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The Effects of Population Growth in Nigeria

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Abstract: This study discusses the use of double time growth analysis in the explanation of the need for population control in Nigeria and the potential danger that might emanate from the continuous neglect of environmental issues presented by environmentalists and population demographers in Nigeria and the world at large. In the case of Nigeria which is used here as a spotlight in this discussion, this analysis method is used to identify and analyze the characteristics and demographic/economic effects on a nation covering a land area of 923,768 sq km, with a population of 120 million and endowed with numerous natural resources (in limited quantity).

Key words: Nigeria, Nigerian population growth, double time, population growth

INTRODUCTION

Significance of research: This paper tries to lay emphasis on the Nigerian environment and its natural resources that are fast being degraded and consumed as a result of human population increase. Nigeria is a country with the largest human population in Africa and popularly regarded as The Giant of Africa for its population. Thus, this research is aiming to point out the eminent and unavoidable results of continuous increase in human population in Nigeria. Some of these results are; depletion of resources, human congestion, weather modification, high unemployment rate, environmental degradation and a lot more.

It is believed in science that matter occupies space and space is limited, as a result, this phenomenon in turn will show that the fixed factor like space (environment) will be affected when a continuous factor like population growth is put on it. The space in this case is the geographical area of Nigeria, which is 923,768 sq km and the population is estimated to be about 120 million (Department of Petroleum Resources DPR Nigeria 2005 est.)

Reports on population growth: Recent reports from the international programs center, U.S Bureau of Census projected the total population of the world to be at 6.4 billion (Sept. 2005 est.). Currently the world's population growth rate stands at about 1.4% (2000 est.), when applied to the world's population of 6.4 billion (Sept. 2005 est.) yields an annual increase of about 85-90 million people. Because of the large and increasing population size the number of people added to the global population will remain high for several decades. It has been estimated that between 2000 and 2030, nearly 100% of this annual

growth will occur in the less developed countries in Africa, Asia and Latin America, whose population growth rates are much higher than those of more developed countries.

At the moment, Nigeria's growth rate is projected at 2.56% (Department of Petroleum Resources DPR Nigeria 2005est.) annually. With this high growth rate and applying the double time growth analysis, Nigeria's population will be expected to have added 3,072,000 persons the 1st year of the estimate and almost 3,150,643 the second year based on double time population growth rate analysis. Meaning that at 2.56% growth rate, the double time or the number of years it will take Nigeria to double in size is approximately 27 years.

$$DT = 70/GR$$

Where DT = Doubling time in years and GR = Growth rate in percentage International Programs Centre, US Bureau for Census, (2005).

Several questions should come to mind in this regard:

- How many people is enough? How many is too many? In Nigeria to leave adequately and be sustained with the limited resources.
- What will happen if the population were to exceed its earth's carrying capacity to sustain it?

The short answer and indeed the most frightening answer to both questions are we don't know! We don't know how close the population in Nigeria is to either enough or too many (an attribute of a nation in need of an adequate data bank for information). In the minds of pessimistic environmentalists and population demographers, it may have already gone beyond enough.

To really appreciate the seriousness and danger of population crash in Nigeria, we need to examine its impacts on Nigeria's ecosystem and resources. These impacts are seen already through:

- Non-renewable resource consumption and depletion like crude oil, coal etc
- Land degradation and waste disposal
- Weather modification
- Rapid urbanization
- Water pollution, soil pollution and air pollution
- Desertification etc.

Thus, population control is seriously needed if Nigerian's are to leave sustainably, but the question is: where is population control needed most in Nigeria and what might inhibit its success? A lot of factors have been noted to work simultaneously to inhibit population control in Nigeria. The following factors amongst many are generally considered to be the most important:

Religion: The Islamic religion in Nigeria promotes large families with the encouragement of early marriage and polygamous family system. The Christian religion in turn prohibits the most effective forms of contraception and most are anti-abortion.

Lack of education: The lack of education especially as related to population education, sex education and the lowering of infant mortality and birth rates.

Male-child preference: In many cultures in Nigeria, male offspring are more highly valued than females for a variety of reasons (like carrying on the family name, greater upper-body strength for physical labor), which leads to the common practice of continuous child birth in an attempt to have male children.

Old-age social security: In many cultures in Nigeria, children are the only form of support for the elder generation.

High infant mortality: The perceived need to have many babies in order that some will survive, to work on the farm, support aged parents and so forth.

Demographic data: Most environmental scientists predict that the world's population will be between 10 and 20 billion, in which case, at present growth rate of 1.4%, we will reach a carrying capacity within the next 50-100 years. What then will the population of Nigeria be, with a population growth rate of 2.56% and contributing 4% of

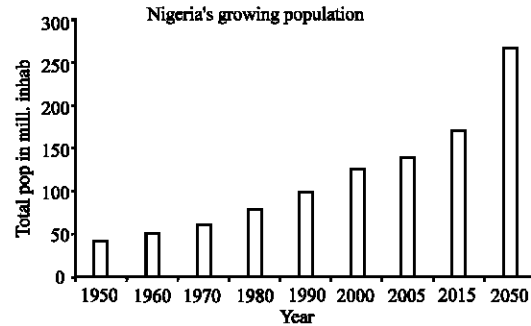


Fig. 1: The estimated total population of Nigeria in the near future (Globalize Interactive World Map. 2005)

the world's yearly population? (Fig. 1). I guess its better imagined than said. Some experts and this work, however, believe that Nigeria is or has already exceeded the carrying capacity.

What then are the implications of exceeding the carrying capacity in an ecosystem like Nigeria? The implications can be drawn from the analogies to the population growth of other life forms in more limited ecological niches. One of the following two things can happen in the very near future if the carrying capacity is exceeded; If the carrying capacity is not exceeded by a great deal, then the population will simply decrease back to the carrying capacity. Such a decrease takes place over a relative short period of time, resulting in what is known as a population crash or dieback. If on the other hand the carrying capacity is too far exceeded, the population will crash to zero, resulting in extinction or the environment will be highly depleted, at least in that particular environment which is eminent in Nigeria if the population growth is not checked.

The difficulties experienced in preparing an adequate work of this magnitude using the double time projection cannot be overlooked when considering that population census in Nigeria is done with minimal accuracy as the actual population estimate of 120 million used in this calculation is seen as not being correct (underestimated) by many population demographers and environmentalists. How accurate will the population census being slated by the year 2006 in Nigeria be? One can only guess than imagine the accuracy of such a census in a country were such an issue is considered as a mere process of disbursing funds by some myopic thinking ones. If by now the population has not exceeded the carrying capacity, then by slowing the population growth to zero or near zero, Nigeria can avoid what many pessimists see as inevitable; a population crash or even potential extinction in the near future.

Taking China as a case study, China is one country that almost suffered such an inevitable situation, but where able to manage and checkmate this problem by taking some bold steps like the limitation on the birth rate. The government of China restricted child birth to one child birth per family (disabusing the male-child preference syndrome) and as a result, this has reduced high infant mortality, old-age social security, lack of population control education as it is currently inversely seen in Nigeria and other third world countries. At the moment China imports crude oil to sustain and increase their domestic production and consumptions. It produces an average of 3 million barrels per day and imports another 2 million barrels per day.

So in essence China is importing almost an average of what Nigeria is producing per day. This should not have been the case when one looks at the crude oil reserve of China and the foreign exchange that ought to be earned by China (which most oil producing nations like Nigeria currently enjoy) but instead such foreign exchange are expanded to import the crude oil to sustain the large population of about 1.2 billion. One then imagines the resulting effect this will be on the resources available in china, when this is compared to the ever rising crude oil price in the international market.

Results on the effects of population growth in Nigeria:

The overall effects of this growth on the living standards, resources use and the environment will continue to change the Nigerian landscape for a very long period of time if nothing is done to checkmate the rapid population growth.

These effects are presently felt most especially in; energy consumption, carbon emissions, air pollution and human congestion.

Nigerian energy consumption: Energy consumption per capital for example, can be said to be an indicator that reflects annual consumption of commercial primary energy (coal, lignite, petroleum, natural gas and hydro, nuclear and geothermal electricity) in kilograms of oil equivalents per capita.

Nigeria's total primary energy consumption has more than doubled since 1980. Owing to its continuing population boom and the further development of the country's economy (fueled by oil development), Nigeria's energy consumption has risen from just 0.42 quadrillion Btu (quads) in 1980 to approximately 0.92 quads in 2001 (Fig. 2). Petroleum consumption accounted for the lion's share of Nigeria's total energy consumption in 2001, making up 61.4% of the total (Fig. 3). Natural gas accounted for the bulk of the remainder with 31.7%, with

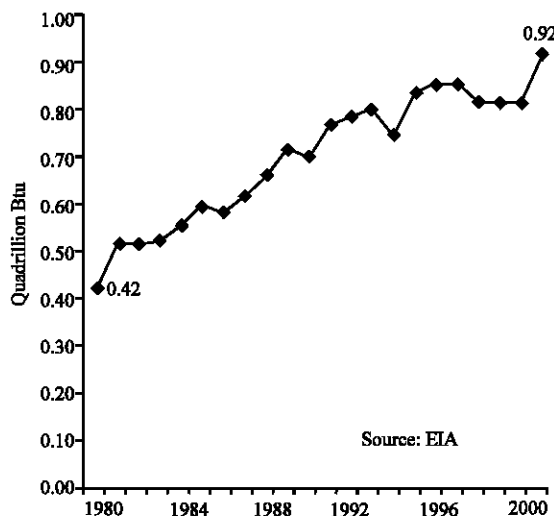


Fig. 2: Chart on Nigeria energy consumption (Department of Petroleum Resources DPR Nigeria (2005)

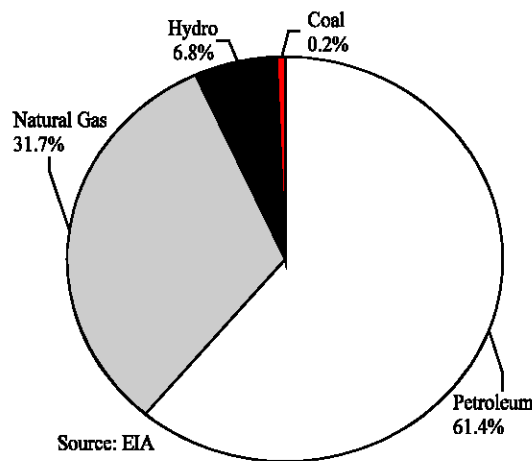


Fig. 3: Chart on Nigeria fuel share of energy consumption, 2001 (Department of Petroleum Resources DPR Nigeria (2005)

hydropower (6.8%) and coal (0.2%) rounding out the country's fuel mix. In recent years, natural gas has made inroads in Nigeria, up from 22% of the country's primary energy consumption in the mid-1990s to nearly 32% today. Recently, the Nigerian government is looking to promote the use of coal for domestic consumption and industrial uses as a means of combating deforestation and over-reliance on oil from the growing human population. However, the country has limited coal reserves; much of which are lignite and sub-bituminous and Nigeria's coal production has declined by around 50% since 1997. In addition, environment alists are concerned that renewed

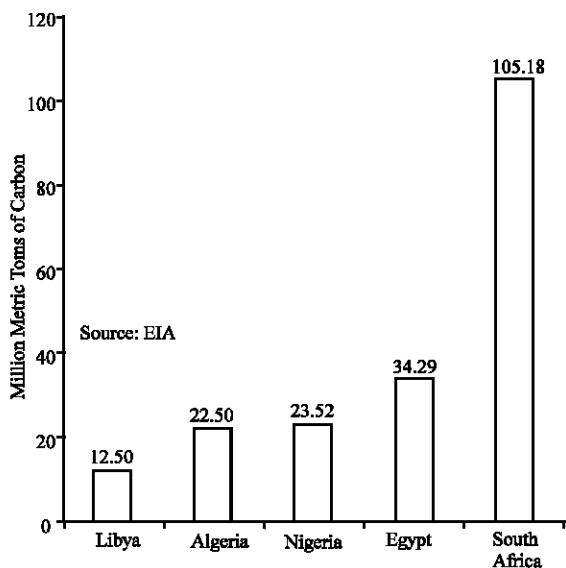


Fig. 4: The rank of Nigeria’s carbon emissions (Department of Petroleum Resources DPR Nigeria (2005)

emphases on coal mining will not only lead to environmental degradation, but they fear that using coal as a replacement for oil and fuel wood also will lead to increased carbon emissions.

Carbon emission in Nigerian: In 2001, Nigeria emitted 23.5 million metric tons of carbon, slightly down from a high of 27.7 million metric tons of carbon emitted in 1996 but still an overall increase since 1980, when the same figure was 18.9 million. Emissions from natural gas accounted for 12.5 million metric tons (53.3%) of that total, with oil emissions making up 11.0 million metric tons (46.6%) coal for the remaining 0.04 (0.1%) (Fig. 4). The rampant flaring of natural gas in the Niger Delta during oil production is the main culprit making natural gas the main source of carbon emissions in Nigeria, other sources are fuel wood, automotive engines and industries. Nigeria's per capita carbon emissions have fluctuated over the past 20 years, but generally have stood at or near 0.20 metric tons of carbon equivalent (although ranked among the lowest OPEC members in Africa). This will definitely increase if the population growth is not checked.

Air pollution and human congestion in Nigeria: The increase in air pollution has remained a problem in Nigeria, as other sources such as automobiles and diesel-fired electricity generators contribute to the choking air in cities such as Abuja and Lagos, which are plagued by daily smog shrouding the skyline of the central city. Studies carried out by the Federal Environmental Protection

Agency (FEPA) show a moderate-to-high concentration of pollutants such as carbon monoxide, sulfur dioxide, nitrogen oxides, organic acids and hydrocarbons in the atmosphere, the majority of which come from automotive engines and industries. The population explosion in Lagos since the 1960s during the 1970s oil boom put tremendous pressure on city government resources, which could not keep up to manage traffic adequately, same is now being seen in Abuja the current capital.

Despite having a population estimated at 12 million, Lagos does not have a subway or intra-city rail service, leaving residents dependent on automobiles for transportation. The country's oil boom and low oil prices also have led to an influx of cars and consequent traffic congestion which continues to get worse.

DISCUSSION

Looking at the current results of environmental degradations in Nigeria, one can therefore project the state the environment will be in within the next 27 years which is the time it is expected for the human population to double in size using the double time calculation. This is probably with out doubt the time it will take Nigeria to reach its carrying capacity and this will put enormous pressure on the environment (an environment that obviously has no means of any improved technology in dealing with environmental issues). The calculation that has been done using double time will thus answer the question regarding; How many people is enough? How many is too many? In Nigeria to leave adequately and be sustained with the limited resources and what will happen if the population were to exceed its earth’s carrying capacity to sustain it? The definite answer to both questions is a positive one because at the rate of the growth, 27 years is a short period of time from now. The environment is already being depleted showing that the population is already enough to have a meaningful negative effect on the environment and within the projected time will be facing total depletion and highly inhabitable to the human population.

Critically analyzing this situation, it is definitely obvious that the population will double but the space (geographical area of Nigeria) will not double since it is fixed.

The geographical area of Nigeria is by nature limited to 923,768 sq. km which represents a fixed factor and the population which is varying in an increasing order as shown in the results presented is the variable factor. When a variable factor like population growth is put on a fixed factor that is already known as the geographical area of Nigeria, then it can be said that the fixed factor will suffer more which is the concern of this study.

With an increase in human population in Nigeria, energy consumption will be in the increase as seen in the results above and this increase will cause more depletion and degradation of the Nigerian environment. The environment will be depleted and degraded because the quest for energy will be increased to meet the demands of increasing human population. That is to say that an increase in human population means an increasing demand on the environment to provide those resources needed to sustain it.

Increase in human population in Nigeria, will ultimately lead to an increase in carbon emission. This is a possibility that is inevitable as human population increases, because there will be more usage of fossil fuel by humans, automobiles, industries and other sectors, leading to higher emission of carbon which is a gas that is harmful to health and also among others causes global warming (weather modification) and air pollution.

Increase in human population over a given geographical area (like that of Nigeria) will lead to human congestion or high population density and air pollution in most cities, which is already being experienced and will be on the increase with the increase of human population. This is one of the aftermaths of the phenomenon explained earlier or the consequences of having a variable factor like population growth on a fixed factor like the geographical area of Nigeria which ultimately will remain limited (923,768 sq. km).

Thus, if the current growth rate stands and Nigeria's human population keeps increasing, there will be an enormous negative effect on the Nigerian environment. Apart from the effects discussed earlier, other negative effects that are paramount with further increase in human population are: More cars (more pollution) as seen in Lagos and Abuja, direct effect on the water table (water scarcity) which is fast dropping below normal, overuse of natural resources, deforestation, desertification, urban sprawl, clearing land for residential use and increased garbage.

Although some views might vary as regarding the approach by this work, which is based on the fact that population growth (a factor) plays a major role or acts as a major contributor in environmental degradation of Nigeria's environment. Certainly, it is not enough when one considers other numerous factors that can also cause environment degradation. An over-consumption or poverty based approach may even be a larger, more potent factor. Hence, sustainable development becomes even more important overall and

giving room for more work to be done in a different approach on the effect of the population on the Nigerian environment.

But this work is strongly of the view that population growth is the key factor to the negative modifications of Nigeria's environment. This can be buttressed further when correlating the views of other environmentalists or demographers that have previously worked on this field and hold the same view that Population growth has been responsible for about 45% of humanity's environmental problems. Hughes *et al.* (1997) showed that often times, population growth is measured in energy use because it is a reasonable measure that correlates to several types of environmental damages (i.e., to say that a higher population will use up more energy and the search for energy degrades the environment). Most econometric studies, including that of Panayotou and Sungsuwan conducted in Northeast Thailand, have found that population density, among other factors contributes significantly to deforestation which is partly responsible for environmental depletion (Panayotou, 1996).

Since Nigeria is still a developing country when compared to other advanced western countries that have improved technology and manpower to handle issues related to population growth, it will be worth while to earnestly control the increasing growth or face a highly depleted environment. Thus, it will be better to curtail this menace that is eminent in the next 27 years, so that the Nigerian environment can be passed on to the generations coming in 27 years improved and not impaired.

RECOMMENDATIONS

Cue should be taken from China and other countries like Russia, Hungary, Estonia etc with negative population growth rates, in trying to address her rapid population growth.

Drastic measures are needed to solve this eminent time bomb that is fast eating its way like a cankerworm into the potential existence of Nigeria as one of the most domineering nations in Africa and the world at large. The age where population increase is seen by many in Nigeria as the key to the control of political power and resources should be discarded and a proactive approach adopted.

It will be adequate if Nigerians learn to think and act as sustainable world viewers rather than the so called frontier world viewers of the environment. By acting as sustainable world viewers, Nigerians will know the effects

of a rapid population growth on the environment and its resources. This view will allow for better understanding of the natural resources that abound, which are limited and should be protected with enthusiasm and vigor. This is because continuous geometrical population growth will only add more pressures on the environment and its resources and can only contribute more to unnecessary congestion, water scarcity, air, land and water pollution in cities like Abuja and Lagos and above all high unemployment rate which at the moment stands at 28% (Globalis Interactive World Map, 2005).

Finally, for the already degraded environment, it will be helpful if strict adherence to the promotion of environmental risk assessments prior to project initiations is adopted. Newer and tighter regulations and enforcement of existing environmental and population laws will help stem the degradation of the environment and excessive population growth.

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