# AN EVALUATION OF POST-RECLAMATION MANAGEMENT OF LANDS RECLAIMED FOR HOUSING IN LAGOS METROPOLIS, NIGERIA

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## ABSTRACT

The research reports that Land reclamation has been used to provide approximately 6,000 hectares of land in Lagos, Nigeria and housing for estimated 500,000 people. The impact of globalisation revolutionalised the practice of reclamation from sand-tipped hinter-land and marshy sites to large scale hydraulic dredged coastal sites. It is noted that the impact of globalisation hardly extends beyond the construction stage of these lands. Findings show that the insufficient attention paid to post-reclamation management of these lands, has led to serviceability problems. Most public owned reclaimed lands do not have any post-construction management, maintenance budgets are generally regarded as insufficient. Drainage problems, flooding, general wetness of top surrounding soil are ranked as the most pertinent consequences of lack of maintenance. Outright neglect, delay in executing repairs, lack of maintenance policy, materials and equipments are seen as factors responsible for the impaired serviceability. Consequently, the users of the lands do not have full benefits of globalisation , as there are added costs; in terms of aesthetics, decay and high life cycle costs. Policy on developing citizen capacity with inherent technology transfer is suggested as a means of achieving full globalisation.

Keywords: Land reclamation, Post-reclamation management, Urban-land scarcity, Constructed facilities, Localisation.

## INTRODUCTION

Urban land scarcity for housing provision in Lagos metropolis is worsened by the twin problems of relatively tiny land area and large presence of body of water covering 22% of the total land area and excessively high and increasing population. The city has 0.04% of the Nigerian land mass, but accommodates 10% of the country's population.[Raheem, 2003].

Owing to the prevailing land scarcity, several attempts have been made to reclaim lands from the Lagoon systems, on a large scale in the past fifty years. Such successfully reclaimed lands have been used for housing purposes. Areas currently occupied through this means include, Maroko, Iponri, Iganmu, Victoria Garden City, Ilubirin, Ogudu, Lekki Pennisula, Osborne road, Ajah, Amuwo- Odofin, Abule- nla and Herbert Macaulay, covering approximately 6,000 hectares or 1.65% of the total land area of Lagos State and housing an estimated 500,000 inhabitants in 20,000 buildings[Onaivi,2004].

History of land reclamation in Lagos reported by Aina et al.(2002), shows that earliest reclamation efforts was limited to hinterland marshy sites, interwoven within the mainland, the sites were reclaimed by the dry sand filling technique, which involves borrowing, transporting, spreading, and compacting fill material on site. The history further shows that, changes in the city caused by exploding population, industrial, communication, and transportation growth, led to large scale reclamation of coastal parts of the city such as; Lekki, Maroko, Ajah, Victoria Garden City and Ikota. Hydraulic sand filling technology required for reclaiming large coastal lands was imported because it was not available locally. This need-importation chain has been identified by Drewer (1980) and Ofori (2000) as the main basis for globalisation in developing countries, as opposed to strategic and proactive reasons of the developed nations. Drewer believes that globalisation is an inescapable fact for developing nations, because many of the construction projects they require for their socio-economic development are beyond the capacity of their industries to undertake. Similarly, Ofori concluded that developing nations must import some construction activities. The main advantages of hydraulic sand filling are the access to large amount of cost-free sand at the sea bed for large scale filling and absence of vehicular transportation.

Land reclamation process is highly engineering intensive, it is the construction of the land, upon which buildings will be constructed, reclaimed lands are therefore "constructed facilities". As constructed facilities, reclaimed lands are subjected to degradation from natural environmental weathering actions and as the support for other constructed facilities. For optimum performance therefore, post-construction monitoring and maintenance efforts for reclaimed lands should be greater than those expended on other classes of constructed facilities. This necessary attention has been an important aspect of land reclamation practices in developed countries of the world, as illustrated by the study of settlement patterns of reclaimed coal workings in England for seven years after reclamation [Kilkenny, 1968];the study of the behaviour of reclaimed iron workings at Corby, England for ten years after completion[Charles et al,1977] and other similar long term monitoring of reclaimed contaminated sites in England[Thorburn,1985].
To sustain the serviceability of reclaimed lands in Nigeria, similar post-reclamation monitoring efforts as reported is inevitable. However, recent observations of excessive dilapidation of reclaimed lands in Lagos metropolis raises queries on the extent of post-construction attention given to the lands. These queries serve as the basic question this research sets out to answer, by evaluating the management policies of these lands and assess the adequacy of the policies and practices, in their performance and the extent of the users satisfaction.

**Globalisation And Construction In Nigeria.**

Globalisation in construction context connotes internationalisation of construction, it is reported that, though architecture and construction are supposed to be continuing monument of what we are, globalisation has transformed these distinguishable, cultural identities to something close to uniformity [Mosaku,2002]. Therefore all nations strive to meet uniform global standards, forms and quality of the built environment, through concepts such as, sustainability, facility management, intelligent buildings and maintainability. Thus, it is difficult to distinguish the skylines of major cities of the world, Mosaku also observed that the Nigerian landscape is doted with products of alien

architectural design, thereby decreasing the prevalence of indigenous designs, as a direct consequence of globalisation. The disadvantage of this wholesale importation, is the near-stagnation of the indigenous construction industry.

The impact of globalisation in Nigeria is further explained by the study of 1133 public projects executed between 1974 and 1984 in Nigeria, for a project cost of N11.25 billion [(US$16 billion )], it was observed that, though, the indigenous contractors executed 77.2% of the number of Projects they only had 6.95% of the sales volume compared with 93.05% by the foreign contractors, and that this could even be below 5% if all data were available [Olateju,1991].See Table1.

Table1:Summary of participation of contractors by number and value of various types of contracts in percentage

| S/No | Project type | Foreign | | Indigenous | |
|---|---|---|---|---|---|
| | | Number | Value | Number | Value |
| 1 | Buildings and Factories | 4.39 | 66.45 | 95.61 | 33.55 |
| 2 | Recreation | 25.00 | 89.78 | 75.00 | 10.22 |
| 3 | Roads and Bridges | 70.28 | 94.05 | 29.72 | 5.95 |
| 4 | Electrification | 36.36 | 97.38 | 63.64 | 2.62 |
| 5 | Other Major Civil Works | 86.21 | 99.68 | 15.79 | 0.32 |
| 6 | Water Supply and Sewage | 88.24 | 99.98 | 11.76 | 0.32 |
| 7 | Telecoms, refineries, steel | 100.00 | 100.00 | 0.00 | 0.00 |
| | TOTAL | 26.68 | 93.04 | 77.32 | 6.96 |

Source: [Olateju,1991]

Low participation of indigenous contractor has been adduced to factors such as lack of technical depth to support quality work, prompt delivery as well as lack of machinery and economic and efficient management capabilities.

However, inspite of the near total control of the construction scene by foreign based organisations and forces of globalisation and free trade, there is no evidence of the involvement of foreign based firms in post-construction management and maintenance of constructed facilities in the public sector in Nigeria. This duty is largely carried out by ill equipped government organisations , that have been slow to reflect the effects of positive globalisation. However, the importance accorded building maintenance and facility management globally,[Seely (1986), Ikpo (1990) Yussif (1998)] does not support the Nigerian arrangement.

Land reclamation practices is not an exception to the situation described above, as evidenced by 80% participation of foreign based firms in reclamation in Lagos, and little or no evidence of their participation in managing the sites. [Aina et al., 2002]. Though the input of the foreign firms, through the medium of globalisation, made large-scale reclamation of large land sizes possible. While it is obvious that maintenance business is not big enough for foreign firms, considering the volume of work and frequency of occurrence. What is required from foreign firms is offer of sufficient emphasis on post commissioning maintenance at the feasibility stages of projects, offer of training and equipment and provision of maintenance manuals at commissioning stage of projects. And the government's preparation to shoulder the long-term counterpart responsibilities

**Survey Methods And Findings:**

For the purpose of sampling, the whole city was grouped into three zones according to population density, namely; core zone, comprising Ajegunle, Amuwo odofin and Iponri, the intermediate zone, comprising Ebute-meta, LagosIsland and Festac, and the newly developed zone, comprising Victoria-Island, Lekki and Ikoyi. The core zone has the highest population density. Structured questionnaires were administered on the organization that manages the land and the dwellers on the land, to elicit information on the existing land management policies and the performance of the reclaimed lands. One hundred and fifty and fifty questionnaires were administered on the dwellers and management organisations respectively. Response rate was 55 from the dwellers and 12 from the managers. Relative importance indices were used to rank the variables with simple charts to present the results.

Out of the 12 management organization that responded to the survey, 11 claimed to have maintenance policies, of these, six carry out daily inspection of their reclaimed land, five do so every two year, while one does not carry out any inspection. The six firms that carry out daily inspection were found to be private organizations, managing privately reclaimed lands, in the newly developed zone, housing low density elite populations. Respondents from organizations that manage public lands claimed that the responsibility for maintaining the estates is borne by them for only two years after construction after which the management of the estate is transferred to occupants of the lands.

Responses to budget related factors show that the basis of budget is predominantly from actual maintenance needs and previous budget, both are used by 33% of the respondents respectively. Percentage of original cost and percentage of current value are preferred by 25% and 8% of the respondents respectively. In a situation where there is organization budget, the occupants bear 10% to 20% of the budgets, where there is no budget, 30% of the organizations raise funds as required, while 70% demand funds from the occupants. On the whole, only 30% of the respondents believe their funding is adequate.

Table 1 shows the problems identified on the reclaimed lands and the defects induced on the buildings on them by dwellers. Nine out of the 12 variables identified, significantly affect the state of the lands, they were ranked from 1 to beyond 3 on a scale of one to four. Drainage problems (3.143), flooding (2.429), general wetness of top surrounding soil (2.143) are ranked as the most pertinent problems associated with the lands. Other important defects are rising damp in the floors and walls (1.571 and 1.429 respectively).

Table 2: Defects identified by the dwellers

| Defects | Relative Importance Indices | Rank |
|---|---|---|
| General wetness of top surrounding soil | 2.286 | 3 |
| Flooding of surrounding land and building | 2.429 | 2 |
| Rising damp in the wall | 1.571 | 5 |
| Rising damp in the floor | 1.429 | 6 |
| Erosion of the land | 1.571 | 5 |
| Drainage problem | 3.143 | 1 |

| | | |
|---|---|---|
| Depression of the ground floor | 0.857 | 8 |
| Bulking of ground floor | 0.350 | 10 |
| Cracking of the ground floor | 1.286 | 7 |
| Foundation cracks | 0.429 | 9 |
| Collapse of the building | 0.286 | 11 |
| Flooding of soak away pit and septic tank | 2.143 | 4 |

Cracking of the ground floor (1.286) and subsidence of the ground floor (0.857).

Table 2 shows responses of management organizations to identify and rank prevalent problems in the study area. To them, soil consolidation ranked higher than water related problems (3.32), this is followed by excessive moisture content (2.92) and drainage problems (2.76). Other defects such as flooding (2.56), general wetness of top soil (2.40), burst pipes (2.20) and erosion gully (2.04) are ranked in descending order as being important . The difference in the views of the experts and the dwellers draws from the emphasis of the experts on the structural stability of the soil above its service functions.

Table 3: Defects identified by managers.

| Defects | Relative Importance Indices | Rank |
|---|---|---|
| Excessive moisture content | 2.92 | 2 |
| Soil consolidation | 3.32 | 1 |
| Burst water pipes | 2.20 | 6 |
| Drainage problem | 2.76 | 3 |
| Soil heave | 1.36 | 9 |
| Erosion of the land | 2.04 | 7 |
| Soil scour | 0.84 | 11 |
| Chemical reaction | 1.24 | 10 |
| Rising damp | 1.48 | 8 |
| Flooding | 2.56 | 4 |
| General wetness of surrounding soil | 2.40 | 5 |

Evaluation of factors affecting the management of reclaimed lands by both classes of respondents is shown in Table 3. The results show that outright neglect (3.231) of reclaimed lands is the highest ranked cause of defects on the lands. This is followed by delay in executing repairs (2.769), lack of maintenance policies (2.769) and maintenance equipments (2.769) and poor workmanship in construction (2.769). Other determinants are use of poor quality materials (2.308), failure to report defects promptly (2.308) and improper monitoring exercise (2.308). High premiums given to neglect and its related factors, confirms earlier evaluation of the management organizations and directs attention to where efforts at improving the defects should be focused.

Table 4: Factors affecting Land reclamation management

| Factors affecting land reclamation | Relative Importance indices | Rank |
|---|---|---|
| Vandalism | 0.923 | 4 |
| Poor workmanship in construction | 2.769 | 2 |

| | | |
|---|---|---|
| Poor quality materials | 2.308 | 3 |
| Delay in executing repairs | 2.769 | 2 |
| Users failure to report defects promptly | 2.308 | 3 |
| Improper monitoring exercise | 2.308 | 3 |
| Lack of maintenance policy | 2.769 | 2 |
| Lack of maintenance materials | 2.769 | 2 |
| Lack of maintenance equipments | 2.308 | 3 |
| Outright neglect of the land | 3.231 | 1 |

**Implications Of The Findings**

Survey findings show that most problems identified are associated with ground and surface water, which generate others, such as general wetness of the surrounding grounds, damp penetration, drainage problems and flooding. The effect of these on the occupants is general inconvenience, which generates social tension when these problems occur perennially on a large scale.

Damp penetration has been described as one of the most serious defects in buildings by [Seely, 1986], apart from causing deterioration of the structure, it can also result in damage to furnishings and contents and can in severe cases adversely affect the health of the occupants. Structural defects may also arise as a result of drying out of subsoil after flooding and washing away of the supporting soil by underwashing water currents. Walls may also experience surface damage by scouring and erosion, efflorescence and cracks. Furthermore, flood poses dangers to electrical installations as ducts and conduits that traps flood water must be carefully treated and have continuous technical inspections for a year after the flooding.In addition to the implications highlighted above, a critical attribute of the building that is severely impaired is the aesthetics,[Anderson, 1987] believes that aesthetics is the focus of all maintenance activities and that it is the prime significance of maintenance. [Lloyd, 1962] also believes that among the Yorubas in Nigeria, aesthetics of a building causes the building to bring prestige to its owner as it marks him out as one of his town's worthier citizens.

However, the economic life and the life cycle cost of the buildings in the study areas are the most severely affected factors besides all other implications. The earning power of these buildings may not be able to compete with those elsewhere and the life cycle cost is high.

As noted earlier, the government, as owners of reclaimed lands, and as monitoring agents of other privately owned lands, presently has agencies that are ill equipped for post reclamation management responsibilities .To effect desired changes, government responses would largely be premised on policy formulation. The general maintenance provision of the Nigerian national housing policy is not strong enough to cater, for specialised areas such as reclamation , the policy is also weak as a result of its low emphasis on development of maintenance personels and in not advocating maintenance in the design and implementation stages of projects. It is significant to note that the three steel plants and the two refineries referred to in item 7 on table 1 are presently inoperable and shut down, as a result of general poor maintenance culture.

The key policy requirement relates to development of citizen capacity, to enable their full

participation in the construction industry in consonance with the objectives of TG29(CIB Task Group 29).This would enable them provide adequate attention to national sensitivities, local environmental issues and maintenance requirements [Gubago, 2000]. Development of citizen capacity, as an instrument for effective globalisation is amply supported by global organizations such as Federation Internationale des Ingenieurs-Counseils (FIDIC), World Bank and World Trade Organisation. [FIDIC, 1995] in relating a forty year study, states that" the result of more than forty years of development aid is a discouraging story of lost opportunities. The gap between the rich and poor is increasing and rate of environmental degradation in low income countries is accelerating". FIDIC also believes that the solution to the problems in building local skills and transfer of know- how, to enable the low and middle income countries of the world activate their stagnant economies and move closer towards achieving the advantages enjoyed by the richer and industrialized nations .The World Bank (1997) in her support of local citizen capacity development, demands that, though qualified firms from member countries must have equal access to bid for contracts and its award, independent of national origin ,the borrower nation is permitted to give a margin of preference of 7.5% to local contractors. The WTO's General Agreement on Trade in services also allows countries to liberalise at their own pace.

To achieve effective citizen capacity development for technical responsibilities as required by the survey findings, transfer of technology has been identified by [Strassman and Wells (1988) and Raftery et al (1998)] as a major vehicle for capacity development .However, [Ofori, 1996] disagreed, on the grounds that the objectives of foreign contractors and host countries often differ, in the same vein [Abbott (1985) and Carrillo (1984)] supported Ofori's views as they reported that foreign firms are not keen to effectively transfer their technology since they believe that they would be nuturing their future competitors. The 5% market share of the indigenous contractors in Nigeria and the survey findings are further evidences of the latter group's views.

An alternative policy direction, that Nigeria may benefit from, is the localisation policy [Gubago, 2000], which has achieved as much as 90% of it's citizen capacity development goals in Botswana Malaysia. The aim of the localisation policy in Botswana is to govern and guide the employment of foreigners to achieve the national goal of full employment for all qualified citizens before employing a foreigner. The act that guarantees an employment permit for a foreigner , requires him to have a position of an understudy, as well as training programme for an understudy. The programme has achieved 95% result in Botswana's public and mining sectors.

## CONCLUSION

Land reclamation practices in Lagos metropolis has benefited immensely from hydraulic sand filling technology, imported through the avenues of globalisation, the technology has made large areas of reclaimed lands available, from previously uninhabitable, marshy and coastal lands.The study shows that lands obtained through this means require greater maintenance attention than naturally occurring lands, so as to prevent excessive degradation. Findings from the study area show maintenance attention accorded these lands is inadequate. Policy on citizen capacity development is advocated to improve the situation.

A general view of globalisation shows that there have been both negative and positive effects of its use in developing nations of the world, the lapses reported in this study is an example of the negative effect. But studies elsewhere showed that Japan and Korea are countries that benefited immensely from the globalising forays of the United States of America. A notable characteristics of nations that have benefited from globalisation in any sector of their economy is that the initiatives for benefiting and sustenance of momentum came from them, this is because globalising organisations hardly ever have the primary goal of empowering host nations.

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