

EFFECT OF POPULATION ON ENVIRONMENT

**A CASE STUDY OF KADUNA SOUTH LOCAL
GOVERNMENT**

PRESENTED BY

ABDULRAHMAN Y. TANKO

PGD/GEO/99/2000/071

**IN PARTIAL FULFILMENT OF POST GRADUATE
DIPLOMA IN ENVIRONMENTAL MANAGEMENT
FEDERAL UNIVERSITY OF TECHNOLOGY MINNA**

ACKNOWLEDGEMENT

I must first among others express my sincere appreciation and gratitude to Alhaji Abdullahi Halliru Makama, Wakillin Tsabtan Zazzau for his untiring support inspiration motivation throughout my productive years and expectedly beyond, I say thank you. My appreciation also goes to my untiring lecturers, course co-ordinator colleagues and my project supervisor.

My friends, Lawal Mato, Abubakar Tanimu, Abdul Adamu, Aminu Hamisu, Abu Rajab must be mentioned and appreciated for their support for my family both morally and otherwise whenever I am out of town to Minna.

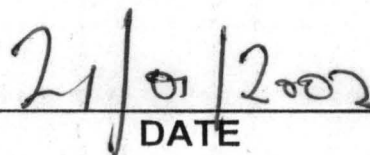
Finally my typist Miss Mercy Moses thank you.

CERTIFICATIONS

This project is the assessment of the effect of population on environment a Case Study of Kaduna South Local Government Presented by ABDULRAHMAN Y. TANKO PGD/GEO/99/2000/071 meets the requirements for the award of the Post Graduate Diploma in Environmental Management of Federal University of Technology Minna, and is approved for its contribution to Knowledge and literary presentation.



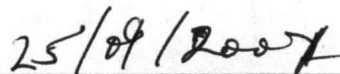
ABDULRAHMAN Y. TANKO
STUDENT



DATE



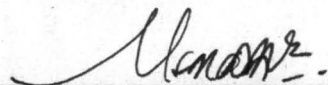
DR. HALIRU
SUPERVISOR



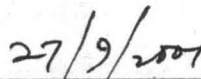
DATE

EXTERNAL SUPERVISOR

DATE



DR. M. T. USMAN
HEAD OF DEPARTMENT



DATE

PROF. ABALAKA
DEAN PG SCHOOL

DATE

TABLE OF CONTENTS

	Page
TITLE PAGE	i
DEDICATION	ii
CERTIFICATION	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENTS	v-vi
 <u>CHAPTER ONE</u>	
1.1 INTRODUCTION	1
1.2 STATEMENT OF RESEARCH PROBLEM	4
1.3 AIMS AND OBJECTIVE	5
1.4 HYPOTHESES	8
1.5 SCOPE OF STUDY	10
 <u>CHAPTER TWO</u>	
2.1 BACKGROUND OF THE STUDY AREA	11
2.2 METHODOLOGY	13
 <u>CHAPTER THREE</u>	
3.1 LITERATURE REVIEW	15
3.1.2 AGRICULTURE	16
3.1.3 SOIL DEGRADATION	16
3.1.4 FORESTS AND POPULATION PRESSURE	18
3.1.5 FRESH WATER AND POPULATION PRESSURE	21
3.1.6 WATER POLLUTION	23

3.1.7	THE OCEANS AND POPULATION PRESSURE	..	..	25
3.1.8	MINERALS AND POPULATION PRESSURE	..	..	27
3.1.9	ENERGY SUPPLIES AND POPULATION PRESSURE	..	..	29
3.1.10	CITIES AND POPULATION PRESSURE	..	..	31
3.1.11	GLOBAL IMPACTS	..	..	34
3.1.12	THE ATMOSPHERE	..	..	34
3.1.13	THE GREEN HOUSE EFFECT	..	..	34
3.1.14	ACID RAIN	..	..	39
3.1.15	HABITANT AND WILDLIFE	..	..	41

CHAPTER FOUR

4.1	RESULT AND OBSERVATION	..	..	43
4.2	LAND DEGRADATION	..	..	43
4.3	DEFORESTATION	..	..	44
4.4	WATER SHORTAGES & POLLUTION	..	..	45
4.5	OVERCROWDING AND AIR POLLUTION	..	..	46
4.6	NATURAL RESOURCES AND MINERALS DEPLETION	..	..	47
4.7	WILD LIFE EXTINCTION AND DESTRUCTION OF IS HABITANT	..	..	49
4.8	UNWANTED FERTILITY	..	..	49

CHAPTER FIVE

5.1	SUMMARY AND CONCLUSION	..	..	50
5.2	RECOMMENDATION	..	..	51
	BIBLIOGRAPHY	..	..	55

APPENDIX

CHAPTER ONE

1.1 INTRODUCTION

[The signs of environmental stress grow as population increases: worn-out farm lands, eroded hillsides, polluted water, parched grass-lands smoke-laden air, depleted ozone and treeless ranges. Each year hundreds of hectares of land or tropical forest vanish, fish catches are levelling off. Cities are clogged with refuse, water and air instead of sustaining life cause disease.

[The world population grows by more than hundreds of million each year. Each of these people needs a portion of the cities, resources for food, shelter, energy and water. In just 33 years to come human numbers may be 50% more than they are today – the largest population growth ever-seen in so a short time. By the end of this decade, more than half of the developing countries inclusive Nigeria may be unable to feed their populations from the own lands. Nearly half of the people in this countries will lack sufficient fuel-wood, within two decades few large stands of tropical forest will remain. Within 3 decades carbon-dioxide emissions from energy use could triple, within four decades readily accessible supplies of coal will be exhausted Global warming could raise the oceans by one meter flooding coast and displacing thousands for centuries human beings have supported their growing numbers by inventing new technologies that extend the productivity of their natural surroundings. And for centuries nature appears to have few limits: however much people used, there was always more some where; no matter how much waste people generated, there was always way or room to discard it.

[As population and per capita consumption grow, however, the human race is increasing and generating waste faster and faster. Thus we are now beginning to see nature limits. Pollution of the air and water, destruction of forest, and loss of fertile soil, are becoming critical problems with serious consequences for health, food production, productivity, and perhaps even the ability of the earth to support human life. When used by so many people, the technologies that have raised living standards even as population grew now threaten to reduce living standards and even to threaten life itself.

Concern about conserving non renewals resources is not new what is new is the growing recognition that essential resources once though to be renewable such as clean air, fertile soil, and water are threatened by the combination of increased per-capita consumption of food, energy, and other goods and old time high increases in the number of people.

Current consumption may be diminishing nature's future productivity not just exhausting current supply but also stealing from our children.

[Environmental damage to date requires concerted efforts on how to clean up pollution to preserve natural resources, and to minimize further damage. Continued economic development and better living standard will depend on the continued productivity of the environment. Therefore environmental protection, including sound resource management, is an essential part of development planning. This principle is known as "SUSTAINABLE DEVELOPMENT" – meeting people's current needs while preserving nature's production capacity for the future.]

Moving to sustainable development globally is likely to prove one of the greatest challenges ever faced by the human species it will be extremely expensive and politically difficult. Continual population growth and rising levels of consumption per – capita will add to the difficulty, world population is projected to grow from 5.4 billion (5,400 million) people in 1992 to 8.5 billion within 35 years.

Fortunately however, continued population growth is not inevitable. All over the world women want smaller families; the technology and delivery system exist to help them realize that wish; and the cost are slight compared to other cost involved in achieving sustainable development's three basic factors combine to determine the impact of human society on the environment: the number of people, the average land individual's level of consumption or affluence, and the technology used to produce agriculture and industrial out puts.]

A simple hypothetical example illustrates the importance of population to environmental impact: suppose that per-capita resources consumption is reduced by 5% and improved technologies cause 5% less environmental damage. If world population growth continuous at its current 1.7% per year, these reductions in environmental impact would be cancelled in less than six years. In reality the relationships among population size per capita consumption and technology are much more complex each of the three factors – population, affluence, and technology has many different facets, and all three are closely inter-related, also the three factors are greatly influenced by government economic and social policy it is useful a direct factor: it directly causes pollution, such as automobile emissions or industrial wastes, or its prevent or limit emissions as when waste are

reused or treated. In-contrast, population size and growth and per capita consumption are indirect factors: they influence the prevalence of direct factors. Direct factors can be changed by new technologies such as less polluting cause, changes in manufacturing process, and devices to recycle of safely dispose of domestic and industrial waste. Addressing indirect factors such as population growth will not clean up a polluted environment or restored a depleted resources, of course. This approach can help prevent the situation from becoming worse, thus helping women achieve their desire to avoid unwanted pregnancy and the plan for smaller families complement technological improvement to achieve sustainable development.

1.2 STATEMENT OF RESEARCH PROBLEM

The time to control environmental problems is short if we do nothing between now and the year 2100 to counteract current trends, it will take several centuries for the world's forest cover to be restored, as much as 1000 years for depleted top-soils to be replenished, and several thousand years or more to bring the earth's climates back to today's conditions species made extend and aquifers (underground water deposits) that are polluted will be lost for ever.

The fertility decisions of this decades also are crucial. If fertility declined from it's 1992 level 3.4 children per woman, and the two child family became the norm during the century, world population would stop growing at less than 9 billion if, instead, a family of 2.5 children centrally become the norm, world population would grow to 19 billion in 2100 and continue to grow.

Current levels of population growth are unprecedented in human history. The world's population did not reach one billion until about 1800. It took about 130 years more to reach two billion. Today, just over 60 years later, the world population is 5.4 billion. One billion more people will be added in only 11 years.

[This rapid growth has occurred because death rates have declined faster than birth-rates.]

Every year's delay in further reducing birth rates translates into millions of new babies, who grow up to become parents themselves. This is the decade in which the world, to achieve a better standard of living for all, must achieve a better balance between human numbers and exploitation of natural resources – in other words, must begin practicing sustainable development.

1.3 AIMS AND OBJECTIVE

Rapid population growth affects the environment in five major ways. Nearly all the adverse impacts of population size and growth reflect one or more of these types of effects.

1. **Sheer Numbers** – Everyone of the hundreds people being added to the population of Kaudna South Local Government Area has basic needs for food, energy, housing and other necessities. Fulfilling these needs even at a minimal level, has an impact on the environment. For example each person needs an average 2300 food calories (KCAL) daily to be healthy and productive, where people rely on wood for fuel, each rural resident needs about 7.5

trees annually for fuel wood or 75 trees per person on a 10 year planting and harvesting cycle.

2. **Multiplying Factors** – Beyond basic needs, each individual impact on the environment is multiplied by his or her level of consumption of national resources (closely related to ones standard of living) and the level of technology used to support that level of consumption.

3. **Density** – Population growth is helping to create expanding cities such as the area of studying such concentration of people can overwhelm municipal services such as water supply, sanitation, housing and transportation.

4. **Pace of Change** – With growing populations in decades coming this area can barely keep up with the relentlessly increasing demand for food, jobs and housing. The pace may force people to adopt environmentally damaging production methods.
 - a) The need to expand food production to cater for the population leads to environmentally damaging practices such as over-cropping, reduction of fallow periods, clearing of forest and burning of grass land.

 - b) Speeding up development project to accommodate growing means of people can lead to environmental destruction.

5. **Threshold Effect** – This occurred when gradual population growth evolves and adopt, discontinuous response. Threshold effects can

be biological or Economic. Biological Threshold stem from increasing stress that additional human numbers place on natural ecosystems. National system such as forest and lakes can absorb a certain amount of pollutants without being harmed. As the amount of pollution gradually increases, however, it may eventually reaches threshold. Beyond that level, the ability of national systems to produce food and to absorb waste diminishes dramatically. Thus the effect of population on environment can cross a threshold and incur serious consequences.

Economic thresholds effects can cause dramatic jumps in cost. As growing numbers of people require more food, energy, water and minerals, these resources becomes scarce or less accessible. It becomes increasingly difficult to produce them to additional people and techniques for obtaining more of such resources and likely to be environmentally destructive usually this increase scarcity will be reflected in gradually raising marginal cost.

- Each additional person adds an increment to the demand on the environment, making the situation a little worse.
- Each person's demand is multiplied to varying degrees by the person's affluence and by the environmental impact of technologies involved in production and consumption.

- The high population density of large cities such as Kaduna South resulting partly from high birth rates, overwhelms water supply, sanitation and waste disposal systems.
- The rapid pace of population growth leaves little time to promote environmental safeguards and to introduce new technologies. Solving environmental problems is more difficult and more expensive when populations grow quickly.
- The steadily increasing burden of growing population can eventually overload natural systems, causing their collapse.

Everyone of the people added to the local government population annually has basic needs for food, energy, housing and other necessities. Fulfilling these needs, even at a minimal level has an impact on the environment.

And these is what this study intends to reveal analyse and recommend appropriate measure to mitigate such impacts.

1.4 HYPOTHESES

[Both the developed and developing countries are increasingly concerned about the environment. The developed countries consume far more resources and produce more pollutants than the developing countries. In developing countries population is growing fast and the struggle to raise living standards in the face of growing populations often has resulted in little attention paid to resource management and pollution control. Further

more raising standard of living and growing populations combine to multiply environmental problems. The developing world faces the challenge and the opportunity to avoid some of the mistakes of the developed countries and to choose environmentally sound paths to development.]

The population of Africa south of Sahara has more than doubled since 1965, and at current level and growth rates it would double again in another 25 years. By the year 2025 African's population is projected to be 1.3 billion, about 2 ½ times the 1990 figure of 502 million. Although the region is less densely populated than other regions, its ability to support more people is, severely restricted by limited water supplies and poor soils, situation may become even worse as attempts to grow more food to sustain the ever-increasing population damages land itself. [As available, land and water supply per capital decrease, farmers struggling for survival over cultivate, degrading soils, overgraze, turning range lands into deserts and over cut forest, these people in effect are over consuming the means of the future survival and that of their children.]

Many countries in sub-Saharan African already lack easily accessible wholesome water. Shortages are expected to intensify with rapid population growth, loss of forest has been extensive, much of the wood goes for household cooking. Thus forest loss is closely related to population growth.

In Nigeria a country that grows by 80% between 1980 – 1990 40% of its urban residence lives in shanty towns with no pipe-borne water severe,

lighting and six of every seven homes last sanitary effluent/excreta disposal system.

1.5 SCOPE OF STUDY

The research work is designed to cover Kaduna South Local Government Area. The area which comprises of Makera, Barnawa, Tudun Wada, Districts respectively would be carefully and systematically studied within the time frame allocated.

Being one of the 4 metropolitan local government in the state is occupied by people of various educational and economic background and belonging to different social classes.

CHAPTER TWO

2.1 BACKGROUND OF THE STUDY AREA

2.1.2 INTRODUCTION

This history in Kaduna town dates back to the end of the last century and the early parts of this (20th) century. A lot of things have been said about the origin of Kaduna but, it is mostly believed that the name originated from the river that runs through the town dividing it into halves. At that time there used to be some rocks on the river bank at Kabala where crocodiles spend leisurely hours and hence the river was being called in Hausa: 'KOGIN KADUNA', meaning:- 'The river of crocodiles'. And subsequently people began to call the city KADUNA, a simplified Hausa plural meaning of crocodiles.

Kaduna South Local Government Area was created out of the defunct Kaduna Local Government on 3rd September, 1998. The Local Government Area is the most densely populated Local Government in Kaduna State. According to the 1991 National Population Census figures projector, the Local Government Area has a total population of 454,907 for the year 2000. Out of this population, 4% are children under – 1 year of age that are 18,196 8% are children 0-2 years old representing 36,393 in number, whereas 20% of the total population are children 0 – 5 years of age who are 90,981 in number.

The geology can be broadly divided to the sedimentary and basement complex, the geology is made up of the meter-morphic rocks which its parts are highly weathered off.

The climate varies from hot dry climate or humid to hurt semi-arid climate.

The Local Government Area has a small land mark area when compared to other Local Government Areas in the State. The total land mass area of the Local Government Area is 1,000 square kilometres. It is bounded to the West by Igabi Local Government Area, to the East by Kaduna North Local Government Area, and to the South – East by Chikun Local Government Area. Kaduna South is an urban and metropolitan Local Government Area. The Local Government Area has two administrative district, namely Tudun Wada and Makera district. The Local Government Area is also multi religious and multi ethnic in nature. Tudun Wada district is mostly inhabited by the Hausa, Fulani, Yoruba and Egbira ethnic groups, and majority of them practice Islamic Religion. The Atiyep, Baiju, Jaba, Hausa, Fulani Igbo, Yoruba and many other ethnic groups mostly inhabit Makera district. Majority of them practices Christian Religion, however there are also a lot of Moslems living in Makera district.

The Local Government Area is also the Centre of Industries in Kaduna metropolis. There are numerous industries that are located in the Local Government Area. Notable among them are the Peugeot Automobile, Coca – cola, Seven-up, all the Textile Industries, Nigerian Breweries, and many other industries. Most of the people in the Local Government Area are industrial workers, civil servants, Businessmen and women, petty traders and farmers.

2.2 METHODOLOGY

2.2.1 Primary Sources

This refer to information generated by oneself. It is an original information collected directly from the source. The source as used in this text are the groups and individual members of the community (elders and elites) as well as the local government functionaries.

Interviews, Observation, Experimentation and Sampling constitute the instruments used in exploring the information used in this book.

I attended plenary meeting sessions of the groups and many other developmental and communal works and programmes. In the same manner, I was privileged to observe group members during policy formulation and decision making process.

The major advantage of this method is originality, since information are collected at first hand.

Another advantage of the primary source is accessibility to targets or sources.

On other advantage is reliability, and that one can observe as he extracts the information.

The disadvantage of it however, is that it is time consuming, one need to reach many destinations and meet a lot of persons in extracting the information.

It also cost much financially and energy-wise. Considerable amount of physical efforts must be expended in the process of data collection.

2.2.2 Secondary Sources

These are documented or already generated information of relevant substance collected at second hand. Such materials were available but in minimal volume. Secondary sources are therefore, generated and stored information of second hand origin.

The secondary sources has the merit of simplifying the work for the research. The information is already generated; it is consequently time saving and easily referable.

On the other hand, it has the demerit of the possibility of being vague or varieted.

Another demerit is the changing of situations (development) and events, which may alter the genuinity of results.

CHAPTER THREE

3.1 LITERATURE REVIEW

When population grows rapidly, it demands more and more from nature – more food, more water more energy at the same time, both increasing consumption and pollution by growing human numbers, reduce nature's productivity. This rapid population growth burns nations' candle at both ends.

Nature is resilient even when the so called renewable natural resources are overused or degraded, many can restore themselves eventually if they are given enough time. Grass lands take a year to come back after over-grazing, fish stocks may take few years to return to previous levels after moderate over-shinning; forest ecosystems may take 20-100 years to grow back; top soils may take hundreds or more years to be replenished; and aquifers can take between one and thousands of years to refuse.

But if human beings exploit natural resources faster than they can regenerate, how will nature have the time to renew itself? The change is ever increasing human demand will exceed the rate of renewal of lands, Forest, and fresh water. Also, population increase consumption of non-renewable mineral resources raising their prices, requiring a search for a substitutes, and hastening the day when such key resources as or may need be available at all. At the list, however, rapid population growth may force scarcity problems on us before we can find substitutes or devise new technologies.

The effect of population growth touches virtually all the specific ways that human beings interact with the environment. These include.

- a) Agriculture
- b) Forest
- c) Fresh water
- d) Ruses
- e) Minerals
- f) Energy
- g) Urban growth

3.1.2 Agriculture – At a basic level each person has minimum food requirements, and therefore population increases the overall amount of food needed. Population Growth affects environmental conditions necessary for food production. To meet the needs of a growing population farmers are cultivating areas that are dry, hilly, valley or have thin weak soils. Farming cause such soils to lose it's nutrients and to be carried away by water or wind as a result, areas that ones could support small numbers of people or be used for livestock grazing become eroded and eventually lost its productivity. As population grows in Africa's marginal areas, farmers are pushed unto semiarid range lands that previously supported only nomadic tribes, providing supplementary fodder and water for their livestock during droughts. Since these lands are now under cultivation, the livestock that once depended on them often suffer large loses during dry period.

3.1.3 Soil Degradation – World wide, an estimated billion hectares of land have lost much of their agricultural productivity since 1945. This area

about the size of China and India combined, or of Europe, the US, and Mexico Combined amount of nearly of the earth's land with vegetation. Of this amount, about million hectares of the world's planted land are so severely degraded that they can be restored to farmland only at great cost, if at all. This reduced productivity, which coincided with a doubling of world population, will make it even more difficult to meet food needs as the earth's population increases by a projected one billion people during the 1990's.

Sources of soil degradation include water, and wind erosion, loss of chemical nutrients, concentration of salts or acidic chemicals, compaction, and water logging. Major causes are over grazing, responsible for 35% of all degraded land; faulty agricultural practices, 28% cutting forest for farming and logging, 30% and striping land for fuel wood, 7% population growth contributes to these damaging practices by increasing the demand for food and fuel.

Many problems attributed to drought, such as dry lands and reduced crops yield are readily symptoms of overuse of the land for example, wells dry out when repeatedly drained, soils lose moisture when vegetation is cut, and crust forms on land that has been farmed intensively without appropriate conservation measure. Over cultivation and overgrazing leave marginal lands less able to retain water and more prone to erosion and the formation of salt deposits. Each year an estimated one billion tons of topsoil are lost as a result. Population growth contributes to these developments by making intensive farming practices necessary to grow more food.

3.1.4 Forests and Population Pressure – Deforestation – converting forest to agriculture and residential use – is becoming increasingly critical in developing countries. Tropical forests are vanishing at an estimated rate of millions hectares annually – an area roughly the size of Kampuchea, Tunisia, or Uruguay and larger than England and Wales. Asia is losing its Forests, at rate of 1.2% annually, while Latin America is losing 0.9% annually, and Africa, 0.8% Countries that lost more than half a million hectares of forests annually between 1981 and 1985 include Brazil, Columbia, Cotedivoire, Indonesia, Mexico and Sudan. These estimates do not include logging, a major source of forest destruction. In the Philippines only 8% of the forest that stood 50 years ago still stand today.

If current trends continues, most tropical forests will soon be severely damaged or even completely destroyed, of the countries that now have tropical forest, only four – Brazil, Guyana, Papua New Guinea, and Zaire may have large stands of undamaged forest remaining by the year 2010. To counter the depletion, many countries have started tree planting programs. These efforts cover roughly 10% of the forest areas lost annually in Africa and Latin America and roughly 70% in Aisa, where China, India, Indonesia, Japan and North Korea have embarked on massive forestation programs.

Population pressure contribute directly to deforestation. These pressures come both from outside the forests and from within. Outside the forests, as population density rises on agricultural land, forests become the last available areas for new cultivation. To grow their crops, landless peasants migrating from urban areas or from crowded rural areas have few options but to clear the forests. Government polices that maintain inequitable

land tenure patterns and encourage development of forested areas contribute to the influx.

Within the forest, forest people traditionally have made their living by slash-and-burn or shifting, cultivation. They clear small plots, cultivate them for two to three years and then move on to repeat the process. Tropical forests have thin soils that lose nutrients after about three years of cultivation. If the forest is allowed to grow back over 10 to 20 years, and if the population is spread thinly (fewer than 40 people per square kilometer) shifting cultivation is sustainable.

When population densities increase however, people must return to the same plot more often. They cannot allow the land to remain fallow long enough to regenerate. Assuming a 20 years period is needed for cleared forest to regenerate, a doubling of the population means that 5% more forest cover must be cleared in each 2 to 3 – years growing cycle. Today between 250 and 500 million people rely on slash – and – burn cultivation, and their numbers are growing rapidly.

Population pressures also contribute to deforestation by increasing the demand for fuel wood, on which over-half to two-thirds of the world's people depend for heating and cooking.

Already, city dwellers' demand for wood and charcoal has left many cities surrounded by rings of deforested land stretching as far as 100km. rural people must spend more and more time and travel farther and further for fuel wood up to 10km from their homes in the Sahel the number of trees that remain can provide fuel-wood on a sustainable basis for only 21 million

people just half of the region's 1990 population. World wide, by the end of the century an estimated three billion people three of every five people in developing countries – may be without adequate fuel wood or else forced to over cut forests in order to meet their energy needs. Tree planting and use of alternative energy. Sources of technologies, such as solar cooking stoves, are needed to address this problem.

Population growth will account for about 80% of the increase in people experiencing fuel wood shortage between 1980 and 200. demand for fuel wood in Africa 40% years from now would be 30% lower if birth-rate were brought down to a level comparable to south Asia's.

Another cause of forest destruction is harmful logging this practices can be attributed directly to population growth since growing numbers of consumers increase the demand for fuel wood and wood products. Most wood is out for local use. Less than 55 of unprocessed wood produced in developing countries is legally exported. One fourth of processed wood accounts for one tenth or less of developing-country production.

Based on the amount of land under cultivation, population increase, and levels of consumption on technology, Paul Harrison estimated that population growth was responsible for about four fifths of deforestation in developing countries between 1973 and 1988. two other studies, using multiple regression analysis one of 39 developing countries between 1976 and 1980 also found a significant relationship between Population Growth and tropical deforestation.

Another study of 85 countries found population growth to be correlated with fuel wood use and land clearing major courses of deforestation.

The consequences of losing the world's forest are serious, the rain forests and essential to regulating the world's climate, by cleansing the atmosphere and providing a source of moisture for rainfall. Forests serve many other essential ecological functions, including soil retention and water absorption, which help to prevent floods, landslides, and erosion. Tropical forest resources supply millions of rural people with their livelihood and provide ingredients for hundreds of commercial and industrial products. Over half of the world's plant and animal species live in tropical forest.

3.1.5 Fresh Water and Population Pressure – Less than 1% of the earth's water is available for human consumption. In theory, even this limited amount could support 20 billion people nearly four times the world's current population. In reality, however, usable water supplies are spread unevenly around the world. More than one-third of the world's people live in areas already suffering from chronic water shortages, including most of Africa, the Near East, north Asia, and Australia.

As more people are added to the world's population, the amount of water available per person decreases. Due to population growth alone, water demand is expected to double in more than half of the world's countries between 1971 and 2000. Most of this increased demand is for irrigation and Industrial uses. About 695 of the world's fresh water goes for irrigation, about 23% for industry and only 8% for house hold use. In

many arid and semiarid areas, population growth has raised for demand to a level that can be met only through irrigation.

Population growth creates water shortages not only by adding to the numbers of consumers but also by increasing population density beyond the level that nearby water supplies can serve. Many communities are draining water from aquifers faster than the aquifers can replenish themselves. Population growth also exacerbates water shortages indirectly by contributing to land degradation and deforestation. Weakened soils and deforested land retain less moisture and may lead to reduced rainfall. Also, population growth worsens global warming, which could change rainfall patterns.

Using existing techniques, major economies in water use are possible. For example, roughly 70% of the water used in irrigation is wasted because it never reaches the crops and waste large amounts of water and add toxic pollutants to water that could otherwise be reused. Greater efficiencies in household use can be attained through water saving devices such as toilets using little or no water. In urban areas leaking pipes are a major source of water loss. Also, charging users for water and instituting other policies could reduce water consumption.

Even with the most efficient irrigation systems, however, many countries in the Near East and Africa would not be able to meet the water needs of their projected populations in the year. By this date 25 developing countries may have reached the water barrier the minimum amount of water needed per person, assuming access to advanced technology to maximise conservation. An additional 24 developing countries may

experience seasonal shortages and problems with water quality by 2025. Wealthy countries can build water desalinisation plants or transport water over long distances, but other countries are likely to find their aspirations for development curtailed for lack of water.

3.1.6 Water Pollution – Not only is water in short supply, but also much of what is available is not safe to drink. Nearly one billion people world wide lack access to safe water and 1.6 billion people have no sanitary waste facilities and so many pollute the water. Some developing nations, including Ghana, Indonesia, and Mexico, have stepped up efforts to conserve water supplies and prevent pollution, through waste control facilities, water treatment plant, recycling, and conservation. India has begun a project to clean up the Ganges, the 1,500 mile river that provides water to one-third of the population. The Ganges carries the untreated sewage of 114 cities of more than 50,000 inhabitants each, plus a wide variety of industrial wastes.

Sanitation is one of the environmental quality issues most obviously linked with population growth. Each person generates faecal wastes that contain an average of 3.2 kg of nitrogen and 0.6kg of phosphorus annually. In high concentrations these substances are major courses of oxygen depletion in bodies of water, which kills off fish, other animals, and plants.

Population growth endangers water quality through other routes, too. Concentration of people-in other words, cities-make it difficult to dispose of household wastes without polluting local water supplies. In addition, growing populations demand more goods and food and thus increase wastes from industrial and agricultural production, often to be discharged

or drained into rivers, lakes or aquifers. Faecal wastes may pose the more widespread health threat in the developing world at this time, but industrial discharges are more persistent.

Despite clean up efforts in some places, water pollution is worsening in most developing countries. More than 95% of urban sewage in developing countries is discharged untreated into the nearest waterways or field. Factories and mine release large quantities of heavy metal, toxic chemicals, and solid wastes into the water. For example, Laguna lake in the Philippines – the largest lake in South Asia-has become heavily polluted by marlin's sewage, chemical wastes from about 900 factories, and fertiliser and pesticide run of. As results, fish catches dropped form 320,000 metric tons in 1964 to 128,000 metric tons in 1982. A new water control system intended to divert some of this pollution has further upset the ecological balance, reducing fish catches even more.

Among measures to address water pollution are adequate sanitation and waste treatment facilities including alternatives to water-carriage sewerage, prevention of pollution at its source, waste reduction, tighter government regulation, and research on new recycling and treatment technologies. Companies that have reduced their waste by recycling materials or redesigning processes and products have found that such efforts actually save money.

If water pollution continues at current rates, as much as one-fourth of the world's fresh water supply could be unsafe for human consumption by the end of the 1990s.

It will not be easy to restore these water supplies to a safe condition. Some chemical pollutants can remain in lakes and rivers for 100 years or longer.

Clean up is costly. In fact, the costs of cleaning up contaminated groundwater are so high that in effect its pollution must be considered irreversible.

3.1.7 The Oceans and Population Pressure – About 60% of the world's people live within 100km of ocean coasts, thirty of the world's 50 largest cities are located on or near the coast. Coastal population densities reach more than 500 people per square kilometre in Several Asian Countries, more than twice the density inland.

As these large, concentrated populations grow even larger, efforts to produce food for them contribute to over fishing. Nearly one-fourth of the world's animal protein supply comes from fish. Most types of fish eaten by humans are being caught at close to their maximum sustainable to replenish themselves. Already fish stocks have declined in some areas.

While world fish catches appear to be levelling below the estimated maximum sustainable yield of 100 million metric tons annually, demand for fish continues to grow. UNFAO Project that developing countries will need an additional 22.5 million metric tons of fish in the year 2002, while demand in developed countries will grow by 5.9 million metric tons. About two-thirds of the increased by expanding fish farming (aqua-culture), using different species of fish, reducing losses and wastage, and feeding less

fish meal to livestock, which in 1989 accounted for 28% of the world's fish catch.

Not only is over fishing an imminent danger, but also growing coastal development, pushed partly by population pressure, is actually reducing the ocean productive capacity. Growing human settlements are destroying the coastal areas that serve as hatcheries for 90% of the world's fish catch. For example, many families living Jakarta, Indonesia. Use to make their living from fishing. With a doubling of the city's population between 1970 and 1990, Coastal waters become filled with untreated sewage and Industrial wastes fish catches have doubled, and the few that, remain are unsafe to eat.

Natural coastal ecosystems are being damage by heavy pollution and by dredging and filling of wetlands to make room for further development. An analysis of 31 developing countries found that more than half of their mangroves (coastal forests) have been destroyed since pre-agricultural times.

Oceans are the ultimate garbage dump. Without major changes in production and waste handling technologies, the problem is widely to become worse as population grows not only wastes from coastal cities but also sewage discharged into upland rivers, Sediment from free cutting, and fertiliser and pesticide run off eventually reach the ocean. Sewage and sedimentation are now more serious sources of ocean pollution than oil spills or dumping of toxic wastes. For example, each year the Ganges carries 1.5 billion tons of sediment a result of intensive farming and deforestation in India, Bangladesh, and Nepal to the Bay of Bengal.

India uses about 55,000 metric tons of pesticides annually, about 25% of them are carried to the ocean, off the coast of New York, a former dump site for the city's sewage and Industrial wastes is known as the "dead sea" the population has killed fish and contaminated shellfish beds.

Environmental damage to new dump sites is likely, since the city's 16 million residents produce 1.7 billion gallons of sewage daily.

In addition to providing food, oceans play important roles in the world ecosystem. By circulating cold and warm water, they help to regulate climate and to protect against extreme temperature Fluctuations. Also, oceans absorb 30% to 40% of the carbon dioxide emitted by human activities. Scientists have warned that even minor changes in ocean temperature, chemistry, or circulation patterns could alter the ocean's absorption of carbon dioxide, a changes that could hasten the warning of the global climate. Depletion of the ozone layer in the upper atmosphere could reduce the growth of plankton, micro organisms that form the basis of the food chain for fish.

Also, coral reefs rival the tropical rain forests in their number of animal species and thus are important resources for biological diversity.

3.1.8 Minerals and Population Pressure – Due to rapid industrialisation and economic growth, the consumption of non-fuel minerals –metals and variously other materials used in industry and Construction has increased faster than population. Between 1950 and 1987, while world population doubled, copper production nearly tripled, steel production nearly

quadrupled, and aluminium production grew more than ten fold. Since the 1970s demand for metals has levelled off in the developed countries. Developing countries are consuming an increasing proportion of the world's metals, and this trend is expected to continue.

Experts expect that demand for minerals will grow slowly, if at all, in the next two decades. The long-range trend is difficult to predict because it depends on factors such as economic growth, efficient use of minerals, recycling, and substitution. Nevertheless, consumption of most minerals is expected to remain at or near today's historic highs. Developing countries home to three – fourths the world's peoples, have yet to build the basic infrastructure needed to support an industrial economy, such as roads, bridges, and buildings. As they do, the world demand for minerals may increase.

The combination of increased per capita consumption and population growth could greatly affect supply projections. For example, experts project that all known and predicted supplies of copper will last 277 years at current consumption rates, assuming no population growth. If the world had 10 billion people in the year 2030, however, all consuming at the same rate as people in the US today, copper resources would last just 26 years. Similarly, cobalt and platinum resources would last about 40 years instead of 400.

Will we ever run out of minerals? Perspectives vary. Geologists point to the finite nature of mineral resources and note the increasing difficulties of extraction as supplies become depleted. In contrast, many economists think the supply of minerals is effectively infinite. As a resource becomes

scarce, its rising price dampens demand and drives and search for substitutes.

In the geologists' view, the scarcer a resource, the more impractical and environmentally damaging it becomes to obtain it. When easy to extract supplies are exhausted, one must drill deeper into the ground to extract more spending more and using more energy to do so. At lower depths extraction may not be feasible at all because of heat and pressure.

But in the economist' view, as easy to-extract supplies dwindle and extraction becomes more costly, higher prices will encourage exploration, conservation, recycling, and the use of substitutes, as well as development of new technologies to use lower-grade ores that more plentiful.

Both viewpoints recognise that meeting rising demand for minerals will become more costly as population and per capita mineral consumption increase. In addition, rapid population growth may force scarcity problems upon us before we are able to find substitutes or devise new extraction technologies, if we are able to do so at all.

3.1.9 Energy Supplies and Population Pressure – The effort to keep economic growth ahead of population growth has forced many developing countries into pell-mell consumption of non-renewable energy resources. For example, in just the five years between 1980 and 1985, the developing world increased its commercial energy consumption by 22%. Half of the increased was needed just to maintain the status quo in per capita energy consumption population grew by 11% in the same period.

The other half reflected real economic growth. Between 1979 and 1989 commercial energy consumption in developing countries tripled.

Even if new energy – efficient technologies become wide spread, it will be difficult to continue expanding energy supplies fast enough to meet the needs of developing countries for economic growth. Without any further increase in per capita energy consumption, population growth alone would boost world energy consumption from the current 13.5 terawatts to 18 terawatts by 2025. This increase of 4.5 terawatts is comparable to the total commercial energy currently consumed by developing world. One billion barrels of oil per year, one billion tons of coal per year, or 1.6 billion tons of wood per year.

Even greater increases in energy use will be necessary for real economic development people in developed countries use nearly 10 times more commercially produced energy than people in developing countries. Thus conservation in developed countries is crucial. During oil price increases in 1973 and 1979, commercial energy consumption in developed countries levelled off, and Western economies have become more energy-efficient. But the longer trend in developed countries has been an increase in energy consumption by about one third since 1970.

Even if the developed nation cut their per capita energy use in half between 1990 and 2025—a highly optimistic assumption a doubling of per capita energy use in developing countries, reflecting economic development, would increase world energy consumption to nearly 21 terawatts.

Nearly all the world's commercial power is derived from fossil fuels – oil, coal, and natural gas currently, the world uses in one year an amount of fossil fuel that took nature roughly one million years to produce. At current consumption levels, and assuming no population increase, the readily accessible supplies of oil will be exhausted within 40 years, and natural gas, in 60 years. Coal supplies will last much longer – for hundreds of years at current consumption rates. Switching to more coal, however, is likely to worsen air pollution and hasten the onset of global warming.

While industrial countries will find it difficult to convert from oil to other energy sources such as hydropower and solar power, conversion from fossil fuels will be even more difficult for developing countries due to the high capital costs. Slowing population growth will meet eliminate the need for conservation and for more energy-efficient technologies, but it will buy more time to develop and disseminate the necessary new technologies and to find alternative energy sources.

3.1.10 Cities and Population Pressure – Cities are the most visible evidence of population pressures on the environment. By the turn of the century about three billion people, or nearly half of the world's population, are expected to live in cities. One in every five of these urban dwellers will live in cities of more than two million people. The number of cities containing at least 10 million people will rise from 11 in 1985 to 24 cities in 2002.

In developed areas 73% of the population lives in cities. In developing countries cities are growing at an unprecedented rate, and the pace is accelerating. About 60% of urban population growth from migration, population growth into cities from rural areas. With in-migration and

natural increase both fuelling population growth, the world's cities often present the starkest, most dramatic picture of environmental damage and its impact on human health and welfare.

The rapid growth of urban populations damages the environment in several ways first, as cities spread, they convert agricultural land to industrial and residential use. Where land is scarce, urban growth can undermine efforts to increase food production. In Egypt, for example, expanding cities have claimed more than 10% of the most productive farmland in the past three decades.

Second, city dwellers use more water and energy and generate more wastes than rural residents. For example, many urban residents burn charcoal, which has lost more than half of its energy output when converted from wood. Hence urban people may use twice as much energy as rural villagers who burn wood directly. Cities also use large amounts of energy to import food, water, and fuel; collect garbage; and treat sewage.

Large, densely settled population produce massive and concentrated amounts of air and water pollution, overwhelming the absorptive capacity of natural ecosystems. Much of pollution comes from Industry, which of course is located where workers are. But much is more directly related to the numbers and concentration of people and their levels of consumption. Many cities face enormous smog problems. Smog is a dark haze consisting mainly of ozone, which is formed when sunlight acts on vehicle exhaust fumes and other gases.

In such cities as Ankara, Mexico City, New Delhi, and Sao Paulo, smog often reaches level violate national air-quality standards more than 300 days of the year. One days when air pollution reaches dangerous levels, factories are ordered to cull production by 75% automobile use is heavily restricted, and schools are close.

As city size increases, the cost to maintain environmental quality (such as providing clean water, treating sewage, and disposing of other wastes) also increases. Many cities in developing counties now spend more than 30% of their budgets on refuse collection and waste disposal. Despite this effort, an estimate 30% to 50% of all solid waste in developing countries are uncollected and left in the streets or on vacant plots, and many city residents lack basic services such as safe water and sanitary drainage systems for example, the municipal systems of Karachi, Pakistan, were planned for 400,000 people, but now the city has close to 9 million. Nearly half of Karachi's residents live without basic city services. Because developing – country cities are experiencing the most rapid increases in population on density ever seen, they constitute the clearest case of society's inability to respond fast enough to population growth.

Rapidly growing cities will greatly worsen existing solid waste disposal problems, since urban dwellers produce more waste per capita than rural people. The amount of solid wastes generated by cities and industries in developing countries is projected to double between 1985 and 2025 due to population growth alone – from 0.6 billion metric tons to 1.2 billion metric tons. Accordingly, the proportion of the world's municipal and industrial solid washes generated in developing countries is projected to grow from 25% in 1985 to 35% in 2025. This share could exceed 50% by 2025 if, in

addition their economies develop at about 3% annually, as they did between 1960 and 1985.

3.1.11 Global Impacts – The impact of population growth on the environment is often most immediate and obvious at the local level, but the impact is often global as well. Scientists warn that pollution of the atmosphere is causing the world's climate to change, is depleting the earth's Ozone layer, and is creating acid rain. Also, as tropical forests and other ecological systems are damaged, many potentially valuable plant and animal species are disappearing. Population growth is contributing to all of these changes.

These broad consequences mean that every country has a stake in avoiding environmental degradation. No nation can afford to risk the destruction of any of the environmental systems that support life. Ultimately, when the environmental consequences of today's population growth trends are added together, they raise an important and difficult question. **HOW MANY PEOPLE CAN THE EARTH SUPPORT?**

3.1.12 The Atmosphere – Various expanding human activities – including burning coal and oil, clearing forests and grasslands, and using motor vehicles, refrigerators, and air conditioners release a growing amount of polluting gases into atmosphere. There is evidence that such pollutants are causing grave environmental damage.

3.1.13 The Green House Effect – The world is 0.3°C to 0.6°C (0.5°F to 1°F) warmer than 100 years ago. Scientists have projected that average temperatures will increase by a further 1°C by the year 2025 and 3°C by

2100. No previous global climate change of this magnitude has occurred over such a short period.

Global warming is popularly called the "GREEN HOUSE EFFECT" because heat trapping gases building up in the troposphere of lower atmosphere, keep the earth substantially warmer than it would be without them.

Like the glass panels of a green house, these gases let in heat from the sun but prevent some of it from going back out, causing temperatures on the earth's surface to rise.

Scientists cannot prove that the observed global warming trends is due to increased levels of gases in the troposphere rather than to cyclical variations in weather. The available data are consistent, however, with climate changes predicted from the amount of gases accumulating in the atmosphere. Both the magnitude and the speed of global warming remain uncertain because of the complexity of the natural processes that affect climate. It will take at least another decade of study and perhaps longer to document fully the causes and dimensions of global warming.

Nevertheless, it is clear that human activities are chiefly responsible for the build up of green house gases observed in the troposphere. Three gases – carbon dioxide, chloro-fluorocarbon (CFCs), and methane – are thought to cause 95% of global warming. Energy production and use for industry, transportation, and residential on commercial purposes account for, nearly half of all green house gas emissions. CFCs, used for

refrigeration and in various industrial processes, account for another 24% and burning of forests and grasslands contributes 18%.

Carbon dioxide is released mainly by fossil fuel combustion and production, land clearing by burning vegetation, and cement manufacture. The accumulation of carbon dioxide in the atmosphere closely parallels the growth of the world's population. More than 40% of the total increase in carbon dioxide emissions between 1950 and 1985 can be attributed to population growth with the rest coming from increase energy use per capita. If current trends continue, population growth will contribute 50% of the increase in carbon dioxide emissions between 1985 and 2025.

Similarly, methane emissions closely, match the growth in human population.

About half of all methane emissions from human activities result from vegetation combustion, decaying garbage, gas pipeline leaks, and coal mining. The other half is associated with food production, including gases emitted by rice paddles, cattle, and irrigated land.

World wide, the number of cattle has grown about half as human population (0.9% annually), and the amount of irrigated land has grown at about the same rate as population since 1980 (about 1.9% annually). Because methane is closely associated with food and energy consumption, it may be difficult to reduce per capita emissions, and therefore future population growth will be a major factor in increased methane emission.

Continued emissions of greenhouse gases could make the climate to become warmer. A temperature change of a few degrees does not sound like much, but a long term shift could be devastating. The "bread basket" grain- producing areas of North America, the former soviet Union, and ching would become hotter and dryer.

World food production might rise due to warmer ocean expanding in volume and polar icecaps partially melting. This rise in sea- level could flood low-lying coastal areas, many of which are densely populated. For example, if the sea level rises one meter by 2050, as some experts predict, Bangladesh and Egypt would lose 16% and 15% of their land area, respectively displacing millions of people. Constructing sea walls would be prohibitively expensive for most developing countries.

To prevent such consequences, levels of green house gas emissions need to be first stabilised and then reduced. Both develop and developing countries will need to change energy consumption patterns, adopt new industrial technologies, and limit population growth. Developed countries generate large amounts of greenhouse gases by burning fossil fuels and producing CFCs, but many developing countries also have high emission levels due to deforestation agriculture, and unregulated industries.

Developing Countries, added 45%. Further increases in green house gas emissions are likely. The developing countries will be the major source of the increases due to expanded industrial development, agricultural production, and contributing to all of these, population growth. For example, carbon dioxide emissions attributed to energy use in developing countries are projected to increase by 80% between 1985 and 2020

because of population growth alone. If per capita fossil fuel consumption doubles as well, Carbon dioxide emissions will increase by 365%. Under this scenario the developing countries would increase their share of carbon dioxide emission attributable to energy use from 16% in 1985 to 50% in 2020, assuming that developed countries reduced their fuel consumption by 20% through conservation. One hopeful sign is that most nations have agreed to stop using CFCs by the year 2000 and to limit use of other damaging industrial chemicals.

Shifting to non-fossil fuels, introducing more efficient technologies, and even limiting energy use may be necessary. Slowing population growth also can help limit green house gas emissions for example, per capita carbon dioxide emissions in developing countries are projected to double between now and 2025. If world population grew in line with the UN low projection rather than the medium projection (reaching 7.6 billion people in 2025 rather than 8.5 billion) carbon dioxide emissions in 2025 would be 1.3 billion metric tons lower – equivalent in impact to reducing the current rate of deforestation by 85%.

Stratospheric ozone depletion. Although hazardous at ground level, ozone in the upper atmosphere is beneficial. It screens out harmful ultraviolet radiation from the sun. The ozone layer is located in the stratosphere between 15 and 50 kilometres above the earth. Ozone levels decline over parts of North and South America, Europe, Australia, and New Zealand. A 1992 study reports that the ozone layer is thinning even more rapidly than previously thought.

Thinning of the Ozone layer – and thus more ultraviolet radiation reaching the earth's surface could change climate, reduce crop yields, disrupt marine food chains, and inhibit photosynthesis. Studies have found that a 25% plankton, the major food for ocean fish, by 35%. Thinning of the ozone layer also could increase the rate of the skin cancer and blindness from cataracts, causes genetic changes, and impair human immune systems. For every 1% drop in ozone, the skin cancer rate is projected to increase by 5% to 7%.

Major causes of ozone depletion include CFCs, Chemicals used in solvents, and halon, which is used in fire extinguishers. All these gases are important to industry and agriculture. The industrialised nations have agreed to phase out CFCs quickly, replacing them with possibly less damaging substitutes, and they have established a US \$240 Million fund to support introduction of new technology by developing countries. New research has found, however, that these measures will not completely prevent further ozone depletion. CFCs remain in the atmosphere for century, continuing to do damage, levels of chlorine in the atmosphere from CFCs could triple in the next century.

Also, other gases such as halon and methyl-bromide, a crop fumigant, need to be controlled as well. Assuming that ozone depleting gases are eliminated within the next decade, changes in population size are unlikely to have much effect on ozone depletion.

3.1.14 Acid rain – A acid rain is caused by two gases, sulphur dioxide and nitric oxide, released in to the air from electric generating plants, industries, and vehicles. When combined with moisture in the air, the gases form acids

that make rain water more acidic, lowering its PH to the level of vinegar or lemon juice. Such rain damages ecosystems, killing plants and fish.

The gases that cause acid rain may be quickly blown long distances – as far as 2,000 km in a few days. Thus acid rain is an international problem. Depending on the way the wind blows, one nation's air pollution causes another nation's acid rain. Without better technologies to reduce the pollutant cause acid rain at their source, growing populations and the industrial production required to meet their needs will result in greater acid rain problems.

Acid rain damage has been detected in more than 30 countries. It is most severe in Scandinavia, central and eastern Europe, and eastern North America. China also face a serious acid rain problem because of its reliance on in efficient combustion of low quality coal. Acid rain, however, is not confined to industrial areas. Burning grassland for agricultural purposes has created acid rain in parts of Africa. An estimated 75% of Africa's grasslands are burned annually, and areas that were previously burned every three years are now burned more frequently because of population pressures.

It is costly to control the pollutants that cause acid rain. For example, installing scrubbers devices that reduce smoke stack emissions in nine of Czechoslovakia's most polluting power plants would cost an estimated US \$ 1.3 billion. Switching to cleaner combustion technologies and shifting from coal to natural gas would reduce the cost of prevention pale by comparison with the economic losses due to damaged lakes and forests, reduced crop yields and fish catches, corroded buildings and monuments,

poisoned drinking water, and decreased tourism. Just repairing the damage to metals, building facades, and paint done by acid rain costs the European nations lost an estimated US \$20 billion each year.

As with many other environmental problems, population growth plays an indirect role in increases in acid rain. More people, each consuming more pollution if this growth out paces improvement in technology.

3.1.15 Habitat and Wildlife – At the start of the Industrial age, less than 200 years ago, biological diversify the total number of ecosystem,, species, and genes on earth may have reached an all time high. At that time, the number of people on earth was about one billion. Today the human population is well over five billion and increasing rapidly, while species of animals and plants are disappearing at the estimated rate of 4,000 + 6,000 per year. Losses of this magnitude last occurred when the dinosaurs disappeared 65 million years ago. While most losses of species occur in tropical rain forests. Affected areas include dry forests, grass lands, temperate zones, wetlands, and coastal habitats.

Scientists rank stopping species extinction and destruction of wildlife habitat among the top environmental priorities. Why such a fuss about obscure plants and animals that most of us will never see? One answer is that destroying parts of nature forever, even if people may not know or hear about them today, may deprive us of something we will need in the future or may have dire consequences for other parts of the ecosystem on which human beings do depend now. Wild species of plants have improved crops by strengthening pest and disease resistance; improving durability, yield, flavour, and nutritional quality; and permitting adaptation

to marginal lands. Important medicines have originated from plants and animals. For example, penicillin came from a mould found growing on an orange. Some of the hormones used in oral contraceptives were originally extracted from roots that grow wild in central America and elsewhere. Taxol, a new drug used to treat ovarian and breast cancer, is made from the bark of the Pacific yew tree found in the US. Also, plants and animals provide sustainable revenue through commercial uses and tourism.

It is no coincidence that plant and animal species are disappearing at a time when the human population is growing rapidly. In the human search for sustenance and economic advancement, people put pressure on the habitats of other species. Such practices are over harvesting, over fishing, indiscriminate pesticide use, draining wetlands, polluting the air and water, and urban sprawl all diminish the number of plant and animal species. Slowing pollution growth cannot by itself halt extinction, but the problem will become considerably worse if human numbers continue to grow at their current pace.

CHAPTER FOUR

4.1 RESULT AND OBSERVATION

4.2 LAND DEGRADATION

Everyone of the hundreds of people being added to the Kaduna South Local Government annually has been identified to have basic needs for food energy, housing, and other necessities. Daily struggle to fulfil this basic needs even at minimum level has a grievous impact on the environment such impact as identified through interviews and observation 70% of the inhabitants of this Local Government use or rely on wood for fuel each family unit may have at least utilised 7.5 trees annually for fuel wood or might have burnt 7.5 trees per person in ten years. I have also observed that over-population has affected environmental conditions necessary for food production local farmers around Unguwar Muazu, Kurmin Mahsi, Kakaru Television are cultivating areas that are dry hilly or rocky or have weak thin soil and the consequences of such cause soil to lose it's nutrients and be carried away by rain and one who have been around for long as myself can confidently assert soil in this mentioned areas have lost it productive capacity.

Most of the native who farm in this area before have now migrated to the semiarid areas which before is use by pastoralist for grazing and the pastorals have move father away and are often surfer large losses during dry season.

Water erosion around Nasarawa due to over-grazing, faulty agricultural practices as mentioned earlier, cutting of forest for fuel wood. Farming and

logging for urbanisation have been identified as some of the impacts of over population on agricultural and land.

Kaduna South Local Government as observed may not be able to field it's growing population from it's own land due to past and present faulty land use practices, and presently due to poor revenue generation cannot adequately purchased food for its populace. Symptoms of land overuse is very glaring such as dry land in areas where 10 years ago are fadamas use for production of vegetated are now dry this is because the soil has lost its moisture due to vegetation cutting.

4.3 DEFORESTATION

Conversion of forest for unplanned agricultural use and residential use by over-increasing population is another critical situation in Kaduna South Local Government.

Forest areas have vanished (Rigasa, Kinkinau, Kasaba West) at an estimated hundreds of hectares at a rate of 1.2% annually, if current trends continue to be sustain the remaining forest areas (Western by-pass area) will be sincerely damaged or completely destroyed. Over-population have been identified to contributes directly to the depletion and deforestation of forest in Kaduna, pressures within and outside the forest are the elements that precipitates such activities. As the population density increase remaining agricultural land and forest has become the lost available areas for cultivation to grow crops and have no options than to clear forest.

Heating and cooking are natural phenomenon that co-exist between human, most of the inhabitants of this area have the need for wood and charcoal has left the city to be surrounded by rings of deforested land, population growth have account for increase in people in this area to experience fuel wood shortages four-fifth of deforestation in this area are been identified to be associated with population growth. The consequences of losing such forest are serious, the forest as earlier discussed in the literature review are essential for regulating climate, by cleansing the atmosphere, and providing a source of moisture for rain-fall, forest have many other essential ecological functions, including soil retention and water absorption which help to prevent floods and erosion.

In Kaduna South Local Government, Areas such as Nassarawa Village have continued to experience services land erosion and Gullies resulting to flood, destruction of houses and disease and sometimes accidental death due to collapsed structures that serve as dwellings.

4.4 WATER SHORTAGES & POLLUTION

Kaduna river serve as the main source of water for domestic and industrial use, industrialisation, urbanisation high birth rate and increase fertility and immigration into the area of Kaduna South have make the water level to be low beyond the level that it can be able to serve, 28 of the 30 houses I entered around the river bank now are experiencing dry wells when one visit Kukumake area one can see tippers and pail loaders loading sand inside the dry river bed as if they are construction road on the river bed, it is very heart-breaking for one to see a river as large and long as river Kaduna becoming dry, it is very dangerous trends and pathetic. Water shortage is now an endemic situation in Kaduna South, Local

Government, not only water is in short supply much of what is available is not safe and wholesome in six house-holds in this ever have been identified not to have sanitary waste facilities, sanitation is one of the environmental quality issues most obviously linked with population growth this have make it different to dispose of household waste without polluting local water suppose such as nearby river Kaduna, household waste insanitarly disposed of on water ways or leaking pipes and near by wells are local source of water pollution and contamination as one can easily observed in Kakuri high density area Tudun Wada Old town and Nassarawa villages.

Kaduna South Local Government, have the greatest house of Industries localisation among all the local government in Kaduna State industries in these area include car assembly plant, textiles, fertilisers blending plants and Breweries, metal fabrication plants, large quantities of heavy metals toxic metals are discharged into river Kaduna as one can observe in around open large sewers conveying this effluents from industries into river Kuduna in difficult colour and temperature and accompanied by an offensive odour.

Government in ability to cater for the needs of the population have allow this trends to continue for one it cannot close down this industries because penchant revenue it gets from them and the employment opportunist there in much has reduce burden to the government for now.

4.5 OVER CROWDING & AIR POLLUTION

Kaduna South Local Government Area have 14 maternal child health and family planing clinic and monthly monitoring and evaluation forms are filed

and return to the local government headquarters. Malaria, viral infections of unknown Origins leading to acute upper respiratory tract infections Tuberculosis dhyiorhia and scabies are the most endemic disease spread across the local government. Migrants attracted to urban Industrial areas such as Kaduna South Area by the hope of or jobs acquisition are formed to drink unsafe water and inhale toxic fumes, areas such as Nassarawa, Kakuri around St-Gerard missionary hospital are highly polluted areas even by passing through this areas on commuters one can appreciate what I am saying.

The air that most inhabitants of Kakuri, Television, Unguwar Sunday, Nassarawa Trikania Makera, Peugeot Junction breath is a hazard to their health, one can visually see the amount of industrial emission into the atmospheric by such industries in this mentioned areas, this are pollution has been identified to contributes to such health problems respiratory (ARI) and lungs diseases M & E returns by the Kaduna South Local Government to the state ministry has justified this statutes.

4.6 NATURAL RESOURCES & MINERALS DEPLETION

As the large concentration of population grow even larger efforts to produced food for them contribute to over fishing. One can easily re-call in the calling 80s and late 70s we only need hooks to just go to the back of our yard to the local river in Tudun Wada to catch fish at minimum sustainable yield, and this fish stock then keep to replenish themselves. But now our children have been observed not to take fishing as a hobby because the fish is not there in the river talkless of going the fish, in contrast to the last two decades. Already fish stocks have drastically reduced as I interviewed fresh fish seller at the main fresh fish deport

along Kachia Road by Ahmadu Bello Stadium they told me that 90% of the fish they bought for re-sale to consumers were brought from 100' to almost 200 km away from the state not even the local government because the fish might have migrated or stocks depleted since enough time is not given for it to renew and replenish its stocks due to rapid population growth.

Also growing coastal population around Kaduna river which is the main source of fish in and around Kaduna and its environs pushed by population pressure has been identified to reduce the Kaduna river productive capacity, human settlement have destroyed coastal areas along Malali, Rido, Makera, Tudun Wada Kinkinau that serve as hatching for 90% of the town fish catch families living near this mentioned villages told me that they use to earn their living from fishing. With a doubling of the cities population between 1970 and 1990 coastal water became filled with untreated sewage, and industrial waste. Fish catches have dwindled, and the few that remain are unsafe to eat.

Sedimentation is another problem that has been identified to decrease fish stocks in river Kaduna, run-off by rain and the presence of eroded soil, contributes to the transfer of soil from land to the river thereby inhibiting normal hatching of fish, open sewers in between houses (sanitary lanes) that waste water from toilets and bath rooms run to the rain drains are now carrying 80% of the solid waste generated by the populace and during rain fall run-off carry this solid waste containing both degradable and non-bio degradable materials into the river, countless numbers of unemployed youth earn daily from collecting solid waste from premises and dumping them into Kaduna river.

4.7 WILD LIFE EXTINCTION AND DESTRUCTION OF ITS HABITANT

Deforestation, over grazing, dried river noise due to having industries urbanisation and new construction cutting of trees for fuel wood and heating, killing of defeat species of endangered animals for cash have led to out-might estimation of such small animals like bush rats, monkeys, rabbits that can be easily hunted at the back yard 10 – 20 years ago to be completely level zero such practices of our hunting, indiscriminate pesticide use, drying wet-lands all diminish the number of plant animal species that were part of local environment in the late 70s to early 80s.

4.8 UNWANTED FERTILITY

Over population has his own natural ways of increasing itself naturally if not properly checked moral decadence, unwanted pregnancy, extramarital affairs tend to increase in Kaduna South Local and this has increase the number of unplanned child birth in the area unmoved girls move closer to the workers that are earning salary to have their own shares and in the process lost their virtues consequently led to unwanted pregnancy thereby increasing the population.

Uncontrolled birth have lead to increase in population of Kaduna South Local Government as one can glaringly deduced from family health cared of 14 clinic in the local government women of child being age almost give birth to 2 children in 3 years this trends is seriously dangerous and most be checked, because the carrying capacity may be incapacitated that is the maximum human population that the local government area, can support indefinitely on a specific resource base and at a specific level of technology.

CHAPTER FIVE

5.1 SUMMARY & CONCLUSION

Kaduna South Local Government Area is a visible evidence of population pressure on Environment, the city is growing at an unprecedented rate, and the pace is accelerating. About 60% of it's population growth comes from Natural increase (births minus deaths) and about 40% from migration, the rapid growth of the city has damaged the environment in several ways.

1. Agricultural land has been converted to industrial and residential use, and land is now scarce and effort to increase food production is undermine.
2. Secondly it has been observed in the local government area that this dwellers consume more water, energy and generate more waste than any local government within the state. This is indent in drying new, tree-less land and large dump of refuse within the metropolis.
3. The densely populated area of the local government, localisation of industries produce massive and concentrated amount of air and water pollution.
4. Most of its forest and other ecological systems are damage, many valuable plant and animal species have disappeared or in extreme case extinct.

5. Burning of trees and oil to generate heat and energy, clearing forest and grassland for dwellings and industries, use of heavy refrigerants and industrial machines, may be a source of growing amount of polluting gasses into the atmosphere, which will incidentally promote environmental damage such as the green house effect or global warming.

Finally, the reader must appreciate the fact that increasingly destroying natural resources to meet current needs or to make a good profit is short sighted and potentially disastrous for future generations, the need to satisfy current needs is necessary but with caution in preserving nature's productive capacity for the future. In fact, Continued economic development requires the continued productivity of farm-lands, fish and wild life stocks, forest, adequate and safe water supply, efficient energy use, and preservation of natural areas.

Majority of women are not involved in development programs, they lack access to good education, paid employment, land acquisition and credit, and for any population control programme to succeed women who are the pivot must be protected from tendencies that promote unprotected sex and unwanted pregnancy and birth.

5.2 RECOMMENDATION

5.2.1 POLICY PRIORITY

Environmental and population issues need to be placed at the top of the political agenda especially now that we are operating democracy. Policy

makers, local government authority needs to ensure that necessary laws, regulations, funds and well trained and well motivated personal are in place to address these issues. As we all know effective implementation require sustained political commitment.

5.2.2 BUILDING KNOWLEDGE

The Kaduna South Local Government Authority in collaboration with Kaduna State Government must acquire information on current and potential environmental problems – on such topics as local and state carrying capacity, a range of population projections, urbanisation, migration, poverty, land and water use, food production capacity, resource and energy consumption, and the impact of government policies on all these matters.

5.2.3 PUBLIC SUPPORT

Public and key professionals such as planners, economist, geographers and health workers need to understand the implications of current environmental and population trends and to develop a consensus on appropriate actions. Without this backing it is difficult for political leaders to support long term strategies that may entail higher cost and changes in patters of consumption. The mass media, community leaders, schools, and out of school programmes can help build public understanding and support.

5.2.3 PROGRAMME IMPLEMENTATION

A wide range of programmes addressing environmental and population problems is urgently needed. Major environmental actions include: **preserving arable land, forest, water supplies, and riverine edges;**

reducing pollution by curbing factories emissions and promoting better sanitation; conserving energy; introducing less pollution, more efficient technologies; removing subsidies that distort market prices and encourage short-term use at the cost of future productivity; using economic incentives to reduce pollution and resource depletion, and assisting vulnerable settlements.

In addition the local government authority need to forge partnership with key groups.

- **Business** – Industrial pollution could be greatly reduced by use of up to date technologies and re-cycling, treatment and proper disposal, of waste.
- **Communal Groups** – Ultimately, solutions to environmental and pollution problems depend on myriad individual actions. At the local level small groups can do much to preserve their environment and improve living standards. Communities must be involve in project planning and implementation.
- **Women** – Since women are often the food producers, water carriers, and fuel gathers, they play a central role in environmental matters. They should be equal partner with men in development and environmental programmes and should have access to education, paid work, land, and credit facilities.
- **Non Governmental Organisation** – Private agencies have been at the fore-front of the environmental movement, advocating policy

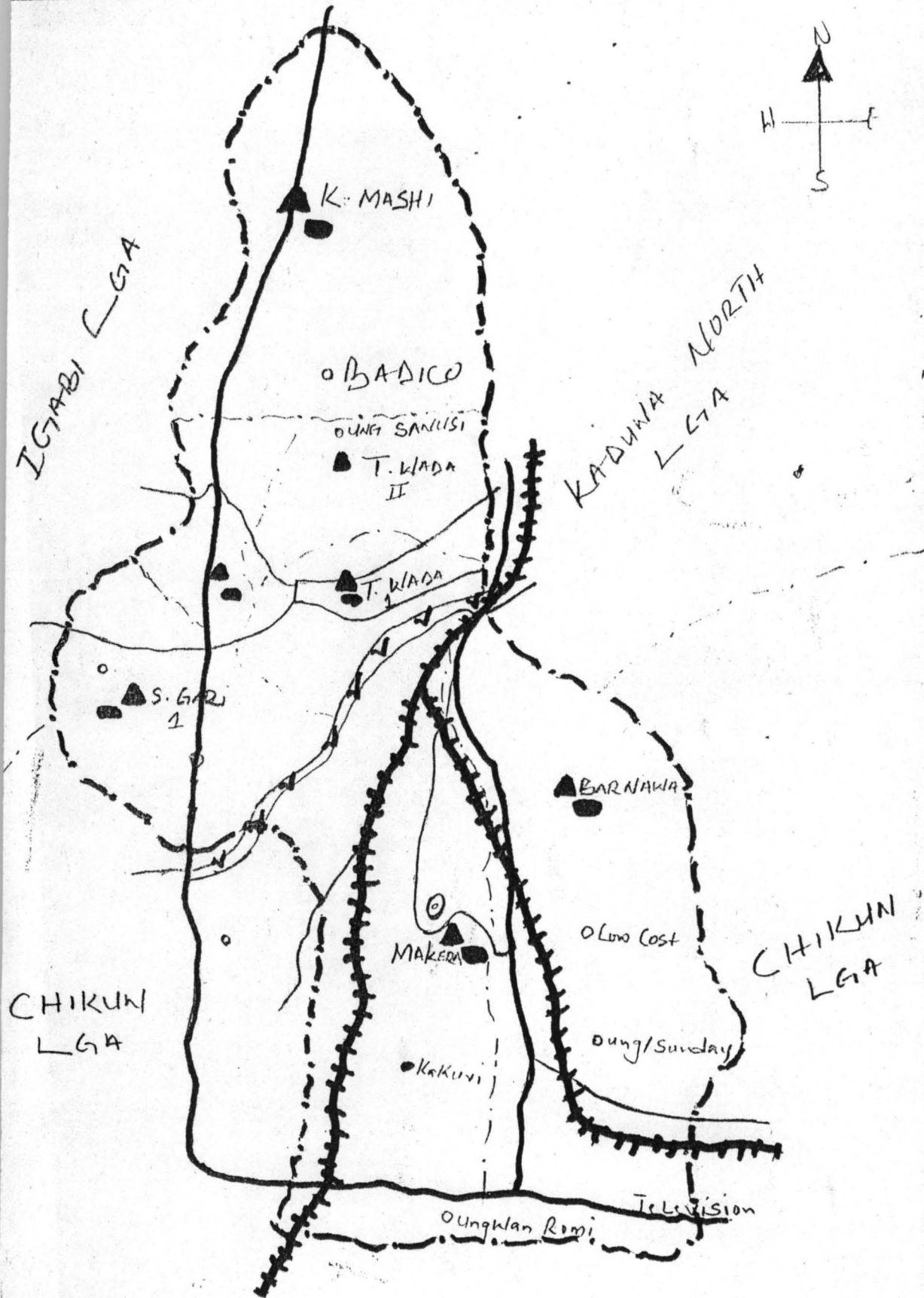
changes, educating the public, initiating various community projects, organising coalitions, conducting research and shearing information. Their expertise and dynamism must be sought by the local government.

The most effective action to address population issue is to expand and improve family planning programmes in the local MCH/FP/Clinics to reach all. This is to make family planning available to all who want it and supporting women who use family planning so that they can choose the number and timing of births, sound programs such as encouraging later marriage and discouraging promiscuity among unmarried women can open up opportunities for more education, work, reduces family size and lengthens the time between generation and in turn reduce the pressure of population on environment.

BIBLIOGRAPHY

1. **ABISSATH, MK.** – The Effects of Population Growth in Developing Nations.
2. **ADEGBOLA, O.** – The impact of urbanisation and Industrialisation on health conditions. The case of Nigeria world health statistics quarterly 1987.
3. **AGARWAL, A., KIMONDON, MORENO, G, AND TINKERS.** – Water Sanitation, Health for all? London International Institute for Environment and Development 1981.
4. The essentials of contraceptive technology, a hand book on Family Planning, John Hopkens Information Programme 1998.
5. **ALLEN, J. C. & BARNES D. F.** – The Cause of Deforestation in Developing Countries. Annals of the Association of American Geographers 1985.
6. **BARDER, B.** – Burning the Third World last Tree. Washington Post, December 1990 Pg. 2.
7. **BARNES, D. F.** – Population Growth Wood Fuels, and Resource Problems in Sub-saharan Africa. World Bank Energy Series Paper No. 26.
8. **BARTONE, C.** – Towards a Healthier Urban Environment, June 1990.
9. **BILLS BORROW, R. E.** – Population Pressure and Agricultural Development in Developing Countries 1987.

KADUNA SOUTH



LEGENDS

Railway Line	— (hatched line)
Local Govt Headquarters	□
Districts Headquarters	△
Health Centers	○