

# Survey of Population Growth on Urban Marshlands and Environment of Southern Nigeria

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**Abstract:-** Now the strategies and challenges of land use development in swampy land is one of the most frequent contemporary issues generated by population pressure in this era. The article consequently surveyed population growth on urban marshlands and environment of south- south Nigeria. The questionnaire approach was active for acquisition of relevant information from the occupants while regression, mathematical percentage and standard deviation held the research analysis. The result demonstrated that sprawling or urbanization ( $t = 13.354$ ,  $P = 0.001 < 0.05$ ), and stood as the most persuasive and deriving mechanism that encourage desertification of marshlands in significant urban centre of south -south Nigeria. Industrialization ( $t = 11.233$ ,  $P = 0.00 < 0.05$ ), population ( $t = 7.895$ ,  $P = 0.001$ ), housing development ( $t = 7.737$ ,  $P = .001$ ), urban food security ( $t = 3.421$ ,  $P = .003$ ) and demand for fossil fuel ( $t = 2.976$ ,  $p = 0.00$ .) are the significant causes of built-up preserved swamplands areas of major cities in south-south Nigeria. The suggestion detailed that successive government must ensure that at least, all local government administrative headquarters are upgraded to township status via a legislative tool which must direct a measure to relocate most of the urban land activities that attract high population to government headquarters upgraded to township status.

## I. INTRODUCTION

In swampland environments, studies on population pressure have been based on the analysis of housing demand, urban development, land reclamation and speedy sprawl, moreover socio-environmental implications of built-up swamplands (SEIBS) studies have received much attention in developing country like Nigeria going by both practice and research. However, the sources, challenges and remedies of swampy land development by extension generate opinions among the scholars. According to Hoius (1990), the Pressures to swampland from agricultural intensification, pollution, engineering schemes and urban development are difficult as societies and institutions that served as damaging mechanism of wetlands are compound systems, a thoughtful of hydrology and ecology is not sufficient for a wetland administrator. He added that wetland destruction is always abetted by mis-perceptions, public subsidy, international funds, local-scale planning, sectorial approaches, and narrow disciplinary measures. While the development disadvantages of swampland manifest from hostile climatic effects, inadvertent environmental changes, non- sustainable alternative uses, and

exacerbation of problems, detrimental effects on rare species, social disruption, international obligations, and sub-optimal management. The work recommended that hydrologists must be proactive in their association in swamplands and road map to its sustainable consumption while Political hydrology must be in tandem with scientific hydrology. Oluwole (2013) researched the rapport between physical development apparatuses and physical planning approaches for arriving at sustainable development in Ikeja Local Government Area of Lagos State, Nigeria. His work used both secondary and primary source of data such as journals, planning decrees, maps and primary data source like questionnaires, reconnaissance survey, interview and photographs. However, the findings shown that physical development apparatuses and physical planning approaches were out of order and used as an invention instead of process. In continuance, His analysis also acknowledged that there are no vibrant planning policies, participation of citizens and inadequate integration of implements and specialists engagement in sustainable development. The article endorses institutionalization of utensils and policies with the experts and the unrestricted. They maintained that initiating direct strategy, acceptable enforcement, citizen involvement and controlling of prospect land use development were suggested.

Leke(2009) look at the claim of the idea in the physical development procedure in Lagos State Nigeria . The work probes literature on spatial development struggles and emphasis on urban planning regulations since the colonial period to the current era in Lagos State. The aim of the examination was to determine the numerous difficulties challenging physical and environmental expansion in the state. The result proved that prevailing complications identified in the area include: physical/environmental, cultural/sociological, managerial and legislative problems. The study also researched sustainable development in other parts of the world of which proposals are presented on sustainable physical development arrival in Lagos State. Other direct recommendations the study made available were inclusion of citizen's participation in planning, capacity building, integration of information technology into planning practice and deterring planning from commercialization.

Sithole and Goredema (2013) investigated the consequences of building in swamplands to meet housing demand in Harare city, as a result of public interest on reclamation of swamplands for urban development as well as solution for speedy sprawl. The authors established that the escalation of the number of person residing in wetlands and the populaces of swamplands came across a number of challenges such as housing units' structural failure and waterborne sicknesses. The study concluded that midland government and local powers that be need to intensify residential development in satellite towns to abstain swamp from reclamation and enhancing the restoration and rehabilitation of wetlands. They emphasized the need to come up with effective urban planning strategies and plans towards security and bringing back of wetlands. That relevant meetings and contributions of all the stakeholders in built environment must be handled as an issue of perseverance before the extending urban space to marshlands. Finally, those wetlands required authoritarian earmarking for recreational uses. They noted that wetlands include lakes and rivers, swamps and marshes, wet grasslands and peat lands, oases, estuaries, deltas and tidal flats, near shore marine areas, mangroves and coral reefs, and human-made sites such as fish ponds, rice paddies, reservoirs, and salt pans. The advantages include provisioning services, such as food and fibre which are essential for human welfare, and regulating services, such as recharge of groundwater and protection from natural hazards, which are critical to sustaining vital ecosystem functions. Wetlands also have considerable aesthetic, cultural, educational and spiritual values and provide sustainable opportunities for recreation and tourism.

Stella (2010) evaluated the procedure and regulation basis for managing urban wetlands, create the contribution of the public in wetland management and to investigate the measures considered for successfully guard and marmalade the wetland. The study anchored on secondary and primary sources. The relevant Primary data used for the research include field surveys, photography, observation, guided questionnaires and oral interviews despite the fact; secondary information was seriously acquired from the professional published and unpublished information. upper, middle and lower income populace residing within the Watiti wetland constituted the target population. Her analysis disclosed status quo of urban wetland management and conventional prevailing gaps within institutions and the guidelines. The investigation also finds that residential development encroached on urban wetland of Watiti and outline measures for wetland dwindling and well-looked-after for sustainability. That the impacts of human activities on wetland include; direct habitat loss (from development, land reclamation, roads, in-stream dredging), altered water regime (from dams/barriers, stream redirection, hard surfacing, water extraction), pollution (from garbage, sewage, oil and chemical spills, pesticides, airborne toxins), introduction of exotic species (weeds, pests and domestic pets) and other ecosystem modifications (for example, altered fire regimes, dieback and changes in salinity). International

conservation efforts are being used in conjunction with the development of rapid assessment tools to inform people about wetland issues.

Zalidis, Antonis and Eleni (1997)' Evaluated the impact of anthropogenic activities on the ecological character of Greek wetlands. The study objectives were; to record the anthropogenic activities that caused change in a wetland's ecological character and determined their intensity for each wetland site, identify the most significant environmental impact on each type of Greek wetland. The study distributed over 1200 questionnaires, compiled and processed for 291 wetlands in order to obtain data on the factors of degradation of different kinds of wetlands (deltas, estuaries, lagoons, lakes, reservoirs, rivers, marshes, and springs). The study also recognized change in water regime, depletion of wetland resources, change in water quality, and loss of wetland area as the degradation factors for impact evaluation. construction of irrigation schemes and diversion of water courses, causing changes in water regime (12%) over pumping, land clearing, and illegal hunting, causing depletion of natural resources (26%), agricultural and municipal pollution, causing changes in water quality (54%) and establishment of housing facilities and expansion of agriculture, causing loss of wetland area (32%) were the most often factors that impact Greek wetlands. They finally reported that change in water regime affected 50% of the springs and 40% of the rivers, natural resources reduction pretentious 42% of the deltas and 41% of the reservoirs, loss of wetland area affected 60% of the marshes and 52% of the estuaries, while all deltas and 75% of rivers had their water quality compressed.

Yangfan , Xiaodong, Xiang and Feng (2010) studied the rapid landscape alteration and regional environmental changing aspects in the Lianyungang bay zone from 2000 to 2006 via remote sensing information and classified Landsat TM (2006-05-20) and ETM+ (2000-09-16) images. In exceptional dimension, the research used classified images to produce maps of urban expansion and salt wetlands squalor, whereas landscape metrics were designed and examined spatiotemporally transverse classically and landscape level for different year. Therefore, the research findings shown that Lianyungang bay region witnessed prevalent urban–rural boundary coupled with rapid land-use conversions, urban expansion and wetland dilapidation. They added that high growths in urban built-up land, associated with large-scale salt wetlands degradation, have been protuberant as at 2005 when the eastern sea development procedure was executed.

Tsihrintzis (1999) stressed that the contemporary USA legitimate context in connection to swamplands and development, parallels demonstrated the notions of alleviation and diminishing banking, examines the contemporary practices when it comes to the pros and cons as it also relate to wetland effects and losses, but respond to the question how on-site easing and mitigation banking exist or could be procedures of sustainable growth. He concluded that swamps

in the USA are secured through legal measures and restoration struggles have also been put in place.

Matthew and Helen (2009) utilized biophysical and socio-economic facets to examine swamp potential in African. Their work explained that expansion of a semi-analytical basis for detecting, consolidating and evaluating the intricate factors that connection persons, agriculture and wetland ecosystems. The analysis was held for both the biophysical and socio-economic appropriateness of wetland for agriculture; and evaluation of the possible hazards, in association to both social well-being and the natural features of the wetland. They concluded that previous studies proved that inappropriate agricultural development in wetlands can weaken sustainability and could explain deep social and economic effects for people dependent on the range of ecosystem services provided by those wetlands. However, this research added that the rising pressure to enlarge cultivation in wetlands due to aggregate population, in combination with struggles to improve food security.

Qinyuqian and Junquiao (2012) deliberated on existing circumstance of China's wetlands. They explained the details that rooted ecological dilapidation of china's swampy land. The work concluded that those the characteristics, role and benefit wetlands built up: building on wetland assets, renovation and reconstruction of wetlands while the growth direction of forthcoming investigation on wetlands and viewpoint.

Tiffany, Jennifer, Tom, Karen, Anne and Dave (2011) used above 100 scientific researches on the uninterrupted and ancillary effect of expansion on wetlands and the prominent character swamplands details watershed quality. They revealed that pollutant removal, flood attenuation, groundwater recharge and discharge, shoreline protection, and wildlife habitat are the significant environmental services contribute. They added that the profit of wetland natural facilities normally growths as total wetland pertain intensification in a watershed. In the long run, many academics have enumerated the economic welfares providing wetlands within crisis. Their studies maintained that any time wetlands are tarnished by land development.

Ajibola And Ijasan (2012) evaluated the impact of expansion on Lagos wetlands through fact-finding tactic. Their work proved that urban growth in the conurbation occurs as a matter of human flood from the various hinterlands and emanated from human pursuit of places to deliver more accommodation or employment for the increasing population. The result also found that the major sources of wetland losses within Lagos urban are were never-ending sand filling and encroach in wetland environment for economic uses (construction) and persistent flooding that always in the urban areas. The had triggered into explicit harm of habitat, deferred solids trappings, hydrologic changes, altered water quality, escalation of runoff volumes, reduced permeation; decline watercourse base flows and groundwater provisions,

extending dry phases to mention just a few. Finally, the examination concluded that human and government actions should be declined but struggles should be put in place to some of the activities that energize swampland protection and defense. That attention should also be removed from the direct profits plagiaristic from wetland encroachment to forthcoming/sustainable advantages acquired from appropriate swamp administration.

Ester Nicolas and George(2014) noted that technical, economic and social change can only take place was the communities concerned are prone to the pressure of population growth. She maintained that population growth might be the main inducement to agrarian change. By so doing, the author identifies successive stages of agriculture, characterized by transformations in practices of cultivation and in social structure and the ways they can be explained by dissimilarities in population density. This book is of relevance not only to economists, but also to historians interested in the way present changes in agrarian communities parallel those of the past.

In Pakistan, Asad, Sana and Muhammad (2014) evaluated population growth and its effect on urban Extension. The analysis compiled subordinate data linked to urban growth files for determining the level of urban expansion with cumulative population advance. The work intentions were to evaluate the ancient population increase of the urban for the past fifty years connected with varying land use design and urban land extension. In furtherance, their findings found growing rate of urban neighbourhood with population size and designates a disturbing conditions for urban and regional practitioners. The study concluded that the direction of urban development across Bahawalpur proved that the urban environment is expanding on the dot in the direction of exceedingly built-up urban of Pakistan. However, the extraordinary and unexpected expansion might bring about critical urban challenges. Therefore, the research might address critical issues and assist by making available necessary information relevant to urban planners and other environmental practitioners.

Digha, Imaitor, Ariwadum, and Osuji, (2018) adopted stratified random sampling method, population figures available from 2000, 2010, and 2014, GIS and remote sensing tools to evaluate the influence of population growth on land use in calabar urban. The analysis welcomed Pearson product moment correlations method and graphic data whereas their findings explained population advancement in Calabar City, caused escalation of traffic bottleneck, sky priced land, land use change, urban extension and uncontrolled increase of housing rent. Their research suggested that zoning principles should be implemented together with the administration of physical planning by the appropriate authority. They added that good generated waste disposal method should be put in place to checkmate non approval of refuse discharges across the urban since the spatial ordering of land use activities, enhanced economical

and aesthetic connectivity of easement, building structures, recreation areas, public utilities and services so as to create functional, efficient and aesthetically pleasant dwelling location.

Basil (2015) stressed on the effect of increased population compactness, burden and subsequent encounters in agrarian practices on vicinity of South-eastern Nigeria. The examination anchored on expressive statistics whereas the findings opined that population pressure and agrarian dynamics across the district triggered the concentrated farming of available farm lands causing crop rotation or over-cultivation, land disintegration and complete decline of fallow lands. The author added that the consequences of overpopulation include soil erosion, deforestation and biodiversity loss and environmental degradation. they recommended way out to decline all the undesirable environmental problems and mapped out workable agrarians applies such as agro forestry, erosion control and soil conservation, organic farming and institutional/administrative methods.

Peter and Veldkamp (1999) opined that intensification in population pressure across Java counties generated agronomic land use extension and increase. In continuation, he explained additional topical land use vagaries instigated the encroachment of leading agrarian land by residential, industrial, and other land uses. Considering dynamic and regional-scale, their model of analysis revealed adequate simulation of land use change pattern. Those Forthcoming designs of land use change between 1994 and 2010 are brought about pretentious further development. He concluded that maximum concentrated land use vicissitudes will take place in Java's low regions.

Sarbapriya, Shyampur and Ishita, (2011) examined population variation and its effects on land, forest and water and energy resources. The findings reveals that overpopulation aggregate population compactness and quantity of residents lower than poverty bench mark. In addition, they stated that population pressure added to land degradation and soil erosion that touches a nation's industrious reserve with regards to the economy. They maintained that additional population statistics and growing prosperity have caused high advance of energy generation and ingesting in India. However, environmental challenges on

ground water, surface water, air pollution and global warming are given much worry in respect to cumulative consumption rate. The work finally explained that hurried population increase of India caused the environmental threat such as extension and increase of primary activities, unrestrained growth of urbanization, industrialization, and destruction of natural environments. While overpopulation shows a significant protagonist in reducing per head agrarian land, forest and water resources.

## II. RESEARCH METHOD AND DESIGN

The study was piloted in administrative headquarters of south-south states of Nigeria embracing the following urban: Port Harcourt, Benin city, Asaba, Yenegua, Uyo and calabar. The population of research contained 1,457,548 residents across the popular urban centres in south-south zone. Put on purposive sampling method, 5,000 populations of the urban centres in south-south region was passionately selected for the sampling across the region. The respondents were chosen because they were knowledgeable about the variables under investigation and could supply the necessary information beneficial on the study instrument. The instrument for data collection was a structure questionnaire titled: Empirical Survey of population Increase on urban land uses/cover and environment in south- south Nigeria (ESPIULCEQ). The instrument was a 10 items questionnaire structured on the 4 liker scales with a response mode of Strongly Agree (SA)-4, Agree (A)-3, Disagree (D) and not Strongly Disagree (SD).

The scale was chosen because the flexibility of the scale renders it appropriate for measuring the variables of the research. In order to ensure the validity of the instrument, the questionnaire was subjected to face and content validity by three experts; a registered surveyor working federal ministry of land survey calabarzonal office and one registered town planner for test and measurement from federal ministry of urban development port Harcourt and the validity was experimental tested on administrative staff of housing ministry uyo and yielded an Alpha-reliability coefficient of 0.71. This proved that the tool was reliable. The research assistants were trained and employed in the sharing of questionnaire and collection of data. This was carried out to make sure that the entire questionnaire were duly completed and returned. See the table below

Table 1: distribution of questionnaire in selected cities of south-south states Nigeria

S/N	Selected South-South Cities	Population	Household size	Sample Size	Percentage
1	Port Harcourt	440,399	40,704	1,300	27%
2	Calabar	191,630	30,008	700	15%
3	Benin city	165,146	28,765	600	12%
4	Uyo	244,762	33,806	850	17%
5	Asaba	149,603	25,953	550	9%
6	Yenegoa	266,008	35,006	1,000	20%
	<b>TOTAL</b>	<b>1,457,548</b>	<b>194,242</b>	<b>5,000</b>	<b>100%</b>

### III. RESULT AND DISCUSSION

#### *Causes of Swampland Encroachment in South-South Nigeria*

The analysis of the exploration revealed in detailed regression bench that all the variables under investigation are significant causes or development of preserved waterlogged areas in south-south major cities of Nigeria. Results attested that urban sprawling or urbanization gave the statistics ( $t = 13.354$ ,  $P = 0.001 < 0.05$ ), and stood as the most persuasive and deriving mechanism that encourage desertification of marshlands insignificant urban centre of south -south Nigeria. Industrialization ( $t = 11.233$ ,  $P = 0.00 < 0.05$ ), population ( $t = 7.895$ ,  $P = 0.001$ ), housing development ( $t = 7.737$ ,  $P = .001$ ), urban food security ( $t = 3.421$ ,  $P = .003$ ) and demand for fossil fuel ( $t = 2.976$ ,  $p = 0.00$ ). This implies that urban sprawl that vanished or converted swampy lands to built-up area by extension occur spontaneous or scientifically. The research is in tandem with [18] who noted that Zalidis, Antonis and Eleni (1997) anthropogenic activities that caused change in a wetland’s ecological character include change in water

regime, depletion of wetland resources, change in water quality, and loss of wetland area as the degradation factors for impact evaluation. construction of irrigation schemes and diversion of water courses, causing changes in water regime (12%) over pumping, land clearing, and illegal hunting, causing depletion of natural resources (26%), agricultural and municipal pollution, causing changes in water quality (54%) and establishment of housing facilities and expansion of agriculture, causing loss of wetland area (32%) were the most often factors that impact Greek wetlands. That changes in water regime affected 50% of the springs and 40% of the rivers, natural resources reduction pretentious 42% of the deltas and 41% of the reservoirs, loss of wetland area affected 60% of the marshes and 52% of the estuaries, while all deltas and 75% of rivers had their water quality compressed but determined their intensity for each wetland site and impacted environmental on each type of Greek wetland while deltas, estuaries, lagoons, lakes, reservoirs, rivers, marshes, and springs are reserved areas encroach by human factors.

Table 2: Causes of Swampland Encroachment in South-South Region of Nigeria

Model	Unstandardized Coefficient		Standardized Coefficient		
	B	Std.Error	Beta	T	Significant
Urban food security	.670	.202	.219	3.421	.001
Industrialization	.548	.049	.497	11.233	.000
Housing development	.717	.093	.666	7.737	.000
Demand for fossil fuel	.190	.064	.254	2.976	.003
Urban sprawl	.940	.095	.587	13.354	.000
Population	.666	.085	.430	7.785	.000

Authors Field work 2020

#### *Determination of land uses that wiped out marshlands.*

The examination details of the research mean and standard deviation arithmetic improved that six land uses or anthropogenic activities smeared out preserved swamp lands in major urban centres of south- south region Nigeria. The analysis considered in chart 2, stressed that residential development and commercial land uses are the main anthropogenic activities that acquired urban swamp lands through sprawling and population pressure in major cities of south-south region Nigeria with the mean value of (3.8361) and (3.7117) individually. The analysis considered industrial

activities (3.5949), institutional activities (3.2629), transportation (3.0134), recreational activities (2.4430) and agriculture (2.1011). The research implies that urban swamplands natural persevered for agricultural and related uses has presently constituted physical development (urban built-up areas) caused by sprawl and population pressure. This has also lead to loss of agrarian land uses and uncontrollable decline of urban food security. The work further submitted that problems associated with urban populace dwelling in built-up swampy zones are many though flooding and structural deflection are on higher occurrence. See the table 3 under

Table 3: Swampy Land Accommodated Land Use Activities in South-South Nigeria

S/N	Land uses/Activities	N	Mean Index	Std.	Swampy Built-up Surveillance
1	Residential	5000	3.8361	.43061	Significant area coverage
2	Commercial	5000	3.7117	.58020	Significant area coverage
3	Industrial	5000	3.5949	.61612	Significant area coverage
4	Institution	5000	3.2629	.72664	Significant area coverage
5	Transportation	5000	3.0134	.82479	Significant area coverage
6	Recreation	5000	2.4430	.90932	insignificant area coverage
7	Agriculture	5000	2.1011	.91456	insignificant area coverage

Source: Researchers field work 2020

*Built-up Alterations of Swampy Lands in South-South Urban Areas Nigeria*

With higher opinion to the physical development and encroachment dynamics on swampy areas of some selected or key cities of south- south Nigeria, the findings revealed that strong changes exist for the urban sprawling by encroachment on swamplands of major south- south urban areas at {F = 15.758; sig. = 0.001; at P < 0.05}. However, The particular investigation carried out with analysis of variance shown that the physical development of swamplands of the region fluctuates significantly. Yenegua had the highest built-up swampy zones with the standard deviation value of 0.85. Port

Harcourt, Asaba, Calabar, Uyo and Benin city with the value of 0.87, 0.96, 0.99, 1.03 and 1.23congruently. The research implication is that physical development of swampy environment is common in all the administrative headquarters of south-south states in Nigeria. All the land uses activities (commercial, industrial residential. Institution, transportation, agriculture and recreation) constitute the built- up areas that encroached and disappeared preserved swamplands found in Nigeria cities. However, the research settled that there is a significant increase of environmental related problems associated with the physical development of swamplands within the urban settlement of south- south region. See table 4 under.

Yenegua Mean ±SD	Port Harcourt Mean ±SD	Asaba Mean±SD	Calabar Mean ±SD	Uyo Mean ±SD	Benin Mean±SD	F 15.758	P < 0.001
3.58±.085	3.55±.087	3.51±.096	3.32±.099	2.98±1.03	2.69±1.23		

Field survey 2020

#### IV. RECOMMENDATIONS

1. The study recommended for strict compliance with the relevant laws establishing forest guide and allied matters to restraint or curb all the activities desperate of swampland deforestation in the region.
2. In order to reduce the frequent tampering or encroachment on swamplands natural lands meant for agricultural consumption, the government is expected to sensitize community development committee representatives, chiefs and elders swampland endowed region, that swamplands are naturally advantageous for agriculture and disadvantageous when converted to other land use activities.
3. for a Nation like Nigeria to achieve strict compliance of non-encroachment or sprawling into swampy lands designated for agricultural usage, the successive government must ensure that at least, all local government administrative headquarters are upgraded to township status via a legislative tool which must direct a measure to relocate most of the urban land activities that attract high population to government headquarters upgraded to township status.

#### V. CONCLUSIONS

The encroachment of land uses or physical development of swampy lands is note restricted to key urban centres of south-south region, though a critical development challenge caused by population pressure and sprawling found in coastal urban environs of the nation-state since the investigation considered that development of swamplands is strategy of decongesting population in all the prominent cities of Nigeria. Therefore, the exploration surveyed population growth and built-up swampy environment of south-south region Nigeria.

The result shown that urban sprawling or urbanization, industrialization, population, housing development, urban food security and demand for fossil fuel were the persuasive and deriving mechanisms that encouraged desertification of marshlands protuberant urban centres in south -south Nigeria. The examination also detailed that the six land uses occupying swamplands in the area are residential development, commercial, industrial activities, institutional activities, transportation, recreational and agriculture land uses. However, the changes revealed that the physical development of swamplands of the region fluctuates significantly. As Yenegua recorded the highest built-up swampy zones. The study recommended for strict compliance with the relevant laws establishing forest guide and allied matters to restraint or curb all the activities desperate of swampland deforestation in the region. In order to reduce the frequent tampering or encroachment on swamplands natural lands meant for agricultural consumption, the government is expected to sensitize community development committee representatives, chiefs and elders swampland endowed region, that swamplands are naturally advantageous for agriculture and disadvantageous when converted to other land use activities.

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