



University of Colombo



**POPULATION ISSUES
(DMG 1217)**

Study Guide

Faculty of Arts
Department of Demography

**POPULATION ISSUES
(DMG 1217)**

**UNIVERSITY OF COLOMBO
FACULTY OF ARTS**

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CHAPTER FIVE

POPULATION DISTRIBUTION, URBANIZATION AND MIGRATION

Manori Weeratunga

Learning outcomes:

The students are expected to acquire the following skills:

- *Identify population distribution, urbanization and migration as origins of population issues*
- *Evaluate population distribution, urbanization and migration in developed and developing areas of the world*
- *Analyze the factors affecting uneven population distribution in developed and developing countries*
- *Examine the situation on Population distribution, migration and urbanization in Sri Lanka*

5.1 Introduction

The main objective of this chapter is to examine population distribution, urbanization and migration as an issue in Sri Lanka, and in other countries in the world. With industrial development, many key urban areas have been established. As a result, people have a tendency to migrate to places with more facilities. Therefore, population density in some places has increased more than in other places. But the space and resources for people in those areas have not increased, even though the population has increased rapidly. As a result of uneven population distribution, some places in the world experience major issues related to population. There is a direct need for policy makers to focus attention and formulate effective policies to mitigate problems related to uneven population distribution and take remedial action. This chapter examines the relationships between population distribution, urbanization and migration in the global situation and the Sri Lankan scenario.

5.2 Relationship between Population Distribution, Urbanization and Migration

Human beings are unevenly distributed all over the world. There would be no history in the world if there was no migration between countries. People migrate from country to country for different purposes. Even when we retrace the history of the world, there are countries created from diverse migratory populations. For example, between 1851 and 1861 the population of Australia almost trebled, largely owing to an influx of migrants (Lucas & Young 1994).

At present, the migration stream has changed with industrial development and some countries can be considered as developed than other countries. Therefore, people migrate to places where they can have a more comfortable life compared to the places where they currently live.

Even within a country the population is not uniformly distributed over the land area. With industrial development, the urbanization process of the world is rapid. Therefore, the population distribution streams are more concentrated in the urbanized areas. Migration streams mainly concentrate on these areas.

Even in Sri Lanka some districts are very densely populated, while others are not. This uneven distribution is partly due to geographical factors such as climate, terrain, soils, natural resources etc. But the population concentration in some places is higher than other places as a result of the migration streams focussing on urbanized places. The population problem of a country can be studied after taking into consideration the extent of migration of people from one region to the other in the same country, and from the country to other countries of the world; both internal and external migration.

According to Donald J. Bouge "the field of population distribution may be defined as the study of a nation's or a community's population in terms of an area, sub-divisions (such as regions, states, and socio-economic areas), urban rural residence and census tracts. This includes the study of population residing in the smaller areas and units, as well as the study of total numbers of inhabitants". (Bouge, 1968). Population growth and different patterns of migration accelerating the urbanization process of the world has contributed to the uneven distribution of population over the country.

5.3 Concepts and Definitions

It is important to understand some of the basic concepts of population distribution, migration and urbanization.

Population Distribution - The multilingual Demography Dictionary compiled by the United Nations explains that "each population lives in a given area or territory and a study of the geographical or spatial distribution deals with the way in which they are distributed over the territory".

Population re-distribution - When changes take place in the existing population distribution, the resulting changed pattern is referred to as population re-distribution.

Percentage of population - One measure of population distribution is its percentage in a particular area, in relation to the population of a larger area in which that particular area is included.

Density of Population - Population density refers to the population of a particular area per square mile or square kilometer.

Urban Place - The concept of an urban place embraces the area demarcated as urban, regardless of boundary determining criteria. Some of the criteria used to determine the urban status of an area is the size of the population, density of the population, predominant economic activity, administrative functions or structure.

Urban Agglomeration - The United Nations has explained urban agglomeration as follows; "A large locality of a country (i.e. city or a town) is often a part of an urban agglomeration which comprises of the city or town proper and also the sub urban fringe or thickly settled territory lying outside of, but adjacent to its boundaries. The urban agglomeration is, therefore, not identical with the locality, but is an additional geographic unit, which includes more than one locality.

Urban Population - The term "Urban population" is used to refer to that population which lives in urban areas, whatever the criteria for "urban" adopted.

Urbanization - This term refers to changes in the proportion of population which is urban. It is important to distinguish between the terms "urbanization" and "urban population growth".

Migration - Migration is a form of geographical or spatial mobility involving a change of usual residence between clearly defined geographic units (United Nations 1956).

Internal migration - Internal Migration is the migration of persons within a country. When the people of one country migrate from one place to another, without crossing the boundary of the State itself, it is called internal migration. (Hans Raj, 2006).

5.4 Population Distribution in Developed and Developing countries

The distribution of population in developed countries and developing countries have taken place due to various reasons. Population distributions in countries are classified according to the development status of the country and the major regions of the world. Regions also can be identified as developed regions and developing regions.

Table 5.1 World Urbanization 1950-2030: Urban Population in Millions and Percentage by Region

Region	1950	2000	2030
World	750 28%	2,845 47%	4,889 60%
More Developed Regions	446 55%	903 76%	1,010 84%
Less Developed Regions	304 18%	1,942 40%	3,880 56%

Source: UN 2001

According to the above table, the urban population in the world can be categorized into two regions namely more developed and less developed. It shows the population distribution from 1950-2030. It clearly shows that the majority of the world's population is distributed in urban areas. It will be 60% by the year 2030. In the year 2000, half of the population was living in urban areas. But here the problem is the population density in urban areas. Population density in urban areas was higher than that of other areas. When considering the developed countries, there were higher proportions of urban population compared to the rural population. In 2000 it was around 76%. The population estimates for the year 2030 shows an increase up to 84%. Then the majority of the population in developed countries will be living in urban places.

Table 5.2 World Urbanization 1950-2030: Urban Population in Millions and Percentage by Major Areas

Region	1950	2000	2030
Africa	32 15%	297 38%	3,880 56%
Asia	244 17%	1,352 37%	2,605 53%
Europe	286 52%	545 71%	571 80%
Latin America and Caribbean	69 41%	391 84%	604 83%
North America	110 64%	239 77%	314 84%
Oceania	8 62%	21 70%	31 74%

Source: UN 2001

The above Table shows the world urban population according to the major areas of the world. Europe, Latin America and the Caribbean, North America and Oceania have recorded higher proportions of urban population 71%, 84%, 77% and 70% respectively in the year 2000. From

those areas, the three areas Europe, North America and Oceania are the most developed regions of the world. Asia and Africa have slow urban development compared to the developed areas of the world.

5.5 Population Distribution, Urbanization and Migration in Sri Lanka

Understanding the distribution of population in any country is very useful for its planning and development processes. If the country has not planned the population distribution in a proper manner it will cause the emergence of a series of problems in the country. Sri Lanka too has formulated policies for the re-distribution of population to mitigate the population pressure in some places. Especially in Sri Lanka, the Western Province has a higher population density, compared to other provinces in the country. When people are concentrated in places where there are more facilities, such places will have an increased population density. When population density increases, it will impose major challenges because of limited space and people need more resources for their survival. In Sri Lanka also there is a limited land area used for various purposes such as agriculture, manufacturing, residencies, sports etc. Such land usage influences and is also influenced by the concentration of population. If the population distribution is related to the geographical distribution of natural and other resources, some indication could be obtained of the extent of over-population or under- population. Such knowledge could help in the formulation of policies for the re-distribution of population within the country (Census 1971).

Urban and Rural Population Distribution

Table 5.3: Urban and Rural Population of Sri Lanka at the census 1901 to 2001

Census Year	Total Population	Urban Population	Rural Population	Percent Urban	Percent Rural
1901	3,565,954	418,969	3,146,985	11.8	88.2
1911	4,106,350	542,945	3,563,405	13.2	86.8
1921	4,498,605	637,870	3,860,735	14.2	85.8
1931	5,306,871	737,272	4,569,599	13.9	86.1
1946	6,657,339	1,032,793	5,624,546	15.5	84.5
1953	8,097,895	1,239,133	6,858,762	15.3	80.7
1963	10,582,064	2,016,285	8,565,779	19.1	80.9
1971	12,711,064	2,842,077	9,869,066	22.4	77.6
1981	14,846,750	3,192,489	11,654,261	21.5	78.5
2001	16,929,689	2,793,398	14,136,291	16.5	83.5

Source: Department of Census and Statistics

As shown in the above Table, the total population of the country increased by a little over six times, the urban population increased more than tenfold during 110 years from 1871-1981. The proportion of urban population, which is the level of urbanization, increased with fluctuations from 10.8% in 1871 to 21.5% in 1981. In 2001, it reduced to 16.5% with changes of the definition for urban places

This is attributed to a process of vertical growth by natural increase and net migration. There is also a horizontal growth caused by annexation, whereby the land area, along with its population is added to already existing urban areas. In Sri Lanka, horizontal growth had always been a significant element in the process of urbanization (Punarajan 1985).

5.6 Regional Patterns of Urbanization

It is important to study the regional patterns of urbanization. This is very useful to understand the regional differences in population distribution and will help policy makers to formulate policies and programmes according to the regional patterns.

Table 5.4: Percentage distribution of the Urban Population by District and Province 1946-2001

Province/District	Census Year					
	1946	1953	1963	1971	1981	2001
Western	33.5	34.4	40.5	48.1	46.6	-
Colombo	40.7	41.5	46.4	55.2	74.4	54.7
Gampaha	-	-	-	-	27.9	14.6
Kalutara	11.1	11.1	20.0	21.9	21.5	10.6
Central	8.9	9.2	10.2	10.6	11.1	-
Kandy	10.7	10.8	11.4	12.4	13.8	12.3
Matale	9.0	8.6	11.5	11.9	10.7	8.2
Nuwara Eliya	4.0	5.5	6.2	6.1	6.2	6.1
Southern	10.9	10.4	14.9	15.3	14.9	-
Galle	12.8	12.7	20.3	21.1	20.4	11.2
Matara	9.9	9.8	11.7	11.3	11.1	8.5
Hambantota	7.2	5.8	8.1	9.8	9.8	4.1
Northern	13.0	15.7	23.1	30.4	28.0	-
Jaffna	14.7	15.7	24.6	33.3	32.6	-
Mannar	-	-	15.0	14.3	13.1	-
Vauniya	-	-	16.3	21.7	19.4	-
Mullaitivu	-	-	-	-	-	-
Eastern	16.3	12.4	20.6	24.2	22.2	-
Batticaloa	6.4	6.4	19.1	27.1	24.0	-
Ampara	-	-	-	11.7	13.7	-
Trincomalee	42.8	31.4	25.1	38.4	32.3	-
North-Central	8.8	8.0	9.9	10.0	7.3	-
Anuradhapura	8.8	8.0	9.9	10.0	7.0	7.6
Polonnaruwa	-	-	-	10.0	7.8	-
North-Western	4.9	4.9	5.9	6.7	6.2	-
Kurunegla	3.2	3.3	3.5	4.1	3.6	2.4
Puttalam	9.2	9.4	12.6	13.9	12.5	9.2
Uva	4.4	4.7	7.0	7.5	6.2	-
Badulla	4.4	4.7	7.0	9.0	8.0	6.8

Moneragala	-	-	-	2.7	2.2	-
Sagaragamuwa	2.6	2.8	3.9	7.3	7.6	-
Rathnapura	4.2	4.5	4.8	7.6	7.4	5.8
Kegalle	1.2	1.2	3.0	7.0	7.7	2.2
Sri Lanka	15.4	15.3	19.1	22.4	21.5	14.57

Source: United Nations, Country Monograph No. 4, Table 50, p.69
 Department of Census and Statistics, general Report, Vol 3 Table 6.6, p75
 Punarajan,P., Urbanization and development Strategies in Sri Lanka, Population
 Redistribution and Development in South Asia, Table 11.4,p.176.

According to the above Table, the highest urban share was found in Western province from 1946 to 2001. This was due to the fact that Colombo being the most urbanized district in the country is in the Western province. There was a favourable share of urban population in the Northern Province next to the Western Province.

With regard to districts, the Colombo district has the highest percentage of urban population and Trincomalee has recorded the next highest.

Table 5.6: Population density by district 1946- 2001

District	1946	1953	1963	1971	1981	2001
Sri Lanka	103	125	165	196	230	299
Colombo	687	338	1,089	2,297	2,586	3,305
Gampaha	-	-	-	839	870	1,541
Kalutara	286	328	398	454	602	673
Kandy	304	359	446	508	550	664
Matale	68	87	130	158	179	227
Nueara Eliya	221	268	328	377	351	410
Galle	275	314	388	439	498	613
Matara	286	336	418	470	502	599
Hambantota	58	74	107	131	164	210
Jaffna	166	193	248	336	845	528
Mannar	13	18	25	37	53	81
Vauniya	6	9	19	23	48	81
Mullativu	-	-	-	22	31	50

Batticaloa	-	-	81	104	123	186
Ampara	29	38	72	60	90	140
Trincomalee	28	31	54	72	97	135
Kurunegala	103	133	181	215	252	314
Puttalam	18	25	103	127	164	245
Anuradhapura	-	-	40	55	84	112
Polonnaruwa	14	22	34	48	81	117
Badulla	-	-	188	218	229	274
Moneragala	45	56	19	35	49	72
Rathnapura	107	132	171	208	245	312
Kegalle	245	287	352	387	405	463

Source: Department of Census and Statistics

The above table shows the population density in districts. The level of urbanization is not always directly related to the density of population. Colombo, which is the most urbanized district, has the highest density; but the density is low in Trincomalee which has the second highest urban share.

5.7 Factors responsible for urban-rural population distribution

Population distribution can occur as a result of migration from urban areas to rural areas and from rural areas to urban areas. The process of urbanization started with the Industrial Revolution because prior to that there was concentration of population on agricultural land. In fact, urban people depended on rural areas for their food supplies and other necessities of life. Gradually a trend towards urbanization commenced when cities began to grow as trade and commerce centers on the one hand and political activity on the other. (Hans Raj, 2006). The whole process of urbanization became a risk with accelerated industrial activity everywhere. England was the first country to witness the Industrial revolution, with several economic opportunities becoming available. People in large numbers began to move from the rural to urban areas. This migration resulted in the redistribution of population (Hans Raj, 2006).

In any country, urbanization can occur as a result of many factors such as internal rural to urban migration, natural population increase, international migration and reclassification of places from rural to urban or urban to rural or a contamination of this process (Ukwattha, 2000).

Historically, Sri Lanka has developed as a typical colonial economy based on the export of primary products such as tea, rubber and coconut and other utility items. The settlement pattern and the infrastructure of the country concentrated mainly in the wet zone, embracing the South western coastal belt hill country areas occupied by plantation agriculture. The other populated areas had a subsistence economy. During this period, urbanization in Sri Lanka was a function of trade and commerce.

Thereafter, urban growth was concentrated in the Colombo District. Road and railway development helped in the growth of several towns of varying sizes and functional importance. In order to maintain law and order and administrative control, provincial administrative structures were established covering all parts of the country. Subsequently, with the development of irrigation facilities and agricultural production, mainly in the dry zone of the country, new settlements emerged with limited infrastructure and service facilities. Therefore, historically, urbanization was associated with these factors, but not with industrialization as in the developed countries. (Ukwatte, 2000)

5.8 Issues emerged from the uneven population distribution

With the uneven distribution of population, several problems will emerge in urban places such as higher population density, housing problems (especially in developing countries slums and shanties will be developed), sanitation problems, health hazards, environmental threats, problems of garbage disposal, higher cost of living, unemployment etc. This will result in creating bad health conditions for the people. There are about 10 mega cities in the world named according to the number of people living in that area. The mega cities in developing countries (such as India and China) are facing serious challenges with regard to higher population density. There are two different types of people; rich and poor. The poor are

adversely affected by limited access to scarce resources and insufficient and inadequate facilities. Health, environmental, food, sanitation, shelter, social problems have emerged as a result of accelerated and unplanned industrialization and urbanization in mega industrial cities across the world.

5.9 Solutions for Uneven population distribution

Governments should take priority action to mitigate issues related to uneven population distribution since it will be a formidable future challenge adversely affecting the economic progress of a country. Population policies should focus on the redistribution of population.

- Redistribution of population by policy formulation
- Development of facilities in rural areas
- Development of resettlements with facilities
- Dissemination of industrial development to rural areas
- Uplifting social and economic condition of rural people
- Proper urban planning

5.10 Key Words

Migrant

Percentage Urban

Population Concentration

Population Distribution

Population Redistribution

Urban Agglomeration

Urbanization

Migration

Population Change

Population density

Population growth

Spatial Distribution

Urban Population

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Spatial Distribution

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5.11 Model Questions

1. What are the factors responsible for urban rural population distribution? Illustrate your answer by citing examples from developed and developing countries in the world.
2. The urbanization process is responsible for changing the internal migration patterns in a country. Explain your answer by citing examples from Sri Lanka.
3. Some countries have a higher population density in some places than other places. What are your suggestions for overcoming problems arising from higher population density? Illustrate your answer by citing examples from developed and developing countries.

5.12 Recommended Readings

Donald J. Bogue (1968), *Principles of Demography*, John Wiley & Sons Inc., United States.

Lucas D. and et. al. (1980), *Beginning Population Studies*, Australian National University, Canberra.

Punarajan, P. (1985), Urbanization and Development Strategies in Sri Lanka, *Population Redistribution and Development in South Asia*, pp 169-184.

United Nations (1980), Migration, urbanization and development in Sri Lanka, *Comparative Study on Migration, Urbanization and Development in the ESCAP Region*, Country Report, New York.

CHAPTER SIX POPULATION AND ENVIRONMENT

Manori Weeratunga

Learning outcomes:

With the reading of this chapter it is expected that the student will acquire the following skills.

- *Identify environment as a major population issue*
- *Evaluate these population issues of developed, developing and major areas of the world in the regional national and global context.*
- *Analyze different types of environmental issues and causes for such issues*
- *Gain a knowledge on the proposed solutions to mitigate environmental effects on population*

6.1 Introduction

This chapter in brief outlines a guide to study the following aspects with regard to population and environment

Population and environment as a current issue

Magnitude of the issue

Environmental problems

Solution to these problems for a better environment

6.2 Relationship between Population and Environment

The imbalance between population growth and the need for natural resources for the survival of human beings is a major issue in the world today. Developed countries have reduced their growth of population, but developing countries are still encountering great humongous challenges pertaining to population growth. Although population growth has accelerated, the

global space and natural resources will not increase any further. Instead, the resources will gradually deplete with accelerated growth of population. Unfortunately, people are using natural resources in an adhoc and detrimental manner leading to environmental degradation.

The long debate over the impact of population growth on the environment is gradually converging on a middle ground where most scientists can agree to a consensus on which they can act. Sound population policies can brighten environmental prospects while improving life especially for women and children, enhancing economic development and contributing to a more secure world.

Changes in population size, age and distribution affect issues ranging from food security to climate change. Population variables interact with consumption patterns, technologies, and political and economic structures to influence environmental change. This interaction helps to explain why environmental conditions can deteriorate even as the growth of population slows.

Human population growth can be identified as the major threat to the world's environment. Each person requires resources such as energy, space and resources to survive, which results in environmental losses. For example, in 1881 the total population in Sri Lanka was 2.8 million. Forest coverage in the same year was 84%. In 1931, the total population was 5.3 million and forest coverage was 57%. In 1991, the total population was 17.2 million and forest coverage was 25%. These statistics clearly show that the gradual growth of population has contributed towards reduced forest coverage. This is a major developmental and social challenge, not only in Sri Lanka, but also globally.

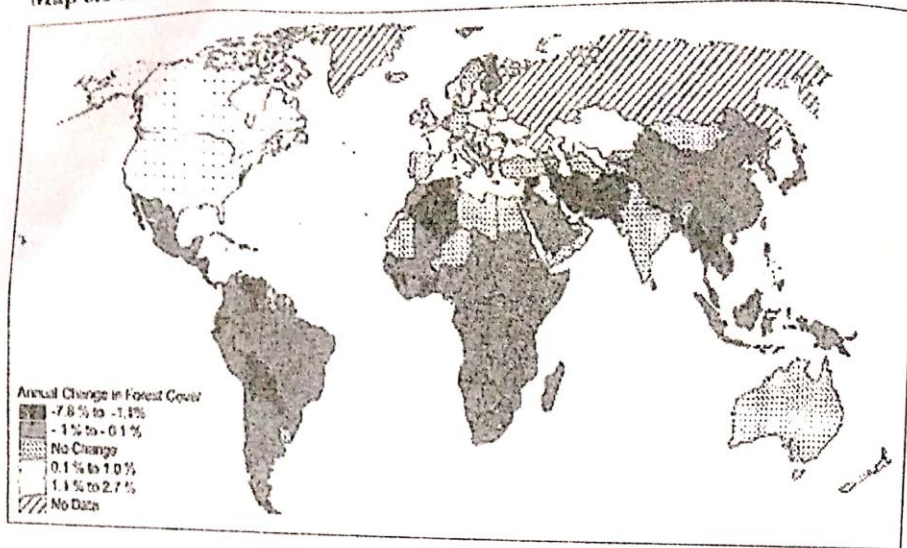
Asia	1411	2394	4030	4444	5266	6189
Europe	548	676	731	566	664	777
Latin America	168	325	572	641	769	914
Northern America	172	243	339	382	445	517
Oceania	13	21	34	42	49	56

Source: World Population Prospects, 2006, Vol. II, UN Publication

The above Table shows the population in developed, developing and major areas of the world. It clearly shows that developing countries and land area of the world contribute immensely to world population growth.

The 1987 report of the World Commission of Environment and development which introduced the concept of sustainable development observes "...rapidly growing population can increase the pressure on resources and slow any rise in living standards, thus sustainable development can only be pursued if population size and growth are in harmony with the changing productive potential of the ecosystem". Two years later the international forum on population in the Twenty First century adopted the Amsterdam declaration on a " Better Life for Future Generation", which acknowledges that, " population resources and environment are inextricably linked" and stress the commitment " to bring about a sustainable relationship between human numbers, resources and development". (United Nations 1996). Thus the popular belief that population growth impedes socio-economic development has gained a new dimension in the form of environment. And it is being said that there is a premium on slowing population growth with all due dispatch as a pre-eminent measure to safeguard the global environment. (UNFPA, 1991).

Map 6.1 Annual Change in Forest Cover



As a result of population growth, more people and higher incomes worldwide are multiplying humanity's adverse impacts on the environment and on natural resources essential to life. Action should be taken to control the population growth in the world. We need to limit our growth voluntarily and promote contraceptive use, before nature controls our population with famines, droughts and plagues. We have to always remember that the future of our children depend on us.

6.3 Theoretical views on Population and Environment

Throughout world history, numerous researchers have made their contribution to analyze and understand the effects of population growth on environmental, social and economic levels. The first modern writer who expressed his view on over population was Robert Malthus. In 1798 Malthus wrote "an essay on the principles of population". Malthus had different ideas as to what such an increase in population would bring. First, he believed that human fertility could increase human numbers beyond the land's capacity to sustain them. The crossing of this threshold came to be known as the Malthusian crunch. Technological advances in the past two centuries, such as fertilizer, irrigation, hybrid crops, and others have extended the number

of people the earth can feed. These advancements, which have enabled man to push back the limits placed on him by nature, have come to be known as the Malthusian shuffle.

Malthus also understood the geometric quality of population growth. Population growth is explained by a growth rate, symbolized by the percentage of the population growth. The geometric factor in a growing base. For example, two percent of hundred is two, while two percent of six billion is one hundred and twenty million (Malthus, 1798).

Eventually, Malthus wrote that an increasing and growing number of people would use up the available resources. This became known as the Malthusian trap. Malthus wrote that it was inevitable that the human population would someday exceed those limits, and as a result the human population would be brought under control by vice and misery. As defined by Malthus, vice referred to human intervention, such as starvation and/or disease (Malthus 1798).

In 1968, Dr. Paul Ehrlich sounded the Malthusian horn to a new era with his book. "The population Bomb". Like the earlier work of Malthus, Ehrlich's book received a mixed reaction from the public. For some, it served as an alert to the growing problems brought on by the expanding population. Others criticized it as an improvable hypothesis generated by the new environmentalism movement. In the book, Dr. Ehrlich reasoned out that the future of an overpopulated earth was soon to be a reality, and that the future was grim. He prophesized great famines, resource wars, polluted oceans, the atmospheric green house effect, and the general degradation of the natural environment (Paul R. And Ehrlich Anne H., 1990).

The Ehrlichs open their book with a discussion of the technological advances of the late twentieth century that have allowed the population to grow in an unprecedented manner. They document the increased productivity brought about by the green revolution, and show that the productivity for this type of industrialized agriculture peaked in the mid-eighties. Since then, yields have fallen each year, while the population has continued to grow. They also explain how these types of farming practices, with their reliance on chemical fertilizers and mono cropping ideology, have resulted in a net reduction of topsoil by as much as half. Also, they discuss the effects of over fishing on fish stocks, whose tattered remains are at the brink of being unable to reproduce their numbers due to younger, pre-breeding age fish being targeted

as a result of the older fish having already been caught and sold (Paul. R. And Ehrlich Anne H., 1990).

Garrett Hardin wrote the book "Living within Limits". His theory is that throughout human history, man's trend of exploitation of the earth's resources has been to colonize, destroy, then move on. He makes a solid case for his theory, going so far as to introduce the plan of science to colonize the stars once we have plundered the earth. Explaining this idea using real numbers, he quickly exposes it as a ludicrous dream ungrounded in reality. Hardin blames the ignorance about population issues on innumeracy. Innumeracy, he explains, is the numerical equivalent of illiteracy. It is the inability to read and comprehend numbers. The evidence he states is clear. It is the interpretation, or lack of which constitutes the problem (Hardin, Garret, 1993).

6.4 Environmental Effects

With the growth of the population, human needs also grow rapidly. People need more food, more fuel, and more buildings...more of everything and more than ever before. This situation definitely has adverse impacts on the environment. It is our responsibility to protect the environment for the younger generation.

Over the past 50 years, humans have changed ecosystems more rapidly and extensively than in any comparable period of time in human history. Environmental effects all over the world are different in each country, depending on their available natural resources. Some countries have taken action to minimize environmental effects. But some countries are still having problems and should be taking action to minimize the effects on the environment. In general, environmental impact can be categorized as follows: deforestation, land degradation, air pollution, water Pollution, global warming, natural disasters, soil erosion, losses of wild animals and damaging ocean layer.

6.4.1.1 Deforestation

The world has lost nearly half its forested area in the past 8,000 years. The majority of that loss occurred in the 20th century when cultivated areas expanded rapidly and consumption of wood and paper increased dramatically (World Watch Institute 2005).

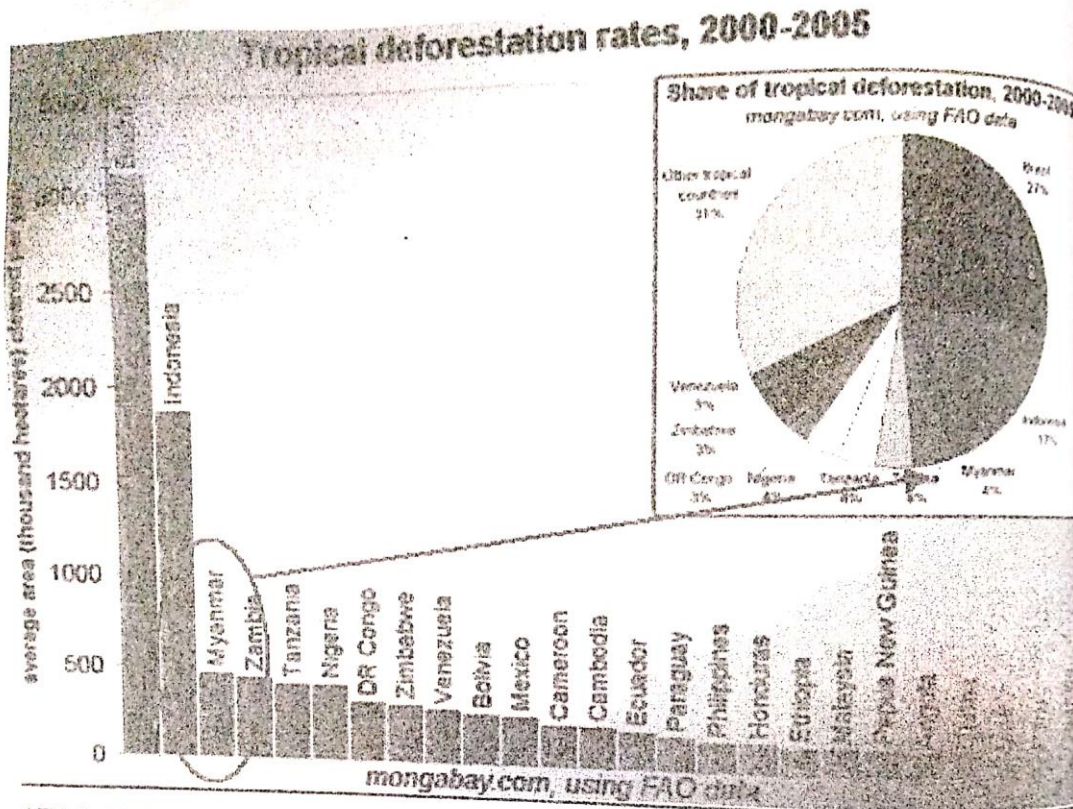
We are continuing to lose forests at the rate of some 112 million hectares each decade, an area twice the size of Kenya or France (AAAs Atlas of Population & Environment May 2001).

The destruction of forests especially in the developing countries is now considered as one of the serious environmental problems related to climate change and extinction of plant and animal species (Ehrlich & Ehrlich, 1990).



Jungle burned for agriculture in southern Mexico.

Map 6.2 Tropical deforestation rates from 2000-2005



(FAO, 2006)

Tropical deforestation rates from 2000-2005, ranked in descending order by the highest amount of average annual forest loss for 25 countries based on data from the U.N. Food and Agriculture Organization (FAO).

6.4.1. 2 Reasons for Deforestation

- Increasing demand for land: increasing number of landless people in the highland areas tend to move up the slope which involve the felling of trees.
- Expansion of agriculture into forest areas.
eg. In Sri Lanka the encroachments along the boundaries of forests accelerated at an alarming rate mainly for expansion of cultivation especially in the hill country.

- Clearing trees for chena cultivation (this is harmful to soil).
- Resettlement schemes where forestland cleared and disturbed is also a major contribution to tropical deforestation eg. Mahaweli Development Programme.
- Clear vast forest areas for Development of infrastructure facilities.
- Illicit falling of timber, a widespread offence in many forest areas.
- Population pressures contribute to deforestation by increasing demand for fuel wood, which is the major source of energy of households with low income.
- War situation in North and East (Sri Lanka).
- Demand for fire wood etc.

6.4.2 Land Degradation

Land area in any country cannot be extended, but population increases. As a result of growing population all over the world, lands are being destroyed rapidly since the number of people is much more than the world can handle. Soil erosion, siltation of water bodies, floods, landslides and loss of soil fertility can happen as a result. The Global Assessment of soil degradation sponsored by the UNEP shows that 11 percent of the vegetable surface of the earth has suffered from some kind of soil erosion in the past 45 years mainly because of human activity (Oldeman, et al 1990). As a result, low crop yields may reduce food for the people which will be a future threat for countries which are still in the developing stages.

From 7 to 8 million hectares of rain cropland and 1.5 million hectares of irrigated land currently lost every year (Tolba, 1992), and 20 million hectares lost all their agricultural productivity (Chisholm and Dumsday, 1987). This affects the population adversely and it is a threat to the future population as well. People over use the capacity of land, use fertilizer, excessively, clear forest areas and exploit the available land resources. As a result of land degradation, the following ill effects can be identified; soil erosion, siltation of water bodies, floods, slides and the loss of soil fertility, decrease in croplands etc.

6.4.3 Coastal Erosion

This is also considered as a major environmental issue today. For example, the tsunami disaster caused vast damage to Sri Lanka. This happened as a result of the vast coastal erosion that occurred along the shore. The main factor for coastal erosion is sand mining from beaches and river mouths which cause salt water intrusion. This could lead to the loss of agricultural land causing severe problems on the scarce land resource. It was estimated that 3.300 hectares of paddy land had been abandoned during the five-year period ending in 1998 due to seawater intrusion.

6.4.4.1 Air Pollution

Energy generation and use are the major reasons for air pollution. Air pollution kills an estimated 2.7 million to 3.0 million people annually - about 6 percent of annual deaths. About nine deaths in every 10 are due to air pollution and takes place in the developing world where about 80% of the total world population live (World watch paper No. 147).

Emission of greenhouse gases result in air pollution. Currently, with high rates of population growth developing countries contributing heavily to the greenhouse gas emission.

Global warming occurs due to greenhouse gas emission through two principal mechanisms; the first is the effect of a large population on fossil fuel emission as a result of increasing demands for energy for power, industry and transport, and the second is the rate of deforestation (Birdsall, 1940).

Table 6.3 Green House Gas emissions per annum (Gg of GHG), Sri Lanka

	CO ₂	CH ₄	CO	N ₂ O	NO _x
Forest Clearing	4477	17.5	366	0.35	3.7
Livestock Clearing		197		11	
Paddy cultivation		405			
Land filling and wet lands		178			
Cement and Lime	554				
Industry fertilizer				0.15	
Total	5031	797.5	366	0.5	3.7

Source: Rathnasiri, (1993)

The demand for electricity, transport, domestic demand for petroleum products, and industrial development for job opportunities are increasing the environmental challenges of air pollution. In Sri Lanka, with the expansion of labour force there was an increasing demand for employment opportunities. Therefore the government introduced industries which did a lot of damage to the environment. Industrialization all over the world imposed a large number of environmental problems.

Every year an estimated 0.5 to 1 million people in developing countries die prematurely from respiratory and other illnesses associated with urban air pollution (World Bank, 2002).

6.4.4.2 Reasons for Air pollution

- Solid and liquid waste from settlements and industries
- Increased use of fertilizer and pesticides
- Growth of transportation systems
- Rapid growth of Industries

6.4.5 Water pollution

Water pollution is another major environmental issue which directly affects the health of the people. According to the United Nations, despite the improvements in the supply of safe drinking water, around 1.2 billion people especially in the rural areas of developing countries did not have access to clean water supply in 1990. Annually an estimated 12.4 million deaths occur from diseases related to the use of unsafe water and the lack of safe means of human waste disposal.

6.6 Impact of the environment on population

The environment deteriorates due to damage occurring to the environment over time. The impact of environment on population can be identified in the following major areas.

- Public health
- Food supply
- Freshwater
- Coastlines and oceans
- Forests
- Biodiversity
- Global climate change

6.7 Action towards Livable Future

How people preserve or abuse the environment could largely determine whether living standards improve or deteriorate. As a result of growing numbers in urban expansion and resource exploitation, there will be threats to the future population. Without practicing sustainable development, humanity faces a deteriorating environment and may even experience ecological disaster. Following are the solutions which can be proposed to protect the environment for the future generations to come:

- Action oriented programmes
- Stabilizing population

6.7.1 Action oriented programmes

There are many steps which can be taken towards sustainability. These include using energy more efficiently; managing cities better, phasing out subsidies that encourage waste; managing water resources and protecting freshwater sources; harvesting forest products rather than destroying forests; preserving arable land and increasing food production through a second Green revolution; managing coastal zones and ocean fisheries; protecting biodiversity hotspots and adopting an international convention on climate change.

6.7.2 Stabilizing population

While population growth has slowed, the absolute number of people continues to increase- by about 1 billion every 13 years. Slowing population growth would help improve living standards and would buy time to protect natural resources. In the long run, to sustain higher living standards, world population size must stabilize.

6.8 Key words

Air Pollution

Crop land

Drought

Floods

Natural resources

Reservoir

Soil erosion

Water pollution

Coastal erosion

Deforestation

Famine

Green house gases

Plagues

Sedimentation

Soil fertility

6.9 Model Questions

1. Collect information from a developed and a developing country regarding environmental effects on population and compare the magnitude of such effects.
2. Do you agree with the view that Population growth is a major cause for emerging environmental problems in developing countries? Illustrate your answer by citing examples from developing countries?
3. What are your suggestions to mitigate environmental problems? Compare the action taken by developed and developing countries to mitigate environmental problems.

6.10 Recommended Readings

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