THE ENVIRONMENT: CHALLENGES OF INDUSTRIALISATION AND URBANIZATION ON LAND USE

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Abstract

Industrialization and urbanization have both greatly led to rapid population growth. Rapid population growth has placed incredible stress on earth's resources. In the last 50 years, cropland has been reduced by 13 percent and pasture by 40 percent. The population trend (dynamics) is affected by birth rate, death rate, fertility rate, migration, availability of social infrastructures and increase economic activities. The study shows thai (lie population trend in the western world to be counter-urbanization at the rate of-32.8 % on an average, while the trend for developing countries is urbanization at the rate of 44.5 %. The results and effects of this in the developing countries of the world are: land degradation, pollution deforestation, soil erosion, desertification, biodiversity threats and increase in the hazard due to an increase in the burning of fossil-based fuel.

Introduction

The environment is the sum of all features and conditions surrounding an organism that may influence it. An individual's physical environment encompasses rocks and soil, air and water, such factors as light and temperature and other organisms present (Montgomery, 2000).

Industrialization has to do with all advances man has achieved in the field of science and engineering that have led to the improve and increase in the production of goods and services and also have provided job opportunities. Industrialization has led to increase and concentration of people in a particular geographical region, and the presence of such industries has improved social and economic activities and facilities in such regions (areas). These improved areas with good social and economic facilities are called urban areas or centers.

Urbanization is defined as an increase in the population or proportion of a country's population living in urban areas (Badcock, 2002).

Urban life muddles through the pace of history. When this pace accelerates cities- and their people- become confused, spaces turn threatening and meaning escapes, from experience in such disconcerting yet magnificent time, knowledge becomes the only source to restore meaning (Castells, 1994).

Land is the foundation of all forms of human activity; from it we obtain the food we eat, the shelter we need, the space to work, and tourism to relax.

Land is the habitat of man and its wide use is crucial for the economic, social, and environmental advancement of countries indeed for human survival (Dale and Me Laughlin, 1990). The truth is that man cannot function on earth without land, it is the land that habours the gold, copper, iron and other solid minerals even coal that has changed humanity over the ages from primitive lifestyle to what we have today.

The Trend

For the first several million years, the number of humans on earth was modest, and their impact on the environment was local in scope. But particularly, since the industrial revolution in the eighteenth century, the exponential growth of the human population has been dramatic. Modern mechanized agricultural methods and improved medical care have contributed greatly to the growth rate(Mader, 1998).

Industrialization and urbanization are twins in the sense that whenever there is industrialization whether in manufacturing, mining, agricultural activities etc. there is always movement of people into such area.

Industrial revolution of Europe in the nineteenth century set the pace for industrialization. Subsequently, this led to the concentration of people in such centers or areas Not only will

urbanization continue into the foreseeable future; the character of settlement distribution is changing on a global scale (United Nations, 1996).
This especially is true of the population of the third world countries that is growing at such an unprecedented rates.

Table 1: Actual (1950, **1994) and projected** (2015) **Population of the IS Largest Cities in the World**

S/N	1950		1994		2015	
1	New York	12.3	Tokyo	26.5	Tokyo	28.7
2	London	8.7	New York	36.3	Bombay	27.4
3	Tokyo	6.9	Sao Paulo	16.1	Lagos	24.4
4	Paris	5.4	Mexico city	15.5	Shanghai	23.4
5	Moscow	5.4	Shanghai	14.7	Jakarta	2 1 .2
6	Shanghai	5.3	Bombay	14.5	Sao Paulo	20.8
7	Essen	5.3	Los Angeles	12.2	Karachi	20.6
8	Buenos Aires	5.0	Beijing	12.0	Beijing	19.0
9	Chicago	4.9	Calcutta	11.5	Dhaka	19.0
10	Calcutta	4.4	Seoul	11.5	Mexico city	18.8
11	Osaka	4.1	Jakarta	1 1 .0	New York	17.6
12	Los Angeles	4.0	Buenos Aires	10.9	Calcutta	17.6
13	Beijing	3.9	Osaka	10	Delhi	17.6
14	Milan	3.6		10.6	Tianjin	17.0
15	Berlin	3.3	Tianjin	10.4	Metro Manila	14.7
			Rio de Janeiro	10.4		

(Source: Badcock, 2002)

Millions of people residing in rural locations actually have jobs that they commute to urban areas. In rural Europe and North America, these households generally have access to the same range of homes and services available in the cities. They are some of the people who have left, the largest cities in the North for lifestyle related reasons (Badcock, 2002). There have been two trends in the recent times:-

- one is urbanization which is obvious in the developing countries of the world and
- two, on the other hand, is counter-urbanization which means preference of the rural areas (dwelling or living) to urban centers this trend is being experienced in the developed countries of the world.

Table 2: World's Population (Urbanization and Counter-urbanization) 1950, 1990

	Approximate proportion of the world's population *Living in urban areas*		*Living in*	
	1990		1950	1990
1950	8.8		1.8	7.5
Africa	9.2		21.2	13.1
North America	9.7		6.7	11.1
South America				
Central America/	4.2		2.2	3.5
Caribbean	44.5		28.6	45.6
Asia	22.8		38.0	17.9
Europe	0.8		1.6	1.3
Oceania				

(Source: United Nations 1996).

Population Dynamics

The world's human population was 5,7 billion persons in 1995 (Nebel and Wright, 1996). Currently the world population is 6.5 billion; it is growing by another 76 million per year. According to

the United Nations (UN) the world will add another 2.6 billion people by 2050. The global population growth of nearly 50 percent in the next 45 years will challenge policy makers around the world as never before. No issue will test the mettle of leaders more than accommodating and feeding an extra 2.6 billion people by 2050.

Population in major industrial nations is expected to decline over the next few decades; but the population of the 50 least developed countries is projected to more than double by the same year. According to UN, the population is expected to triple in Afghanistan, Mali, Nigeria, Uganda, and Burkina Faso (WOA, 2005).

To understand population issues, we must understand certain basic principles of population dynamics. Population dynamics is a function of:-

- Growth rate
- Birth rate
- Death rate
- Fertility rate
- Migration
- Economic activities
- Social infrastructures

Some of the Reasons for Urbanizations are

- Mining activities
- Manufacturing activities
- Religious institution/activities
- Academic institution/activities
- Administrative activities
- Port activities
- Merchant activities
- Agricultural activities

The Effects of Industrialization and Urbanization

The influx of people into an area stretches the available resources and amenities. The effects include the following:-

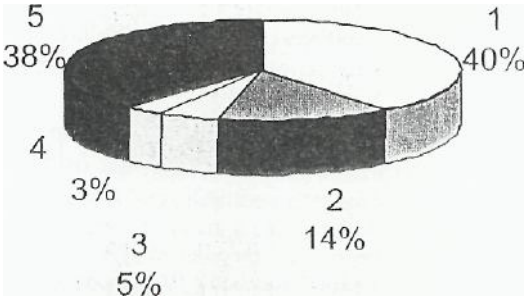
- Soil/land pollution
- Air pollution
- Water pollution
- Acid rain
- Annoyance and psychological problems
- Mortality and morbidity problems

The Challenges and Impacts of Industrialization and Urbanization on Land use

High-consumption technological societies also tend to generate copious quantities of wastes. In the US alone, each person generates, on the average, more than 1.8 kilograms (about 4 pounds) of garbage everyday (Montgomery, 2000).

Rapid population growth has placed incredible stress on earth's resources. In the last 50 years, cropland has reduced by 13 percent and pasture by 40 percent with more mouths to feed and fewer acres of productive land, food production lags behind population growth (WOA, 2005).

Fig 1: Principal sources of solid wastes



D.< animals
crops
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D3 municipalities
D4 industry
• 5
_ mineral ext/processing

(Source: Fergusson, 1992).

1. Hazards of the Increase in Fossil Fuel Usage: The increase in the energy demand has led to unprecedented use in fossil fuel. This has affected the land use directly and indirectly:

- Acidity of land reducing its use from acid rains
- Leaching of soil nutrients

2. Soil Erosion: Soil erosion is caused by wind, rain, snow etc. Wind and rain carry away about 25 billion tons of topsoil yearly worldwide. If this rate continues the earth will lose practically all its topsoil by the middle of the century.

3. Dumpsites: Use of land as dumpsites for refuse and effluent discharges, industrial chemicals and agricultural chemical deposition renders land unfit for use.

4. Desertification Threat: It has been particularly evident along the southern end of the Sahara desert in Africa, where it is estimated that 615,937 square kilometers of once-productive grazing land has become desert in the last 50 years. This is also true for other parts of the globe.

5. Biodiversity Threat: This has led to the loss of valuable plants, which are important in pharmacology. To appreciate this one has to study Table 2.
Table 2: Some pharmaceutical derived from plants and fungi

Drug	Use	**Plant source**
Bromelain	Control tissue inflammation	Pineapple (Annas comostis)
Caffeine	Stimulant, central nervous system	Tea (Camelia sinensis)
Cocaine	Local anesthetics	Coca (Erythroxylon coca)
Codeine, Morphine	Analgerics	Opium poppy (Papaver somniferum)
Digitoxin	Cardiac stimulant	Foxgloves (Digitalis spp)
Diosgenin	Female contraceptive Parkinson's disease suppressant Male contraceptive Anti cancer	Wild yam (Dioscorea spp)
L-Dopa	(topical) General antibiotic	Velvet bean (Mucuna **deeringiana)**
Gossypol	Anti malarial	Cotton (Gossypium spp)
Monocrotaline		Crotalaria sessiliflora
Penicillin	Reduces high blood pressure	Penicillium fungi (esp. PenicrIlium chrysogenum)
Quinine	Sedative	Yellow cinchona (Cinchona legerriana)
Reserpine	Active component of curare: surgical muscle relaxant	Indian snakeroot (Rauvolfia serpcnlina)
Seopolamine	Anti cancer esp. childhood leukemia	Tornapple (Datura metel)
D-tubocurarine		Chondrodendon and Strychnos species
Vinblasline, Vincrisliue		Madagascar periwinkle (Caiharan thus roseus)

(Blackmore and Reddish, 2003)

6. Deforestation Threat: Mining activities, agricultural activities, furniture making with respect to-logging of woods has greatly depleted the once luxuriant rain forests and the Scandinavian forest of pines.

7. Development: Development and clearing new and virgin land to meet accommodation, industrial-sites, road, rail constructions and other building projects etc, have limited the availability of land.

8. Health: Toxicants and poisonous substances, which are by-products from industries etc., have" affected and endangered the earth. A lot of mortality and morbidity have been attributed to some of these chemicals and radioactive elements.

Conclusion

Our activities are now beginning to have fundamental, systematic effects upon the entire life-support apparatus of the planet... the earth is crying (Goldfarb, 2000).

The land as a fixed resource is greatly in demand, the challenges of industrialization and urbanization have greatly reduced the available land due to the above stated effects whether directly or indirectly and this calls for concrete efforts to sec how the effects and impact can be reduced or controlled or even better eradicated.

This is the challenge facing the governments of the world. The environmental issues include: how to deal with global warming, ozone layer depletion. This is causing a lot of heated debate between European and the American governments, the developed and the developing world.

Recommendations

The following recommendations are made fit:

- Afforestation to reduce desertification
- Reducing CO_2 emissions
- Relocating industrial areas from residential areas
- Improving and increasing the use of renewable energy sources
- Environmental protection and management should be a priority.

- Instilling environmental consciousness into individuals, communities, operators and
  supervisors of industries through training, programmes aimed at reducing environmental pollution.
- Educating the public on waste and indiscriminate fossil fuel burning effects.
- Mining and mineral extraction activities should be controlled.
- Laws and edicts to control illegal dumping should be promulgated and enforced.
- Industries should be made to pay, control and treat their wastes.
- Development and upgrading of rural communities.

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