. Therefore, it greatly influences the success of social housing estate delivery and post-construction management, whilst at the same time the institutional roles should begin at the

initialisation stage of the policy development and be sustained throughout the implementation, coordination, monitoring and evaluation and review stages (NNHP, 2011). Parry-Jones *et. al.* (2001), Mudege (1993) and Morgan (1993) stressed that no project development including social (public) housing estate projects should be implemented in any particular environment without a strategic approach for the post-construction management. This is the management culture practice which keeps the social projects functional, and remains much more significant than the actual housing estate construction management. However, a lack of commitment, instability, capacity gaps and a lack of co-operation and the merging and de-merging amongst the different departments of the government, such as in Nigeria (NNHP, 2011; Well, 2001), has led to discontinuity, conflict and corrupt practices in social housing service delivery (Ezeani, 2005). Therefore, for social housing stock sustainability, the need to support and build capacity in all aspects in effective and efficient social housing management in both the rural and urban environment is significant. But, in the Niger Delta of Nigeria, the Federal and State Government have failed to render this necessary service of providing adequate social housing to citizens (Ebie, 2012; Ihuah and Fortune, 2013).

The technological factor is another issue in the sustainability of social (public) housing estates (Ihuah and Kakulu, 2014). This relates to: building materials availability; local manufacturing capabilities; planned preventive maintenance; housing estate usage; durability; technological transfer; and the uncontrolled rising costs of building materials; (NNHP, 2011). In the NNHP (2011) housing policy, it states that *'the building materials sub-sector is intricately connected to the process of national industrial development; and the improvement of local capacities is one major way to stem the overdependence on the importation of building materials'*. In social housing development and post-construction management, the most frequent problems are increased construction and labour costs resulting from: increased import duties; lack of consistency of policy formulation and implementation; over-priced contracts; over-priced cost of construction; shortages of skilled manpower; and the absence of indigenous technology for the production of building materials (NNHP, 2011). However, the United Nations Development Programme (UNDP) and the World Bank (WB) initiatives in the 1970s on global/interregional project laboratory testing and technological development substantiated the fact that technology might no longer be a limiting issue to project sustenance in the rural community (Parry-Jones *et. al.*, 2001). But this notion appears deficient, as most project failures are associated with a lack of available materials, the poor quality of the materials, and unplanned maintenance design management (Ihuah and Kakulu, 2014; Fonseca and Baumann, 1994).

Further, the sustainability of social (public) housing estates post-construction would be influenced by the environmental factors which include: the quality and condition of the social housing estate environment; housing estate design in terms of ventilation, lighting, and building morphology; energy consumption issues; building design; natural topography of the land; and how the housing estate compacts with the natural land for preservation and optimisation (Ibem and Azuh, 2011). Another unavoidable issue is weather conditions such that it often initiates chemical reactions of building materials and other forms of deterioration of components of the housing estate.

Communities and their social aspects in terms of needs and priorities has become the dominant factor why many social-community projects fail or are unable to deliver the benefits intended. This is

because of their beliefs in the use of natural resources, such as land, and can easily lead to U-turns, potentially leading to the failure of the project by looting of materials at building or maintenance sites. Looting is the commonest cause of project failure and abandonment as opined by Kadiri, (2004) and is particularly relevant in the Niger Delta of Nigeria, where most of the area is inhabited by unemployed youths affected by the associated poverty. Other issues within this factor include: the lack of acceptance of appropriate technology by the community; gender discrimination in work places; community level power structures and dichotomies; and the ownership system (Ihuah and Kakulu, 2014; Parry-Jones *et. al.*, 2001, Cleaver, 1996).

Post-construction management monitoring, evaluation and reporting is a critical factor for tracking the performance of the project towards achieving the targeted benefits. According to the Nigerian National Housing Policy (NNHP, 2011), monitoring, evaluation and reporting are an integrated process and coordinated action by several actors in the public and private sector of the economy is vital for housing delivery and management. The 2011 NNHP contended that a lack of monitoring, evaluation and reporting of the various coordinated and integrated efforts of housing delivery and post-construction management are the bane of the current housing estate condition. The availability of such reports is still in almost total deficit. However, the UN-HABITAT Agenda 21 requires that this participatory approach involves and includes directly or indirectly all stakeholders in the design, implementation, monitoring, evaluation and reporting on project development and post-management. At the same time, the NNHP report of 2011 suggested that the mechanisms and institutions for implementing, coordinating, monitoring, evaluating and reporting should be strengthened, to ensure progress and tracking of the implementation of the housing policy. Therefore, the issue of ensuring that social housing estate management is: monitored; evaluated; and reported; for the management style; conditions of the housing estate; and the built environment; cannot be overemphasised as it remains the mortar to the attainment of social (public) housing estate benefits.

The economics and financial factors aim at the maximisation of the capital value of the construction and post-construction management to enhance issues such as: its affordability to the citizens; the tenure options; the aptness of social housing estate acquisition process; the conformance of the housing estate design to future uses and needs; and the creation of opportunities like jobs in the built environment. This allows the researchers to deduce that the post-construction management of social housing estates will involve huge capital sums and that the understanding and ability to reduce these costs will definitely strengthen the affordability of housing to the people. This concurs with Ihuah and Kakulu (2014) and Parry-Jones *et. al.* (2001) who opines that, since the capital costs of projects such as, housing, are huge and the community or individual cannot afford it, the total responsibility should be left for the government, donors or NGOs. Parry-Jones *et. al.* (2001) further argued that even though such concerns should be carried by the project financier, the social housing estate community, the tenants and the professionals must prove commitment either in-cash or in-kind for the management to be in a sustainable manner. It is through this commitment that housing estate communities and all other stakeholders could have involvement in both the social housing estate design and the organisational capacity to sustain them. However, an evaluation of a UNCDF project in Guinea Bissau (1996) indicates that the failure, for example of hand pump water projects to sustain the proposed accruable benefits, was the failure to develop an appropriate strategy for operation and maintenance (O&M) cost recovery at the community level which then undermines the project

sustenance. Therefore, understanding the true costs of the operation and maintenance of social housing estate projects is of importance, but the project owners, planners and decision-makers always seem to neglect this aspect, though little documentation exists (Parry-Jones *et. al.*, 2001). However, the costs of operation and maintenance of social housing estates are generally vast, but if a planned preventive maintenance management strategy of the social housing estate is made through the budget at the onset of the housing delivery, then less cost would be incurred in post-construction management of the social housing estate.

The literature review in this paper has clearly shown that the awareness and understanding of the concept of sustainability was very relevant and important in any project management, (and particularly in public (social) housing estates), as well as in their post-construction management; where their benefits of development were to be sustained in the built environment. Further, seven essential and beneficial sustainability factors were indispensable in the sustainability of public (social) housing estate, but, how effective and sufficient the application and utilisation of these factors in the current public housing estate post-construction management were to be fundamental for this investigation. Therefore, the following emerged themes of: sustainability awareness; sustainability understanding; essential and beneficial factors; the factors effect and relevance; and the factors current utilisation; in social housing estates post-construction management were investigated and the results/findings are discussed accordingly after the methodology section of the study. Since the findings from the study are predicated by the study to be social issues, the following methodology defines the approach adopted in the study investigation.

Methodology

This study utilised semi-structured interviews and questionnaire surveys to collect data. The semi-structured interviews involved sixteen (16 Nr) participants chosen by an equal ratio of 4: 4: 4: 4 from the: Federal Housing Authority; State Housing Authority; professionals/contractors; tenants/residents and external estate community representatives. This gives a balance between those affected and the practitioners of public housing estate management utilising judgemental perceptions and experience in the area. The semi-structured interviews achieved a point of data saturation which required no further investigation (Saunders, *et. al.*, (2009). While in the questionnaire survey, 180 potential respondents were selected using stratified random sampling based on an estimate target population. Out of the 180, 100 questionnaires were returned with complete answers representing a response rate of 56.6%. This response rate was acceptable in a study with such a total questionnaire sample size (Kobbacy, 2013). The data was analysed utilising the NviVo software package with thematic framework coding, and iterative pattern coding after transcription of the interviews, while, the SPSS descriptive package was utilised for basic statistical interpretations and graphics.

Furthermore, the Relative Importance Index (RII) analysis was conducted so that it supports for better rendition and ranking on the identified essential and beneficial factors can emerge. The RII according to Lim and Alum (1995) and Johnson and LeBreton (2004) in their respective studies are mathematically defined as thus:

$$RII = (n_1 + 2n_2 + 3n_3 + 4n_4 + 5n_5) / 5N$$

Where in this study:

- n_1 = number of respondents that answers no direct effect;
- n_2 = number of respondents that answered negligible effect;
- n_3 = number of respondents that answered limited effect;
- n_4 = number of respondents that answered significant effect;
- n_5 = number of respondents that answered high effect;
- N = total number of respondents = 100.

A content analysis tool was utilised in both the instruments for the analysed data. The semi-structured interview was aimed to gather in-depth predominantly qualitative information about the current and future initiatives and methods regarding the issues discovered in the study. The questionnaire was used to expand the scale of data gathered and to aid further explanation of the findings through triangulation with the semi-structured interview results. The analyses supported the conclusions that should be proactively practiced in order to enhance the sustainability of the public (social) housing estates, as well as enhancing the reliability and replicability of the study findings.

Results and Discussion

Analysing generated data in a study is a difficult task (Yin, 2009), but, the first step in an effort to analyse the data was to test for data consistency and reliability, though the resulting variations depend on the sample size (Davis, 2013, Pallant, 2013). The process elicits whether all the data in the questionnaire and interviews was consistent and measures the same underlying construct (Davis, 2013, Pallant, 2013). Table 4.1 shows the results of the reliability test for the data used in this paper.

Table 4.1 Reliability Test

<i>Cronbach's Alpha</i>	<i>Number of Items</i>
0.748	14

Table 4.1 shows that the reliability of the Likert scale used in data collection in this paper achieved an acceptable internal consistency and reliability with a Cronbach's alpha coefficient of 0.748 for the 14 items. This Cronbach alpha confirms that all the data was reliable, consistent, and consequently was used to advance the analysis. Further, a normality test was conducted. The results indicate a Kolmogorov-Smirnov statistic of non-significant value of 0.000 for the 14 items compared to a significance value of ≥ 0.05 for normally distributed data (Pallant, 2013). This indicates that the data was non-normally distributed, and hence would be further (where necessary in this paper) tested with non-parametric tools such as Spearman's correlation coefficient (Pallant, 2013; Creswell and Plano Clark, 2011; Saunders *et. al.*, 2009).

After the data analysis, the following emergent themes of: sustainability awareness; sustainability understanding; essential and beneficial factors; the factors effect and relevance; and the factors current utilisation; in social housing estates post-construction management were investigated and the results/findings are discussed as follows.

Sustainability Awareness and Understanding in the Social Housing Estates Management Practice

This theme investigates the awareness of the concept of sustainability and its prevalent beneficial factors in social housing estates post-construction management from the identified social (public) housing estates management stakeholder as described previously. All the interviewees from the Federal and State Housing Authority and the professional/contractors (12 Nr) remarked as being aware of and having an understanding of sustainability and the issues in a general perspective; but within social housing estate management, it is context specific. The professionals/contractors and Federal and State housing authorities interviewees (12 Nr) commented further by inferring the point from the Bruntland report definition (Bruntland, 1987) and Agenda 21 (UNSD, 1992) which emphasises that all development must be that which meets the needs of the present generation without endangering the ability of the future generations to meet their own needs.

The interviewees from tenants/residents and the external housing estates community group (4 Nr) acknowledged having some basic knowledge of sustainability, but how this concept works and achieves the intent was difficult to understand. At the same time, these interviewees (4 Nr) stated that whether the government housing estate management teams used this approach in the housing estate post-construction management was unknown to them.

The quantitative findings in this theme are as indicated in Figure 4.1 and Figure 4.2 below. Figure 4.1 reveals that out of the 100 responses that a level of awareness of sustainability concepts and its antecedent factors was stated by at least 48.0% of the respondents as having an unsatisfactory awareness compared to 35.0% rated as having a high awareness.

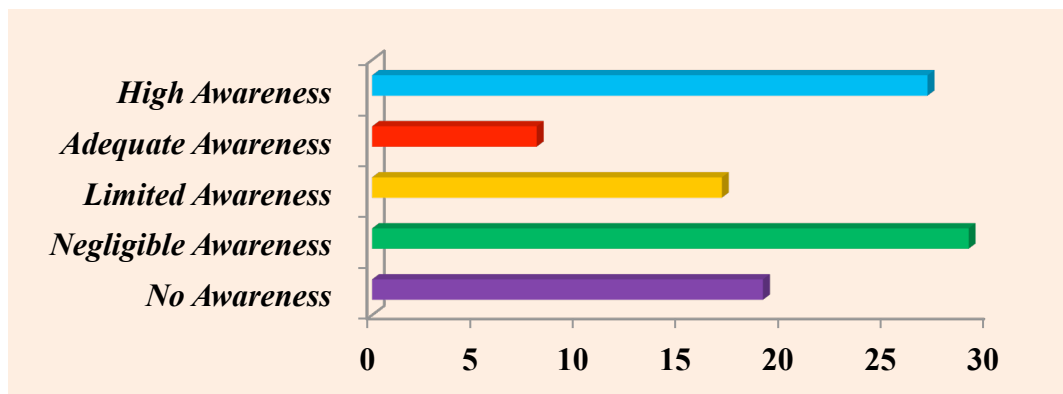


Figure 4.1 Sustainability Awareness Level in Social Housing Estates Management

However, for the level of understanding of the sustainability in the management of social (public) housing estates (Figure 4.2), it was revealed that out of the 100 responses in the survey, at least 47.0% rate it as being poor or fair as compared to 29.0% rating it as an excellent level of understanding.

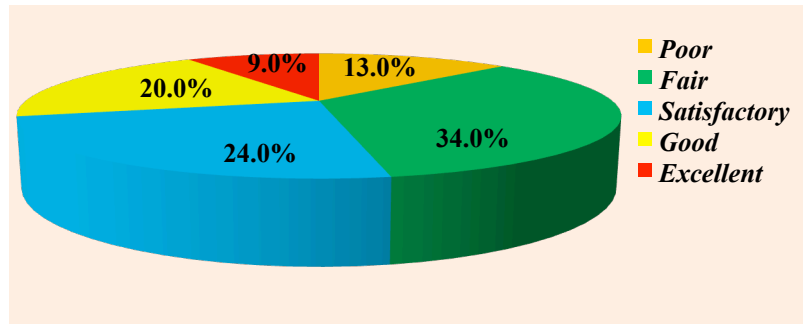


Figure 4.2 Sustainability Understanding Level in Social Housing Estates Management

The above findings confirms, in the study context, that the lack of awareness and understanding of sustainable development concepts and its essential factors in social (public) housing estates post-construction management was a significant factor in the failure of current practices.

Sustainability Considerations and the Relevance in Social Housing Estates Management Practice

This themes result' ascertained the relevance and / or importance of utilising sustainability beneficial factors in the activities of managing public (social) housing estates in practice. Regarding this concern, all the interviewees (16 Nr) revealed that sustainability in the management of the social (public) housing estates was relevant and important and would be enhanced if there was proper implementation of a monitoring, evaluation and reporting strategy which sustainability requires. They further specified that apart from monitoring, evaluation and reporting, issues such as: social perceptions of the community; the housing estate environment; financial and economic factors; the housing estates management structure; the policy underlining the housing estate provision and post-management; and the technology appropriateness; are considered to be significant issues. All the interviewees (16 Nr) confirmed that these issues despite being important or essential to sustainability of social (public) housing estates are being neglected in most Niger Delta housing authority's social housing estate management practice today. While strengthening and supporting the previous point, the opinions from the tenants/residents, professionals/contractors and external housing estates community (12 Nr) was that the housing authority hardly ever monitored, evaluated and reported the dilapidated nature of social (public) housing estates and the various associated activities.

The quantitative overall finding in Figure 4.3 confirms that 73.0% of respondents rated sustainability consideration as being important as against 11.0% as having no relevance or importance in sustainable social housing estates management.

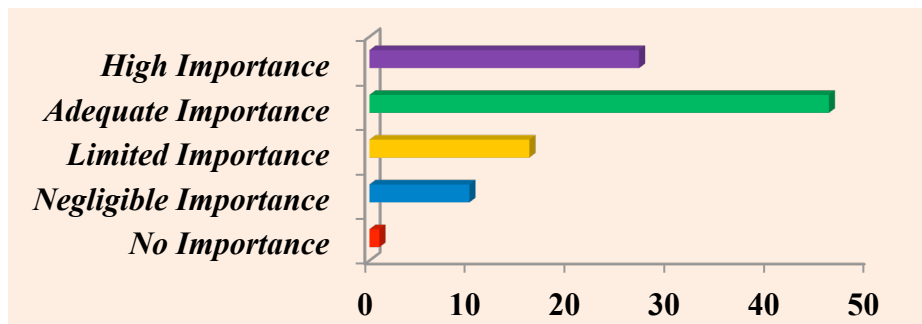


Figure 4.3 Sustainability Considerations and Relevance in Social Housing Estates Management Practice

These findings, as verified in the study context, indicate that the sustainability beneficial factors in social (public) housing estates post-construction management were vital to be considered in order to provide social housing estates sustainable management in the Niger Delta of Nigeria, even in Nigeria as a whole.

Beneficial Sustainability Factors in Social Housing Estates Management Practice

To establish that: policy support factor; environment factor; external estate community perception factor; finance and economic factor; management structure factor; technology factor; and monitoring, evaluation and reporting factor; were the sustainability essential and beneficial factors in housing estates sustenance, all the interviewees (16 Nr) stated that

“...issue of policy implementation, funding, monitoring and using the appropriate maintenance technology are such that we cannot imagine...”

The interviewees from the tenants/residents and external estate community further stressed by commenting that

“...opinions and interests of our people are not considered...”

The quantitative results in Figure 4.4 for this theme reveal that 75.0% strongly agree or agree to these factors as compared to only 10.0% that strongly disagree to these identified factors from the literature and established by this analysis.

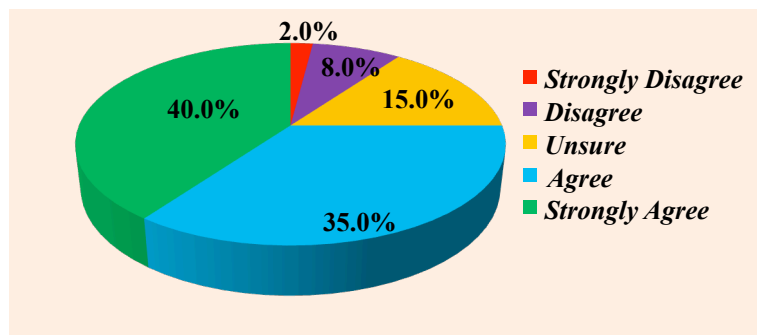


Figure 4.4 Beneficial sustainability factors in Social Housing Estates Management Practice

The overall findings in this theme, in the study context, confirms that these factors were essential and beneficial factors that needed to be integrated into the practice to manage the social (public) housing estates in a sustainable manner in the Niger Delta region of Nigeria.

Sustainability Beneficial Factors Effect in Social Housing Estate Management Practice

This theme investigates the effects that the essential and beneficial sustainability factors have as an influence on the social housing estates post-construction management when they are integrated. At the same time, they provided a ranking of the factors using the cumulative frequency of individual factors

utilising the order from low magnitude cumulative effect to high magnitude cumulative effect (Table 4.2, 4.3 and Figure 4.5).

All of the qualitative semi-structured interviews, (total 16 Nr) agreed and acknowledged that the lacks of recognition of these factors that are essential and beneficial in sustaining social housing estates have so much influence on the housing estate conditions, and how the housing authority responds to a housing estate units disrepair. Furthermore, one of the professionals/contractors stressed by saying:

“... Most public housing estates are left un-maintained because funds and policies supporting the proper allocation of the required funds are lacking or even where it does exist, never being implemented accordingly by...”

For the quantitative source of evidence, the results confirm in the case of the policy support (PSL) factor that 81.0% rated it as having a high effect as weighted against 11.0% as having no direct effect and that this ranked equal 1st amongst the beneficial factor effects. In the case of economic and finance factor (EFE) the finding confirms that 81.0% rated it as having a high effect compared to 8.0% as having no direct effect, ranked equal 1st. Monitoring, evaluation and reporting case was confirmed 79.0% rated it as having a high effect as contrasted to 9.0% as having no direct effect, ranked 3rd. In the management structure (MSE) factor, the finding confirms that 68.0% rated it as having a high effect compared to 10.0% as having no direct effect, ranked equal 4th amongst the beneficial factor effects. For technology factor (TECE), the situation was similar as 68.0% rated it as having a high effect as contrasted to 11.0% as having no direct effect and ranked equal 4th amongst the beneficial sustainability factors effects. The environment factor (ENE) confirms 62.0% rated it as having a high effect as weighted against to 9.0% as having no direct effect and ranked 6th. The case of community perception factor (CPE) was unlike the others with 58.0% rating it as having a high effect as against 18.0% as having no direct effect, ranked 7th.

Table 4.2 Sustainability Factor Effects Rank based on Cumulative Frequency of Variable Category

S/ N	Variables Category	Low Cumulative Effects (A)		High Cumulative Effects (B)		Ranking based on Cum % of B
		Cum f	Cum %	Cum f	Cum %	
1	PSL	0.15	11.0%	1.57	81.0%	1st
2	MSE	0.14	10.0%	1.75	68.0%	4th
3	TECE	0.11	11.0%	1.72	68.0%	4th
4	CPE	0.26	18.0%	1.75	58.0%	7th
5	EFE	0.10	8.0%	1.49	81.0%	1st
6	ENE	0.10	9.0%	1.74	62.0%	6th
7	MERE	0.10	9.0%	1.47	79.0%	3rd

Furthermore, since the ranking of the essential and beneficial sustainability factors in Table 4.2 above is so close or same, additional differentiated analysis was completed, utilising the Relative Importance Index (RII) which are as shown in Table 4.3 below. This provides discrimination between the five categories of response, rather than just the combined classes. Therefore, it represents a more specific analysis and results, and the ranking obtained from

Table 4.3 are more preferred rather than those of Table 4.2. However, there is a general degree of internal consistency between the two methods.

Table 4.3 Sustainability Factors Effect Rank based on Relative Importance Index (RII) Value

Rank	Essential and Beneficial Sustainability Factor Effects	1	2	3	4	5	R.I.I. Value
1	Lack of Monitoring, Evaluation and Reporting Factor Effects	1	8	10	28	53	0.848
2	Economic/Finance Factor Effect	2	6	11	30	51	0.844
3	Lack of Policy Support Effect	4	7	8	38	43	0.818
4	Technology Factor Effects	3	8	21	38	30	0.758
5	Management Structure Inadequacy Factor Effect	4	6	22	43	25	0.758
6	Environment Factor Effect	1	8	29	36	26	0.756
7	Community Social Perception Factor Effects	8	10	24	33	25	0.714

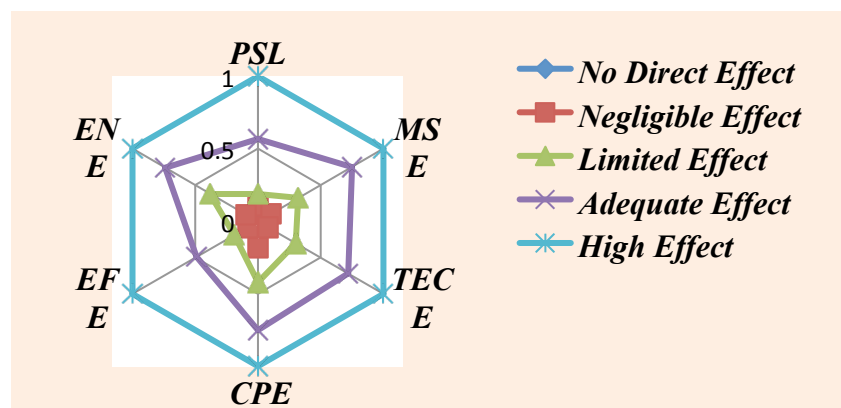


Figure 4.5 Sustainability Factors Effect Level in Social Housing Estate Management Practice

From the results, the combined factor effects was 1.61(at least 71.0%) high cumulative factors effects as weighted against 1.37 (about 11.0%) low cumulative factors effects with a strong positive association amongst these factors which would enhance or detract sustainability achievement in social housing estates. This confirms that it is crucial that the effects of these factors should be tackled through integration into the management strategies for the sustainability of the housing estates and the post-construction management as any missing factors would undermine the expected success and achievement of housing estates benefits. It further confirms a strong effect association with almost all these beneficial factors as shown in Figure 4.5 above.

Beneficial Sustainability Factors Utilisation in Social Housing Estates Management Practice

This theme assesses the current echelon that the Federal and State Housing Authorities utilises when considering the beneficial sustainability factors and their efforts to effectively provide sustainable post-construction management of social (public) housing estates in the region. The results in Figure 4.6 reveal that 61.0% believed that these factors were not considered and included in order to manage and sustain social (public) housing estates compared to 21.0% that thought that these factors are

highly considered. This confirms in the study context that social (public) housing estates were not sustained by the post-construction management so far as these beneficial and essential sustainability factors were apparently underutilised or overlooked.

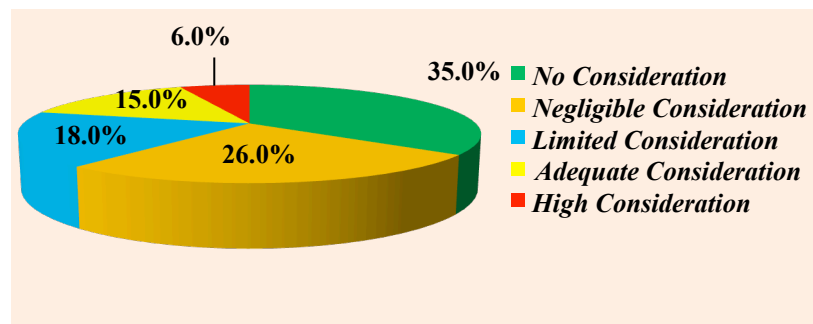


Figure 4.6 Beneficial Sustainability Factors Utilisation in Social Housing Estates Management Practice

Within the semi-structured interviews, all the interviewees (16 Nr) remarked that though it may be a challenge, it is worth doing in the social (public) housing estates context. All interviewees acknowledged that they believed that the environmental aspects are being utilised in the current housing estate management practice via regular monthly environmental sanitation monitoring, evaluation and reporting but more is needed to be done. At the same time, one of the interviewees had this to say:

“.....the social and economic issues to sustain the housing estates and the post-construction management, such as, social and infrastructural services provision are “nothing to talk about” as most social housing estates do not have the social services provided”.....

All interviewees observed that the need to utilise the sustainable issues (social, economic, environment) in the current social (public) housing estates management practice is very important and highly significant, if the government social (public) housing estate is to be sustainable. This indicates that there is fragmentation of the awareness and understanding of sustainability with the beneficial factors and that the attempts to incorporate these factors lie solely within the environmental context of sustainability or sustainable development.

5.0 Conclusion and Recommendation

This paper demonstrates that housing and/or housing estates is an indispensable need amongst the four basic necessary needs of human beings, and which harmonises these other needs in terms of providing comfort, security, tenure, safety and the well-being of the human in the built environment. It also provides jobs, education, finance, and leisure/recreation. The paper further indicates that these vital benefits from accessing housing estates cannot be underrated as a result of the non-sustainability in the public housing estates of the Niger Delta of Nigeria or even Nigeria as a whole and potentially other developing and developed nations. The sustainability of the housing estate remains a process that should ensure that the benefits from the original intent of providing the housing estates are maintained, sustained and which authenticates the relevance and importance of sustainability in public (social) housing estates post-construction management. In this paper, seven factors were identified and established as essential and beneficial sustainability factors in the sustenance of the public (social)

housing estates after construction. These factors have in combination been demonstrated as having high effects and therefore must be interlocked and tackled together in public (social) housing estates post-construction management to achieve the benefits of sustainability in the built environment. This paper further argues that sustainable management of the social housing estate or sustainability would be achieved successfully through full utilisation and strong association of these factors within an appropriate post-construction management best practice, appropriate maintenance management approach and full assessment and involvement/participation of the stakeholders.

This paper recommends that while these sustainable factors are all significant and feasible to be achieved in public (social) housing estates post-construction management for the benefits of sustainability: transparency; accountability; partnership; and good governance; would be considered as pre-requisites to these factors implementation in sustaining social (public) housing estates and the benefits. Therefore, government, policy decision makers and practitioners are to ensure that these beneficial sustainability factors are understood, and utilised fully in the social (public) housing estates post-construction management. This would be through capacity development amongst the various authorities and their staff with the best post-construction management practices for the sustainability of benefits and returns from the public housing estates provided in developed and developing countries in the world.

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