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ASSESSMENT OF SUSTAINABILITY OF HOUSING DEVELOPMENT IN LAGOS PERIPHERY

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Abstract
Accompanying rapid urbanisation in Nigerian cities is the emergence of spontaneous physical transformation outside the cities' border. The emerging settlements at the periphery are confronted with development-driven urban challenges. This study assesses the socio-economic sustainability of Ikorodu, a typical peri-urban settlement in Lagos. Adopted research method in this study is a combination of case study based examination and application of International Urban Sustainability Indicators List framework (IUSIL). Economic sustainability was measured by assessing the impact of local regulatory laws on the growth of local economies and social sustainability was measured by examining housing satisfaction, the quality of life and housing social integration. Data were collected through primary and secondary sources including observation, structured questionnaires, interview and satellite images. Two stage clusters sampling was used to select 384 household heads representing the sample size. Descriptive analysis was used for quantitative data while satellite image analysis was used for qualitative data. Findings show a trade off in area of local economic development, non-inclusive housing and socially impaired urban development. Findings may be useful templates for policy makers and all stakeholders in creating a balance in the arms of development goals by public participation. Improvement in housing satisfaction can be achieved by increased access of the urban low income group to credit facility for housing. In addition, investment in public housing would foster improved social integration, reduce tenure insecurity, and create affordability in housing.

Key Words: *Housing, Indicators, Integration, Peri-urban, Sustainability, Urban quality*

Introduction

Supporting the findings of Shen *et al.* (2011), the spontaneity of the housing developments in the peri-urban interface of most African cities lack mutually supportive and dynamic balance between the social wellbeing, economic opportunity and environmental quality (Adedire, 2018). There is often a disconnection between the urban and the rural leading to an institutional failure in peri-urban settlements of developing countries. This, creates management challenge for the local government in

maintaining a desirable state of urban conditions, which is the hallmark of urban sustainability (Adinyira *et al.,* 2007)

Generally in developing countries, sustainability is of little priority thus translating to poor communication of global sustainability agenda to the stakeholders (du Plessis, 2007). Following investigation by du Plessis (2007), notable barriers to the success of prior sustainability agenda in developing countries of which Nigeria is one, are, lack of data, poverty, disinterested stakeholders, unstable economic environment and undue dependency on foreign codes and standards which are not fit for local application. In addition to these are development inequality, unequal income of urban dwellers leading to segregated and non- inclusive development, poor governance and recently stifled actions of the local government (Aribigbola, 2011).

The direct influence of urbanisation in the study area, Ikorodu, has been phenomenal. It is the most urbanised peri-urban settlement in Lagos State (Lagos State Ministry of Housing, 2016). The socio-economic transformation in most peri-urban interfaces, Ikorodu not being an exception is a product of internal migration of a heterogeneous mix of population from city metropolis to the periphery (Adell, 1999). There is usually a change in economic dynamics from rural to urban, thus calling for a balance between the demographic change and the policy response through provision of economic opportunities and strengthening of local enterprises (Adam, 2014). Also to enhance economic sustainability of the peripheral settlements, there is need to address inequality and poverty by introduction of people-oriented regulatory laws to encourage small scale businesses by the low income group constituting the greater population of the peri-urban settlements (Moussiopoulos *et al*., 2010).

Success in urban sustainability globally has been attributed to adoption of functional and relevant sustainability indicators to mitigate local challenges (Kamp *et al.,* 2003; Sahely *et al*., 2005). Indicators are set of parameters for benchmarking performance. They assist in maintaining focus in development strategies, promote local participation, and help in achieving set sustainability target (Winston and Eastaway, 2008; Moldan *et al.*, 2012). To address the peculiar socio-economic issues in Lagos peri-urban interface, it is necessary to develop sustainability indicators to guide in policy making.

Therefore, this paper assesses the socio-economic impact of development in Ikorodu on human well-being and their productivity. There is a need for development of indicators to address the sustainability challenge form the perception of the residents and other relevant stakeholders in the study area.

Literature Review

A sustainable urbanisation is a dynamic process that create a balance between socio-economic, environmental and the institutions managing them (Drakakis-Smith, 2000). Sustainability brings urban and rural together with links at the national and global levels (Shen *et al;* 2011). Also, the European Commission (2006), defined urban sustainability as the challenge to solve both the problems experienced within cities and the problems created by cities. The ambiguity of space in most peri-urban interface is a great challenge for sustainable development (Adell, 1999). It is argued by (Allen, 2003; Allen, 2010) that the

interface must be space-specific to overcome challenges confronting its healthy development. Aside the institutional fragmentation and lack of cooperation between the state and local government, public and private sectors and generally lack of international and local synergy, sustainable development in developing countries is also hampered by socio-economic issues like poverty, inability to preserve local economies and poor linkages (Leaf, 2002).

Central to the success of any sustainability programme is the consideration of the socio demography of the local citizens (Dempsey *et al.*, 2009). Urban social sustainability is vital to the well-being and the quality of life of the citizenry. It fosters unhindered growth and enhances social integration with the aim of improving the quality of life of the urban population (Shen *et al*., 2011). Social sustainability is the core of successful urban policies (Bramley *et al*., 2006). A socially sustainable development gives good locational satisfaction to the dwellers, provide educational facilities, health facilities, ensures safety of lives and properties, eliminates differentials in infrastructure, counter residential segregation to bridge the gap in inequality between the poor and the rich, make adequate health facilities available to reduce mortality rates (Omann and Spangenberg, 2002; Firman, 2004; Pradoto, 2012).

The urban low income group suffer most the impact of the economic transition in the peri-urban settlements. A greater percentage of the residents are low income group (Uzonwanne *et al.,* 2015). The surge in population of the interface either by *in situ* growth or rural and urban in-migration imposes an uncontrolled inflation on consumables because of increase in demand for goods and services Acheampong and Ankoye, 2013). This type of urban pressure is borne by the poor in the peri-urban settlement. Also local economy and enterprise in the interface suffer primarily due to poor development of local facilities by the state and local government (Moussiopoulos *et al*., 2010). Most of the peri-urban dwellers are engaged in informal trading and are affected by the poor transportation linkages in most peri-urban settlements in developing economies (Iaquinta and Drescher, 2000). The growth of informal enterprises are not encouraged by microfinance, the petty traders suffer from unfavourable regulatory demands and impositions by the local government leading to poor growth of their enterprises (Alberti and Susskind, 1996).

Worthy of mention as one of the sustainability challenges in African peri-urban settlements is the poor state of information and communication, especially in provision of internet services and dissemination of vital information. There is no commitment by the service providers to improvement due to perceived poor economic gain from their investment (Allen, 2010). Local tourism that could generate local source of livelihood for the urban poor are not developed by the stakeholders.

In terms of urban development, Lagos has the most improved state development plan in Nigeria (Aluko, 2010; Adedire, 2018). But despite this, urban sustainability in Nigerian peripheral settlements including Lagos is far from being a success (Uzonwanne *et al.,* 2015). Therefore, global improvement in urban sustainability has been achieved by developed countries through the adoption of sustainability indicators. Reliable and

realistic indicators do not only guide in achieving the desired urban sustainability but measure performances and give indications of lapses in policy (Huang *et al.,* 1998; Shen and Zhang, 2011*;* Moldan *et al.,* 2012).

Study Context

Factors like the dearth of land supply in the metropolis, increased housing demand by the rapidly increasing urban population are central to the creation of satellite towns in the peri-urban interface of Lagos namely Ikorodu, Alimosho, Badagry, Ibeju-Lekki and Epe (Towry-Coker, 2002; CPMS, 2005). Opening of the peri-urban interface for housing development is an ongoing urban decongestion exercise to control overcrowding and the collapse of urban infrastructure by the increasing population in Lagos (Lagos State Ministry of Housing, 2016). Among the five notable peri-urban interfaces in Lagos, Ikorodu, a municipality in Lagos State has received an impactful urban development lately as shown in Figure 1. One of the major successes towards the reform of Ikorodu peri-urban interface is the just concluded new development plans to cover 20 years from 2016 – 2036. Marking a departure from the inherited master plan from the colonial era, the new development plan incorporates local interest, aligns with local culture, embraces public participation and positively promote sustainability agenda of Lagos State government (Lagos State Ministry of Physical Planning and Urban Development, 2015).

Ikorodu Local Government, covering 345 km^2 is situated at approximately 36km north of Lagos and located in the North East of Lagos State along the Lagos lagoon. Ikorodu had an enumerated population of 535,619 in 2006 (National Population Commission, 2006). According to Lagos State Ministry of Physical Planning (2015), spatial growth of Ikorodu has been at the annual rate of 118.3% from 1990-2011 and as at 2015. Ikorodu population at estimate of 706,100 is 0.388% of the total population of Nigeria. Ikorodu population in 2016 was estimated to be 768,562.

With the locational benefits of large industrial area containing many factories and notable commercial services, Ikorodu has both location-specific advantages and challenges that makes it ideal for sustainability study in Lagos State. It has grown phenomenally due to rapid and continuous expansion of relatively central parts of Lagos mainland like, Ojota, Ogudu, Ketu and Magodo (Adedire, 2018). The growth of peri-urban settlements in Ikorodu, the study area is aided with the development of Ikorodu urban corridor and additional feeder roads. The selection of this study area is to promote integration of Ikorodu peri-urban settlements to the Lagos metropolis by collection of empirical data for improved interventions in areas of sustainability.

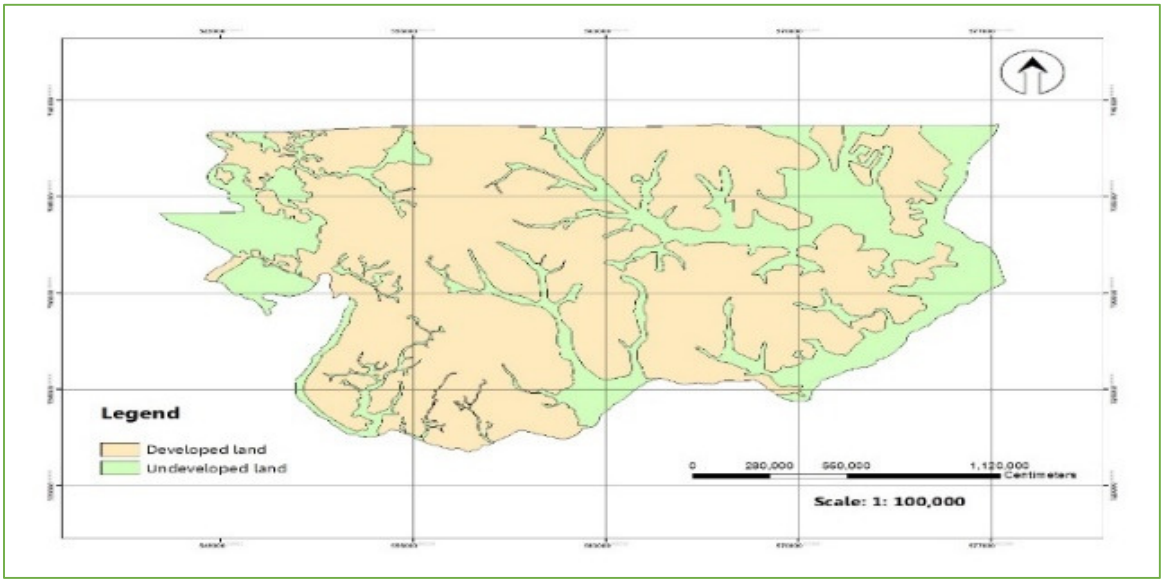

Fig. 1: A Map showing improvement in urban compactness of Ikorodu in 2016
Source: Google Earth Archive (2016)

Research Methodology

This study employed the integrated research method where case study examination and international sustainability indicators were employed in sourcing for data. Before the field survey, document survey was carried out on the existing master plan and the satellite images of the study area generated with GIS. Ad-hoc consultations were carried out with selected stakeholders to complement the quantitative and qualitative data collected after the survey.

Two-stage clusters sampling was carried out in selection of the sample size. Using probability sampling technique, 18 settlements were purposively chosen from 94 peri-urban settlements in Ikorodu to save cost and time. 384 housing units were selected randomly from clusters of 18 settlements, chosen from the 6 districts in Ikorodu under the three known structures, self-built housing, public housing and Public and private partnership development (PPP) for balanced data collection. To achieve high return rate, the administration of the questionnaires were done during non-working days and hours and also on the spot collection system was adopted. Respondents were not allowed to choose multiple answers in the survey questionnaire. Out of the total of 384 questionnaires administered to household heads as primary respondents, 379 questionnaires were retrieved.

Data processing and analysis for this study were performed using the Statistical Package for Social Sciences (SPSS) 22 for windows for statistical analysis of the quantitative data. On the quantitative data, two types of analysis were performed. Descriptive statistics were used to generate the percentages and frequencies of respondents' socio-demographic profile, commuting patterns and whether housing were gated or not to measure the level of residential segregation. Data on respondents' perception on urban sustainability was collected using the international urban sustainability indicator list (IUSL). The qualitative data, a satellite image of year 2016 was obtained from

Google Earth archive using Geographic Information Systems. The available features on the satellite images which include Greenfield, Brownfield, road network, and water body were classified and analysed.

Results and Discussion

Socio-demography of Respondents in the Study Area

As stated in Table 1, there were five distinct household sizes in Ikorodu peri-urban settlements. The most prevalent household size being of 3-5 persons, this constitutes 48.8% of the sampled households. Household sizes of 1-2 people and 6-9 persons constitute 23.2% and 23% respectively, household size of more than ten persons, 10-12 comprises about 3.7% of the population. The least popular household size is that which is made up of more than 13 persons, this comprised of 1.3%. The most prominent occupation in the study area was informal trading, 31.4% of the respondents were engaged in one form of informal trading or the other. Civil service was 23.7%, skilled artisans were 17.7% and those engaged in professional practice were 14.8%. Studying (4.7%), farming (3.2%), retirees (3.2%) and the unemployed (0.8%) were the less prominent occupations in Ikorodu peri-urban settlements. The low income group with 25,000.00-50,000.00 ($70-$140) monthly earning was 39. 6% of the respondents. The middle income group, earning between N50, 000.00 to N150, 000.00($140-$420) monthly were the most predominant. 46.9% of the total population sample was composed of this group. High income group, earning 150,001-above ($420) were just 13.4% of the population. Illiteracy level, which according to UNESCO means education below secondary school level constitutes is 5.5%.

Urban Social Sustainability in the Study Area

The survey analysis presented in Table 2 shows the satisfaction of the respondents with social infrastructure in the study area. The following indicators show high level of satisfaction, electricity 80.7%, water 85%, public education 61.5%, health facilities 50.1%, efficient transportation 83.9% and reduced natural hazards 84.7%. On the other hand, high dissatisfaction were recorded in areas of security of lives and properties 72%, unbalanced infrastructure development 66%, poverty level 60.3%, security of tenure 97%, access to credit for housing 98.9%, cost of land acquisition 71.5%, housing social integration 56.2%, cultural tolerance 69%, recreation 72.3%, availability of local public green areas 69% and availability of local services 50.2%. In terms of housing satisfaction, the respondents were satisfied with the following indicators, lots size 73.6%, state of painting 63.9%, openings 88.1%, burglary installation 81.5%, number of rooms per household 57.5%, flush toilet provision 83.6%, tiled bathroom 74.1%, tiled kitchen 67.5%, source of water 85% and electricity supply 80.7%. However, housing dissatisfaction were shown on the following, size of informal settlements 52.2%, state of disrepair 64.6%, building design 60.7% and number of windows per room 60.9%.

Table 1: Household heads' socio demography

Variables		N=379	%
Household size	1-2 persons	88	23.2
	3-5persons	185	48.8
	6-9persons	87	23
	10-12persons	14	3.7
	More than 13 persons	5	1.3
Occupation of Household Head	Civil service	90	23.7
	Informal Trading	119	31.4
	Professional practice	56	14.8
	Unemployed	3	0.8
	Retired/pensioner	12	3.2
	Artisan	67	17.7
	Student	18	4.7
	Farming	12	3.2
	others	2	0.5
Monthly income of household head	Low income ($70-$140)	150	39.6
	Middle income ($140-$420)	178	46.9
	High income ($420)	51	13.4
Literacy level of Household Head	Postgraduate	25	6.6
	BSc/Higher diploma	124	32.7
	National diploma	79	20.8
	Secondary	130	34.3
	Primary	18	4.7
	None	3	0.8

*Salary grouping is culled from the Federal Republic of Nigeria's Federal Civil Service Commissions

Table 2: Urban Social Sustainability Indicators

		Respondents' satisfaction on Sustainability (%)		
Social	Sustainability Indicators	% Satisfied	% Not Satisfied	Indifferent
So1	Electricity supply	80.7	19	0.3
So2	Water Access (Borehole/Tap)	85	15	0
So3	Education	61.5	38	0.5
So4	Provision of Health facilities	50.1	48.8	1.1
So5	Safety(security of lives)	25	72	3
So6	Balanced Infrastructure Development	34	66	0
So7	Poverty level	39.6	60.3	0.1
So8	Efficient Transportation	83.9	16.1	0
So9	Reduced Natural hazards(Flooding)	84.7	15.3	0
So10	Public housing	2.6	71.5	25.6
So11	Housing satisfaction(Dwelling quality)			
So11-1	Size of informal settlements as a % of city area and population	38.8	52.2	
So11-2	State of disrepair	35.4	*64.6*	*0*
So11-3	Lots size	73.6	25.9	0
So11-4	State of painting	63.9	36.1	0
So11-5	Building design	39	60.7	0.3
So11-6	General opening	88.1	11.6	30.3
So11-7	Burglary Installation	81.5	18.2	0
So11-8	Number of rooms	57.5	42.2	0.3
So11-9	Windows/room	38.8	60.9	0.3
So11-10	Toilet type	83.6	16.1	0.3
So11-11	Tiled bathroom	74.1	25.9	0
So11-12	Tiled kitchen	67.5	32.5	0
So11-13	Source of water	85	15	0
So11-14	Electricity supply	80.7	19	0.3
So12	Security of Tenure	2.6	97	0
So13	Access to credit for housing	1.1	98.9	0
So14	Cost of land acquisition	18.2	71.5	10.3
So15	Promotion of social integration in housing	41.7	56.2	2.1
So16	Cultural tolerance	15	69	16
So17	Recreation	19	72.3	8.7
So18	Availability of local public green areas	28.1	69	2.9
So19	Availability of local services	46.8	50.2	3

*Indicators extracted from IUDSL - Shen *et al*. (2011)

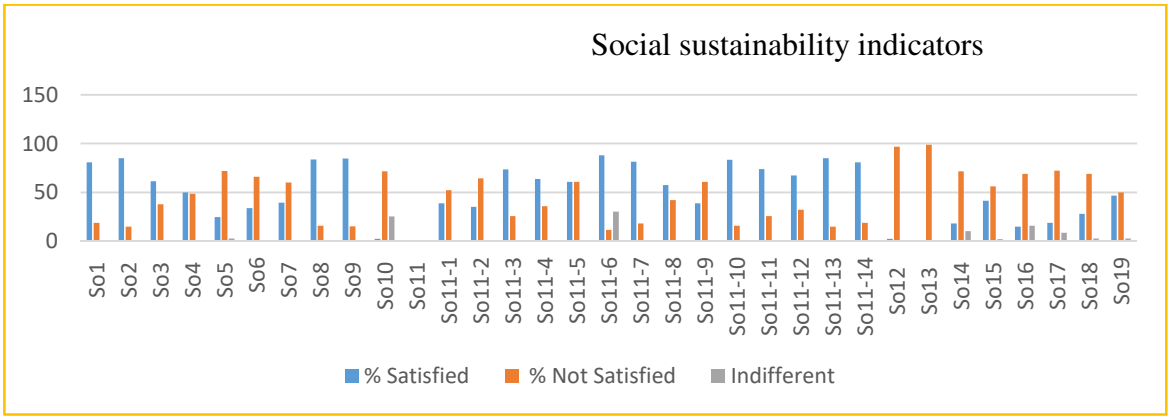

Fig. 4: Respondents' social sustainability indicators.

Economic Sustainability in the Study Area

The study area from findings presented in Table 3 is more production driven than consumption. More respondents consume less and the waste level is minimal. The intensity of energy use in the study area is high given the respondents satisfaction indicated by 56%. Positively, a greater share of the total energy is on economic activities. 44% indicates less satisfaction with the production pattern. In terms of economic opportunities, 54% respondents were satisfied while 46% were not. The interview carried out revealed that the satisfied population have good access to information and communication technologies, internet and GSM telephone lines. Also, the study area, Ikorodu is home to different public and private enterprises. Provision of multi-disciplinary job opportunities exist for the peri-urban residents in form of government services, manufacturing work, schools and medium enterprises. This corroborates findings by Adedire (2018). Central to the dissatisfaction of the residents is the urban pressure of inflation as a result of increasing demand on consumer goods by the rapidly growing population in the peri-urban interface. Access to public water is reasonable as indicated by 65.3%. Most dissatisfied respondents live in the remote parts of the peri-urban interface. The strength of small and local enterprises is hindered by anti-people regulatory laws. The negative impact of these laws, which come in forms of internally generated revenue demands by the local government, on the fostering of local enterprises is indicated by 73% of the respondents. However, there is an evidence of good linkage between workplace and settlements in the study area as shown by 72% satisfied respondents. The improvement of the urban corridor of Ikorodu Expressway has contributed immensely to easy accessibility to places of work in neighbouring Lagos metropolis. This encourages low-income mobile working group to seek residential location in Ikorodu peri-urban settlements despite having work place locations in urban centres.

Table 3: Economic Sustainability Indicators

		Respondents' satisfaction on Sustainability		
Economic	Sustainability Indicators	% Satisfied	% Not Satisfied	Indifferent
Ec1	Consumption and production patterns	56	44	0.0
Ec2	Economic opportunities	54	46	0.0
Ec3	Poverty level (earnings below $1 a day)	0	0	0.0
Ec4	Public Water affordability	65.3	34.7	0.0
Ec5	Strength of small and local enterprises	44.6	55.4	0.0
Ec6	Linkages between works place and settlements	72	27.4	0.6
Ec7	People-oriented regulatory laws	24	73	3.0

*Indicators extracted from IUDSL - Shen *et al*. (2011)

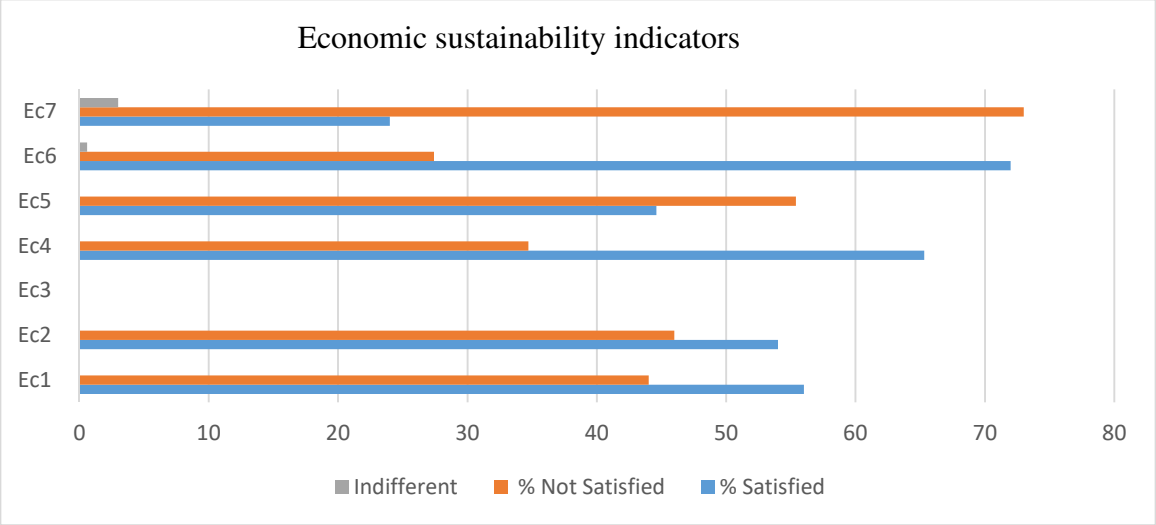

Fig. 3: Respondents' economic sustainability indicators.

Conclusion

Based on findings in this study, the major areas of dissatisfaction are related to security of tenure, high level of poverty, and disparity in infrastructure development, lack of adequate green areas, residential segregation, cultural intolerance and increasing high cost of land, due to rapid migration of the urban population to the study area. The high level of poverty signifies a weak economic sustainability of the study area. Therefore, there should be a strengthening of local enterprises and improved economic activities in the peripheral settlements to reduce the poverty level. This can be achieved by slackening of unfavourable anti-growth regulatory laws for improvement in areas of local economic development, which is vital to viability of economic sustainability. Following the findings in Table 2, one could conclude that the level of social integration is very low by the presence of more gated housing in this study. Residential segregation encourages unbalanced infrastructure development, promotes inequality, stirs intolerance, create a sense of insecurity, leads to alienation of the urban poor and ultimately creates cultural intolerances.

In conclusion, the engagement of tested sustainability indicators in this study has helped in revealing the weaknesses in the socio-economic sustainability of Lagos peri-urban settlements. These findings could be a useful information for the policy makers and all stakeholders in creating a more sustainable development through synergy and concerted efforts. It is a useful template for creating a balance in the three arms of development goals.

Recommendation

It is recommended that improvement by the state and local government in areas of public housing would foster more social integration, reduce tenure insecurity, and create affordability in area of cost of land acquisition for housing development. In addition, housing satisfaction can be achieved by access of the urban low income group to credit facility for housing. The level of informality which is measured by the availability of information on regularisation of housing development, building permit in this case is an indication that predominant housing type in the study area, the self-built housing could not give high satisfaction to the peri-urban dwellers.

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