

Examination of the Adequacy of Social Infrastructure in Urban Centres Facing Rapid Population Growth in Anambra State Nigeria

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ABSTRACT: *Taking into account the rapid urbanization and fast growing urban population in Anambra State Nigeria and the consequent effects on the social infrastructure; this study examined the adequacy of the social infrastructure in the urban centres of Anambra State. The Study concentrated on the three major urban centres of Anambra State (Onitsha, Nnewi and Awka) and utilized the survey research design with questionnaire being the main instrument of data collection. By applying Taro Yammaine formular, the target population was reduced to 399.8820 which is approximately 400. The researcher thus decided to sample 405persons, 135 each from Awka, Nnewi, and Onitsha. Stratified Random Sampling technique was employed in distributing the questionnaires. The researcher purposively chooses 20 professionals from among population and planning experts, teachers/lecturers, medical practitioners and other professionals with at least 6 professionals responding from each of the three urban areas studied to ensure fair response. From the questionnaire survey and interview, it was found that the social infrastructure in the three selected urban centres were significantly inadequate. The study therefore recommended that the government should provide more social infrastructure in the urban centres to contain their rapidly growing population, high quality/durable materials should be used for social infrastructure construction and there is need for the expansion of existing social infrastructures and the construction of new ones. Also it was recommended that more social infrastructures should be initiated in the rural areas and service delivery should be improved in rural areas to reduce the rate of rural to urban migration.*

KEYWORDS: examination, adequacy of social infrastructure, urban centres, rapid population growth, Anambra state, Nigeria

INTRODUCTION

Population growth is a global issue and its consistency is a global challenge (UN Habitat, 2007). According to projections included in the 2016 World Population Data Sheet from the Population Reference Bureau (PRB) the global population will grow into 9.9billion by 2050 and will hit 10 billion by 2053, which is about thirty-three percent of an estimated 7.4 billion presently (PRB, 2016). "Significant regional differences exist in the rate of population growth. For example, very low birth rates in Europe will mean population declines there while Africa's population is expected to double" (PRB, 2015; 2016).

The population of Nigeria is growing at a rate of 3.75% per year indicating a doubling of the population every 23 years (Lagos State Government, 2007). Nigeria illustrates complex interactions between demographic pressure, social, economic and political considerations (Okpala, 1990). A large body of demographic literature documents the incidence of population growth in Nigeria(Farooq, 1985; Ainsworth, Beegle and Nyamete, 1996; Anyinwe and Okojie, 1998; Federal Republic of Nigeria, 2004; Jiboye and Omoniyi, 2010 and Nwosu, 2013).

One of the critical issues of concern to most national governments world over is the need to stem the rate of urbanization induced by the incidence of globalization, industrialization and an unprecedented population growth rate in the cities with its attendant resource management problems (Jiboye, 2009; Osasona and Jiboye, 2007). This concern has led to several global Summits organized at various level of government, international agencies including the United Nations. Specifically among such are, the Millennium Development Goals Summits, the 2002 World Summit in Johannesburg and the 2005 La-Havana UN Sustainable Cities Documentation of experience programme among several others, with interest in population control.

Statement of Problem

Paul Erhlich in analyzing environmental impact using the IPAT model acknowledged and clearly buttressed population growth as a major factor. Most amenities in Nigeria are in sorry situation and we as a people have not stopped to think about what brought about these social woes. There is immense pressure on the land and resources can no longer cope no matter how well economic analysts may present it. Our social institutions are over-crowded and our infrastructure are stretched to the farthest limit. For instance, most of our universities facilities that were built to accommodate six thousand students now accommodate over twenty-five thousand students. Our markets are over-crowded with stalls and make-shift stores by traders who desire to make a living. Our roads, hospitals, libraries, housing and schools can no longer cope with such increase in population (Richards, 2013).

Anambra state in the southeastern part of Nigeria is not an exception to the dangerous impact of uncontrolled population growth. The availability of land and other exhaustible environmental resources is largely being threatened leading to the high cost of land as the population density increases within the state over time. At the family, kindred and clan levels within the communities of the state, there have been lots of land dispute cases in the court, boundary settlement disputes and fights over family inheritance which has led to great economic loss, social unrest and loss of lives. Many children practice in this area has made many families homeless with lots of rancor and acrimonies, this is more pronounced in polygamous families. This has been buttressed by the findings of Birdstal, (2007), who highlighted series of inter and intra communal conflicts due to the inadequacy of resources and amenities to equate with the growth rate of our population. According to him, people clash with each other over farm land, forest resources, watershed, war also sometimes occurs over annexation of some communities' lands which usually result to destruction of lives and properties.

This is an area which the earlier researchers as exposed by the literature review tend to be silent. Although some of the earlier studies tried to offer solution, but none of them tried to develop a policy framework for sustainable social infrastructure management.

The question is "what can we do to tackle this intrinsic problem?" There are lots of efforts by governmental and non-governmental bodies to arrest this situation, lots of research works to design the containment of this problem and lots of policies to reduce the pressure of an ever increasing population on the environment, but the population growth rate increase within the state and other states of Nigeria and the unsustainably high degree of pressure on the available social infrastructure, justifies the assertion that they all failed.

In order to explore the possibilities of achieving the provision of sustainable social infrastructure to adequately cater for the growing population in these urban centres, this study becomes expedient.

Aim and Objectives

The aim of the research will be to analyze the impacts of urban population growth on social infrastructure in selected urban centres in Anambra State with a view to developing a framework for sustainable social infrastructure planning and development amidst population growth. To achieve the aim of the research, the following objectives were raised and pursued:

1. to ascertain the opinion of the general public on the adequacy of the available social infrastructure.
2. to analyze the level of adequacy of each social infrastructure with respect to population size.

3. to develop a framework for sustainable social infrastructure planning amidst population growth in the study areas.

Research Questions

The main questions which this research answered are as follows:

1. What is the opinion of the general public on the adequacy of the available social infrastructure?
2. What is the level of adequacy of each social infrastructure with respect to population size?
3. How can the social infrastructure be planned to accommodate the population growth in the study area?

H_0 : The available social infrastructural facilities in the study areas are not significantly adequate with respect to population need.

Concept of Sustainable Infrastructure Development

Like the foundation of an edifice, the place of infrastructure in economic development cannot be over emphasized. A sound infrastructural foundation is the key to the overall socio-economic development of a state. This acts as a magnet for attracting additional investment into a state and thus provides a competitive edge to it over other states. Availability of adequate and efficient infrastructural set up not only promotes rapid industrialization but also improves the quality of life of the people. This fact, therefore underscores not just the availability of infrastructure but of sustainable urban infrastructure.

Since the introduction of the Sustainable Development concept in 1989 by the Brundtland commission several offshoots have emerged, one of such is the Sustainable Infrastructural Development. According to UNEP (2016), Sustainable infrastructure development is defined as infrastructure development that integrates environmental, social and governance (ESG) aspects into a project's planning, building and operating phases.

In 2015, the United Nations adopted 17 Sustainable Development Goals (SDGs) with ambitious targets to eliminate extreme poverty and hunger, take action on climate change, provide sustainable cities and communities with affordable, clean energy and infrastructure while maintaining ecosystems and ensuring good health and well-being for all (UN, 2015). To achieve this sustainable cities, there must be sustainable infrastructure.

In the case of Nigeria and Anambra state under study, population growth has tampered with the achievement of sustainable infrastructure such that if not arrested now, the future generation will not forgive us. Population growth and distribution no doubt have significant roles to play in the sustainability of urban infrastructures. Not only the number of people, but also the lifestyle, consumption patterns, and regions people inhabit and use directly affect the environment. The relationship between population growth and urban infrastructure degradation may appear to be rather straightforward. Clearly one of the challenges of a growing population is that the mere

presence of so many people sharing a limited number of urban infrastructural facilities. This study therefore explores this concept to develop a framework for planning and designing sustainable social infrastructure in the cities/urban centres in Anambra State, Nigeria.

Frameworks for Planning Sustainable Urban Infrastructure

The process to prepare new plans such as Local Development Frameworks or Urban Infrastructural Development Framework, grave focus must be upon bringing a wide range of relevant stakeholders together to consider and plan for change. The ability to draw together the various components of social infrastructure and establish appropriate mechanisms to plan for and deliver new and improved service are therefore fundamental to achieving the best from any spatial system. NHS (2006), developed the London Thames Gateway Social Infrastructure Framework: The Case for Social Infrastructure Planning. The indicated that sound social infrastructure must be well planned to locate the need of the city dwellers in the right place and at the right time; thus market confidence will be enhanced, consumer confidence will be built, value for money will be achieved and waste of resources minimized. In this framework, they considered Social Infrastructure parameters and principles for the future of the area under study that is population growth is a vital issue. It should be noted that the policy environment influencing social infrastructure service delivery is fast moving, with new documents and initiatives of varying importance launched and reviewed regularly. According to NHS (2006), there are a number of key themes that illustrate the overall parameters and principles within which social infrastructure services across the London

Thames Gateway should be planned for and delivered into the future. These include the following:

- Social infrastructure is a vital part of the creation of Sustainable Communities, and can act as a key focus point in local community life drawing people from different backgrounds together;
- Social infrastructure can also play a crucial role in achieving broader regeneration objectives, with direct links to education, health and well-being;
- A broad range of services should be delivered from locations close to the point of need, in particular through joint working or co-location.

The local development framework process: examination, independent examination, adoption, final adoption, monitoring and review, evidence gathering review. Social infrastructure context: pre-production, development plan preparation, link to social infrastructure production, prepare issues and alternative options, test with social infrastructure stakeholders, statutory public participation, test with public and other stakeholders, representation and preparation of development plan documents, review and amend social infrastructure proposals submission and consultation on development plan documents (NHS, 2006).

Challenges to Population Growth Control in Nigeria

Ebigbola (1988) in his paper titled "A Dilemma in National Population Policy: Evidence from Nigeria", highlighted that many factors militate against the success and proper functioning of the

population policy programmes. Ebibgola (1988) explained many socio-cultural and other constraints that militated against effective implementation of the population policy programmes in Nigeria. For instance the policy was voluntary in nature. According to the policy document, "couples will only be encouraged to have the number of children that they can adequately cater for, since all couples have the basic right to decide freely and responsibly the number and the spacing of their children". There is also prevalence of polygamy most especially in the Northern part of Nigeria. Islamic injunction allows a man to marry many wives. The policy advocated four children per woman rather than four children per couple. According to him, another impediment is the belief that Islam does not support the fixing of marriage at 18 years or more. The programme cannot be implemented wholly or in part most especially in the Muslim community of the North due to this belief. Moreover, there is a wide belief that the male children are the pillars of the family and object of perpetuation of the family lineage. Therefore, many families strive to have many male children irrespective of the number of female they have had. In addition, the policy was voluntary in nature. There is no legal backing, (sanction or incentive) for compliance. Frequent change of government in Nigeria is another serious impediment. Every government wants to be the architect of a new policy. For political reasons there is no continuity or equal zeal to implement the policy on the part of most successive governments (Ebibgola, 1988).

Odusina (2010), in his review paper, stated that Nigeria government made the first serious efforts to influence the population variables in 1988 during the Buhari administration. The policy, "Nigeria Policy on Population for Unity, Progress and self-reliance" was introduced after the approval of the Armed Forces Ruling Council (AFRC). A lot was done in preparation for the policy. It was a proof of the government seriousness and concern about family planning as part of overall socio-economic development of the country. The Head of State and Government emphasized the need for the policy (Federal Ministry of Health, 1985). Furtherance to this, another policy was introduced in 2003 by Olusegun Obasanjo Administration. This was called "Nigeria Policy on Population for Sustainable Development". However, the rate of population growth in 1991 (2.82 percent) and in 2006 (3.02 percent) attest to the fact that the policies have little or no influence on the people (The Guardian, 2007). Despite the two policies, the Nigerian population is growing rapidly and the rate of growth in 2006 was higher than that of 1991. The policies have not achieved the stated aims and objectives.

Nigeria's population control challenges are peculiar unlike most developed countries. According to Olokor (2012), in his online write-up stated that some population experts are optimistic that Nigeria's population is well above the 167 million that was recorded in the 2006 census. The then Director-General of the National Population Commission (NPC), X Mr. Jamin Zuberan said that the problem of insufficient records for population projection in Nigeria is really disheartening. "Projections are things you can do even beyond 2016. If you have a growth rate and a base population, you can even calculate for the next 100 years. But there no exact records on birth rate, death rate and population of Nigeria. I have to do some calculations to get projections" he said.

This goes to say that one of the major challenges of Nigeria's population assessment and control is unavailability of records.

Among many other factors causing unprecedented growth of population in Nigeria is birth rate and this has affected greatly the growth rate of the population. According to 2006 Population Census, the growth rate was 3.02. This shows that Nigerian population will double in less than 22 years. There are many factors that have generated increase in birth rate. One of them is improved medical services and facilities. Compared to many decades ago, there are better though not adequate medical services and facilities. Better drugs and immunization services which have reduced greatly infant, child, maternal and other forms of mortality and consequently high birth rate.

Another factor is early marriage most especially in the northern part of Nigeria. Early marriage tends to lead to high birth rate because women will have opportunity of having many children due to long child bearing/reproductive years while postponement of marriage because of educational aspirations will reduce birth rate. Another factor though not significant is the increase in material wellbeing of some families. When people are materially well off, they give little thought to the number of children to have. Wealth has encouraged many people to have large families and thus result to high birth rate. Moreover, old age security also encourages people to have large families. People want to have many children based on the fact that these children would provide for them when they are old and cannot engage in productive activities again. They believe the more the children the more the guarantee of better life at old ages. They strive and try to have more and more children.

In Nigeria, religions, superstitions and customs have encouraged population growth. All these favour large families and discourage the practice of family planning. Many religions and customs also allow polygamy. For instance, Islam favours polygamy and allows men to have up to four wives each.

Death rate is also worth mentioning as a factor in population growth in Nigeria. Many of the factors mentioned above can also be held responsible for low death rate that is generating increase in population growth. Factors that affect death rate include improvement in medicine, dietary standard, hygiene, increase in the levels of standard of living and literacy etc. They are part of the reasons for the decline in mortality or death rates of infant, child and adult in Nigeria and consequently continue to generate rapid increase in population.

Many countries around the world have policies that intentionally or not, reward families with more children. In the UK, for example, those who have three children or more can take advantage of the Earned Income Tax Credit (as long as they fulfill the income requirements). Other countries, meanwhile, offer fertility incentives to entice couples to procreate and have more children. It is

not fair to say that these policies and rewards are the primary reasons why people have more children. However, this is an important factor to consider since, in one way or another, they do reduce the burden of parents and make having more kids a more attractive option. Obviously, removing these rewards will cause an uproar among people, so governments should think of ways to change these policies without putting existing large families at risk of poverty and food insecurity.

Most people nowadays are not really familiar with uncontrolled population growth and its negative effects, and this lack of awareness can lead to families not to limit the number of children they have. However, when people are thoroughly educated about overpopulation, they become more aware of how their actions affects the entire, country and they can deliberately do their part to keep their country's population at a sustainable level. On the other hand, some people know about the effects of overpopulation and want to limit the number of children they have, but they do not know where to start or what to do. This is where family planning services come in. Most family planning clinics educate couples about the appropriate number of years in between children and discuss how proper pregnancy spacing can help improve maternal and child health. They also inform couples about the steps they can take to prevent unplanned pregnancies, such as going through voluntary sterilization or using artificial contraception. With this information at hand, couples can effectively plan how they can have the ideal number of children.

It should be noted that from literature, unplanned pregnancies occur mostly among poor women simply because they do not have access to birth control pills and devices. These products are often sold at high prices, making them inaccessible to those who do not have a large budget. Governments can counter this by creating a program that makes birth control products available for free or at a substantial discount and spreading awareness about this program. It might seem too expensive at first glance but, in the long run, preventing pregnancies is much cheaper than dealing with the effects of overpopulation (Lombardo, 2016).

According to Lombardo (2016), many people consider the one-child policy to be controversial because of its negative impacts, like an increase in abortion rates, a skewed sex ratio (due to the traditional preference for sons), and higher rates of abandonment for baby girls, among others. However, it is important to note, though, that this is not the only way to counter overpopulation. Instead of actually limiting the number of births, government can provide financial rewards to families with one or two children and increasing the required taxes for those who bear three children and more. This way, parents still have the freedom to choose how they want to grow their family, but they will have to face consequences if they insist on having many children.

As Oladunjoye, (2005) opined, the socio-economic problems of Nigeria could be attended to if the gender structure, age pattern, spatial distribution, extent and rate of urbanization, human resources, and population distribution by geographical and political entities are put into consideration when

planning. The findings strengthen the belief that Nigeria has a population load factor that weights too heavily on its limited resources to guarantee the welfare of the citizens. Since the basic needs of the people are not adequately catered for, exacerbation of poverty is inevitable as urban decay and urbanization crunch intensify.

AS Farooq, (1985) opined, the growth rate serves as a factor of measurement of Development in a country and therefore enables comparisons over time and region to be made. The age pattern in the study area suggests a large labor force indicating the need to create more jobs. The family size is of interest to the planner as many of the needs of the population have to be provided in relation to the size of the family (for instance 2-4, 4-6, 6-8 and above); therefore, analysis of family size is important for planning studies. Previous studies by Ajakaiye (2003) emphasized that what people do in their daily lives, their purchasing habits, their hours and place of work, their form of recreation is a reflection of their income and standard of living. The employment of the head of the household is taken as a proxy for income level, educational background, and social needs and habits. This provides vital information for land use planners to help them accommodate the people's physical needs. The relationship between people (population), their work (employment), where they live (housing) is at the core of planning considerations for example the provision of services for the population such as shops, schools, and recreational facilities.

In population studies, to enhance strategic planning, gender and age' are very important aspects of a population as they help a lot in forecasting the future of the nation. According to Nwosu (2013), sex composition and age factor are related to the incidence of rural-urban migration. In his study, three major age groups were identified in the population (0-14, 15-64, 65 and above) for the purpose of appraisal and planning for development and welfare of the people concerned. From the result of his analysis it was clear that majority, (53%) of the respondents are within the working age group and reproductive stage. The population has a high dependency ratio (37%) as most women are in their reproductive stage. Onwuka (2001), in his work indicated also that old people need specialized welfare and this further puts burden on the economy. Age and sex composition influence fertility and mortality rates and therefore serves as a guide to planners in forecasting the range of women of child bearing age and the number of clinics to be provided. Age and gender should therefore form a cardinal focus in policy making and planning pf population control.

British political economist, Rev. Thomas Robert Malthus (1766 - 1834) who was regarded as the first professional demographer buttressed this point. In his book (Essay on the principle of population), he wrote many years ago about the possible consequences of a rapidly growing population. He explained that when population increases more rapidly than the food supply, population is checked by war, diseases, famine, among others. Malthus' proposition is relevant to Nigerian situation. Rapid population growth is detrimental to economic and social development. There will be little or no time to adjust economy to developmental efforts. Population will continue to eat up any gain in economic development and these may lead to adverse effects on the people

as put forward by Malthus. Nigerian population requires and deserves urgent attention as a result of its alarming and unprecedented growth rate, also, because the population has gathered momentum.

Regardless of any efforts, Nigerian population will continue to grow for some time. Nigerians need to learn from China's experience in the 19th century when the Qing government faced many problems associated with population growth. More and more people lived in poverty; they were unable to cope when floods or droughts occurred. The government of Qing was unprepared for the effects of population growth.

From literature review, it is clear that in recent times, many countries of the world including India, China, Singapore, Iran, and Uzbekistan have applied different types of population control measures to prune down their population. So, instead of Nigerian leaders to allow wars (Boko Haram), extreme poverty which will result into starvation and floods to act as population checks, they should strive to initiate a population control programme that will benefit the masses. This is because the era when population increase is seen by many in Nigeria as the key to political power and resources thereby encouraging many children practice should be discarded and pro-active approach developed.

To achieve the following goals of the 2003 Nigeria National Policy on Population for Sustainable Development - sustained economic growth, poverty eradication, protection and preservation of the environment, and provision of quality social services, balance between the rate of population growth, available resources, and the social and economic development of the country and complete demographic transition to a reasonable growth in birth rates and low death rates and also that of Millennium Goals, population management is desirable (NPC, 2004 and NDHS, 2009), The growth rate of the population needs to be studied, monitored and managed properly with conscious efforts. If not, it can militate against all the efforts and commitment of governmental and non-governmental bodies in improving the quality of live and standard of living of the people of the country.

The factors of population growth are also essential focal points in controlling population growth in the urban areas and in planning a sustainable city or urban centre where the infrastructures are sustainable. People's access to basic infrastructure and services such as healthcare, water and sanitation, energy, and social welfare is critical in determining their physical and mental well-being. Their further development and ability to exploit livelihood opportunities depends on access to education, communications, transport, agriculture and enterprise support, markets etc. The quality of both the physical and social infrastructure and the human resources needed to provide these services is important. Negotiating who is responsible for providing and maintaining the quality of services and infrastructure is necessary.

MATERIALS AND METHODS

Study Area

Anambra State was created in 1976 when the East Central State was broken into Anambra and Imo State. It derived its name from the Omambala River found South of the River Niger. Then, it comprised the present Anambra State and Enugu State including Abakiliki part of Ebonyi State with Enugu as its capital. During further states creation in August 27, 1991; Enugu State with Abakiliki was cut out, leaving Anambra State as presently constituted with Awka as its capital. The present Anambra state in the southeastern Nigeria forms boundaries with Delta State to the west, Imo State and Rivers State to the south, Enugu State to the east and Kogi State to the north. Anambra State is located within latitude 6° "48' N and Longitude 6°37'E on the North and Latitude 5°40'N and longitude 7°27'E on the South. It has a total land area of 4,416sqkm (Geological Survey Awka, 2000).

According to the 1991 national population census, the state has a total population of 2,796,475 in a land area of 4,416 sq. km, giving an average density of 633 persons per sq. km. The state is therefore one of the most densely populated states in Nigeria. But based on the 2006 census figure, the population of Anambra State rose to 7,821,858 with a density of 863km² (NPC, 2006).

The three main urban centres are Awka, Onitsha and Nnewi. Awka and Onitsha developed as pre-colonial urban centres with Awka as the craft industrial centre of the Nri hegemony; and Onitsha the city state on the Niger and a river port and commercial centre. Onitsha is a fast-growing commercial centre and has developed to become a huge conurbation extending to Idemili, Oyi and Anambra East LGAs with one of the largest markets in West Africa. Nnewi is rapidly developing industrial and commercial centre; and Awka, by becoming the state capital is, as it were, regaining its pre-colonial eminence. These three cities are incidentally located differently in the three senatorial zones of Anambra State, with a rapidly growing population as such it was expedient that they were used in this study.

Research Design

Considering the aim of this study, the objectives set to be pursued for the aim and the consequent data need, the study adopted survey research design utilizing questionnaire as the main instrument of data collection.

Considering the study area, the three major urban centers selected were incorporated into two local governments each that is Nnewi north and south for Nnewi, Awka north and south for Awka and Onitsha north and south for Onitsha. The population of these six local government area as projected by NPC from 2006 census figure to 2017 is 1,356,152; with Awka North (159,526); Awka South (269,669); Nnewi North (221,024); Nnewi South (331,818); Onitsha North (179,043) and Onitsha South (195,072).

The population of the six local government areas which form part of Onitsha, Nnewi and Awka as projected by NPC from 2006 census figure to 2017 is 1,356,152. The sample size will be drawn, using Taro Yamaine formulae, that is $SS = \frac{N}{1+N(e)^2}$

and the level of significance will be 5%. Thus from Taro Yamaine's formula, the number to be sampled becomes

$$\frac{1,356,152}{1+1,356,152 (0.05)^2}$$

$$= \frac{1,356,152}{1+3390.38}$$

= 399.8820 which is approximately 400, the researcher thus decided to sample 405 persons, 135 each from Awka, Nnewi, and Onitsha.

Stratified Random Sampling technique was employed in distributing the questionnaires; this is necessitated by the fact that Awka, Nnewi and Onitsha were further divided to give a wider spread of distribution and proper representation. On the professionals to be interviewed, the researcher purposively chooses 20 professionals from among population and planning experts, teachers/lecturers, medical practitioners and other professionals who were purposively selected by the researcher. The interview had at least 6 professionals responding from each of the three urban areas studied to ensure fair response.

PRESENTATION OF RESULTS

To ascertain the opinion of the general public on the adequacy of the available social infrastructure.

The responses of the respondents which was collated from the questionnaire to answer this objective was calculated in percentages from the likert scale. The strongly agreed (SA) and agreed (A) were added to get the percentage agreement while the strongly disagreed (SD) and disagreed (D) were added to calculate the percentage disagreed. The no idea (N) was discarded. The following tables details the information:

Table 4.1a: Adequacy of Social Infrastructure in Awka

The following is true about the adequacy of the social infrastructure in your area.		A	%A	D	%D	Wtd Mean
1	The numbers of healthcare facilities in the area are presently inadequate due to population increase.	64	47.41%	66	48.88%	2.96
2	Healthcare infrastructures in the area are adequate and accessible but needs to be expanded with growing population.	89	65.92%	42	31.11%	3.63

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3	Educational facilities in the area are presently inadequate due to population increase.	68	50.37%	66	48.88%	2.96
4	Education infrastructures in the area are adequate and accessible but needs to be expanded with growing population.	70	51.85%	59	43.70%	3.04
5	Recreational facilities in the area are presently inadequate due to population increase.	92	68.15%	36	26.66%	3.63
6	The number of recreational infrastructure in the area are adequate and accessible but needs to be expanded with growing population.	40	29.63	86	63.70%	2.27

Table 4.1b: Adequacy of Social Infrastructure in Nnewi

The following is true about the adequacy of the social infrastructure in your area.		A	%A	D	»D	Wtd Mean
1	The number of healthcare facilities in the area are presently inadequate due to population increase.	59	49.17%	56	46.67%	2.98
2	Healthcare infrastructures in the area are adequate and accessible but needs to be expanded with growing population.	69	57.5%	47	39.16%	3.31
3	Educational facilities in the area are presently inadequate due to population increase.	94	78.33%	22	18.33%	3.73
4	Education infrastructures in the area are adequate and accessible but needs to be expanded with growing population.	31	25.83%	83	69.17%	2.26
5	Recreational facilities in the area are presently inadequate due to population increase.	82	68.33% •	36	30.00%	3.50
6	The number of recreational infrastructure in the area are adequate and accessible but needs to be expanded with growing population.	47	39.17%	70	58.33%	2.81

Table 4.1.c: Adequacy of Social Infrastructure in Onitsha

The following is true about the adequacy of the social infrastructure in your area.		A	%A	D	%D	Wtd Mean
1	The numbers of healthcare facilities in the area are presently inadequate due to population increase.	85	64.39%	43	.57%	3.46
2	Healthcare infrastructures in the area are adequate and accessible but needs to be expanded with growing population.	73	55.30%	57	.18%	3.15
3	Educational facilities in the area are presently inadequate due to population increase.	90	68.18%	36	.27%	3.75
4	Education infrastructures in the area are adequate and accessible but needs to be expanded with growing population.	48	36.36%	77	.33%	82
5	Recreational facilities in the area are presently inadequate due to population increase.	93	70.45%	37	.03%	3.87
6	The number of recreational infrastructure in the area are adequate and accessible but needs to be expanded with growing population.	52	39.39%	75	.82%	2.95

Hypothesis 1: the impact of population growth on social infrastructure in the selected urban areas are significantly the same.

Holistically applying the analysis of variance to the three selected urban areas, we have the following:

Table 4.1
One-way ANOVA

		Notes
Output Created		28-Jan-2018 19:54:30
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Input	Data	Ds
	Active Dataset	DataSetO
	Filter	none>
	Weight	none>
	Split File	none>
	N of Rows in Working Data File	150
Missing Handling	Value Definition of Missing Cases Used	User-defined missing values are treated as missing. Statistics for each analysis are based on cases with no missing data for any variable in the analysis.
Syntax		ONEWAY Data BY Social /MISSING ANALYSIS /POSTHOC=LSD ALPHA(0.05).
Resources	Processor Time	00:00:00.016
	Elapsed Time	00:00:00.06

ANOVA

Table 4.2: Data on social infrastructure

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.567	4	.142	1.021	.398
Within Groups	20.112	145	.139		
Total	20.678	149			

Source: Generated from SPSS

From the table above, we observe that the p - value is 0.398. This means that there is no significant difference between the effects of population growth on the social infrastructure in Anambra State. This means that the effects of population growth on primary education, secondary education, tertiary education, recreational infrastructure and health infrastructure are the same.

To analyze the level of adequacy of each social infrastructure with respect to the selected cities.

Hypothesis 2: The available social infrastructural facilities in the study areas are not significantly adequate with respect to peoples' opinion in the selected cities.

Statistical tool: One sample T - Test.

Reason for choice of tool: One level of observations was compared.

Degrees of freedom: 17.

Decision Rule: Accept the null hypothesis if the p - value is greater than or equal to 0.05, otherwise, reject the null hypothesis.

Table 4.3
One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Data on social infrastructure	18	3.1711	.47626	.11226

From the table, we observe that the mean (average) of the observations is 3.1711, which implies positive.

Table 4.4: One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Data on social infrastructure	28.	1	.000	3.17111	2.9343	3.4079

Source: Generated from SPSS

Decision, Conclusion and Reason: We have observed that the mean of the issues raised is 3.1711. Then from the table, we see that the p - value is 0.000 which is less than 0.05. This means that the available social infrastructural facilities in the study areas are not significantly adequate with respect to the growing population.

To develop a framework for sustainable social infrastructure planning amidst population growth in the study areas.

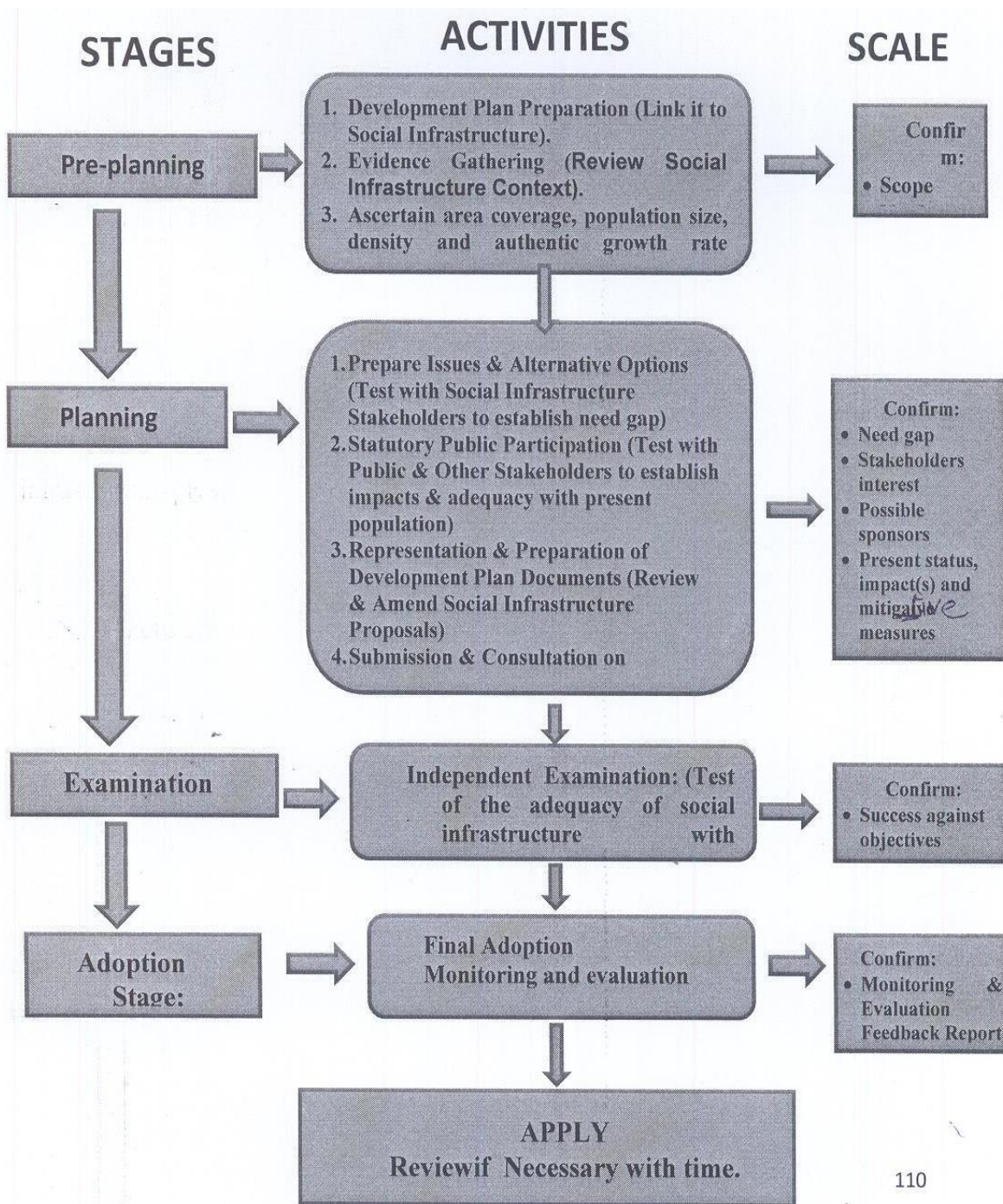


Fig. 4.1: Framework for Sustainable Social Infrastructure Planning Amidst Population Growth

Framework for Sustainable Social Infrastructure Planning Amidst Population Growth

The process to prepare new plans such as Local Development Frameworks focuses upon bringing a wide range of relevant stakeholders together to consider and plan for change. This was the focus of this study as it analyzed the opinion and perception of the masses and professionals on the effects of population growth on urban social infrastructure and the adequacy of these infrastructures in the selected cities. The ability to draw together the various components of social infrastructure and establish appropriate mechanisms to plan for and deliver new and improved service are therefore fundamental to achieving a sustainable urban environment. Haven proven from the analyses of the opinion(s) of people that there is significant impact of population growth on social infrastructure in Anambra State and their perspectives on the adequacy or inadequacy of the social infrastructures in the urban centres in the study area, it becomes expedient to plan to mitigate these negative impacts and to contain these inadequacies in the midst of a constantly growing population; hence the development of this framework.

How the Framework was Developed?

After a critical consideration of the framework developed by NHS (2006) for London Thames Gateway Social Infrastructure, who divided the framework structure into pre-production stage, production stage, examination and final adoption stages. The researcher juxtaposed their findings with the findings of the questionnaire survey and interviews and came up with the framework.

How the Framework Operates

The developed framework just like the NHS (2006), has four major stages which includes: the Pre-planning stage, the planning stage, the examination stage and the final adoption, stage. At each of the stages the researcher was able to develop some activities that must take place and a scale to determine whether or not the process is moving over to the next stage. At the Pre-planning stage, the process ensures development plan preparation which should be directly linked to social infrastructure; evidence gathering through proper site investigation and review on social infrastructure context; area coverage, population size, density and authentic growth rate should be ascertained to delineate scope. To move to the next stage, the process must confirm the need and scope of the project area under plan.

At the planning stage, the process entails the preparation of issues and alternative options which should be tested with social infrastructure stakeholders to establish the need gap; statutory public participation which should be tested with public and other stakeholders to establish impacts and adequacy with present population; representation and preparation of development plan documents which should include the review and amendment of social infrastructure proposals, submission and necessary consultations on development plan documents. Here the process should confirm the need gap, stakeholders interest, possible sponsors, present status, impact(s) and mitigative measures (which from the findings of the study in this area may include: encouraging family

planning, sterilization and other forms of population growth control, use of quality materials for construction, etc); before moving to the next stage.

At the examination stage, the main activities independent examinations in the case of Awka Onitsha and Nnewi (Anambra State urban centres) there is need to check the adequacy of the social infrastructure with the accepted rate of population growth and time to ensure that the population estimate for the will be contained in the social infrastructure for some years before any review may become necessary.

The movement to the next stage should be prompted only if the evaluation of output against set objectives becomes certified as successful.

Adoption stage signals the acceptance of the plan and subsequent application. At this stage, monitoring and evaluation are essential features. The monitoring and evaluation feedback reports must approve the plan for the full blown implementation to take place. It should be noted that a review of the whole plan and processes may be necessary with time as the management observes a faulty signal from the monitoring and evaluation processes.

Challenges that Delimit the Operation of the Framework for Awka, Nnewi and Onitsha Urban Centres

It is noteworthy that the framework actually was almost completely observed in the course of this study but for some limitations. These challenges which hindered the expanse of the study findings include unavailability of correct population data to enable the estimation of population density, growth rates and authentic future population for a sound sustainable planning. Also the inaccessibility to potential sponsors was a great challenge and would pose a challenge to the planning for sustainable social infrastructure; that is, adequate social infrastructure for today and for the future generation.

CONCLUSION AND RECOMMENDATION

Conclusion

From the available data and results of the analyzed responses, it is crystal clear that the available social infrastructural facilities in the study areas are not significantly adequate with respect to the growing population. One can therefore conclude that the study have proven through empirical means that the social infrastructure in the three selected urban centres were significantly inadequate.

Recommendation

Based on the research findings, the following recommendations have been put forward:

1. The government should provide more social infrastructure in the urban centres to contain their rapidly growing population.
2. High quality/durable materials should be used for social infrastructure construction.
3. There is need for the expansion of existing social infrastructures and the construction of new ones.
4. More social infrastructures should be initiated in the rural areas to reduce population growth in urban areas.
5. Implementation of high quality service delivery in rural areas will reduce population growth in urban centres.

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