Population, Environment and Sustainable Development

When humans first began to cultivate plants some 12,000 years—ago, Earth's entire Homo sapiens population was around 5—million, about the number living in just the state of Colorado today. Very slow growth pushed the global total in 1 C.E. to perhaps 300 million, or about the current population of—the United States.

Starting around 1750, world population began to spike upward. We now add more than 80 million people to the planet each year; today, the world holds 6.9 billion people (Population Reference Bureau, 2010).

The causes and consequences of this drama are the basis of demography. Demography is the study human population. Demography (from Greek, meaning "description of people") is a cousin of sociology that analyzes the size and composition of a population and studies how and why people move from place to place. Demography not only collect statistics but also raise important questions about the effects of population growth and suggest how it might be controlled.

The basic concepts of demography:

- 1. Fertility
- 2. Mortality
- 3. Migration

Fertility

Fertility is the incidence of child bearing in a countries population.

Demographers describe fertility using the crude birth rate.

Crude birth rate is the number of live births in a given year for every 1000 people in a population. To calculate a crude birth rate divide the number of live birth in a year by the society's total population and multiply the result by 1000.

/Mortality:

Population size also reflects mortality, the incidence of death in a country's population.

To measure mortality demographers use the crude death rate, the number of death in a given year for 1000 people in population. This time, we take the number of deaths in a year, divide by the total population, and multiply the result by 1,000.

Infant mortality: The number of deaths among infants under one year of age for each 1000 live births in a given year. To compute infant mortality, divide the number of deaths of children under one year of age by the number of live births during the same year, and multiply the result by 1,000.

Migration:

Population size is also affected by migration, the movement of people into and out of a specified territory. Movement into a territory, or immigration, is measured as an in-migration rate, calculated as the number of people entering an area for every 1,000 people in the population. Movement out of a territory, or emigration, is measured in terms of an out-migration rate, the number leaving for every 1,000 people. Both types of migration usually occur at the same time; the difference between them is the net migration rate.

History of population growth

1800	1 billion
1930	2 billion
1962	3 billion
1974	4 billion
1987	5 billion
1999	6 billion
2010	6.9 billon

Currently, the world is gaining 83 million people each year; 97 percent of this increase is in poor countries. Experts predict that Earth's population will reach 7 billion very soon and will climb more slowly to about 9 billion by 2050 (United Nations Population Reference Division, 2009). Given the world's troubles feeding the present population, such an increase is a matter of urgent concern.

Malthusian Theory:

Thomas Robert Malthus an English economist and clergyman warned that population increase would soon lead to social chaos. Malthus calculated that population increase in what mathematicians call a geometric progression, illustrated by the series of numbers 2,4,8,16,32 and so.

• Food production would also increase, Malthus explained, but only in arithmetic progression (as in the series 2, 3, 4, 5, 6, and so on) because even with new agricultural technology, farmland is limited. Thus Malthus presented a distressing vision of the future: people reproducing beyond what the planet could feed, leading ultimately to widespread starvation and war over what resources were left.

 Malthus recognized that artificial birth control or abstinence might change his prediction. But he considered one morally wrong and the other impractical. Famine and war therefore stalked humanity in Malthus's mind, and he was justly known as "the dismal parson."

- Fortunately Malthus prediction was flawed.
- First, by 1850 the European birth rate began to drop, partly because children becoming an economic liability rather than an asset and partly because people began using artificial birth control.
- Second, Malthus underestimated human ingenuity. Modern dripirrigation techniques, advanced fertilizers, and effective pesticides increased farm production and saved vital resources far more than he could have imagined.

- Some people criticized Malthus for ignoring the role of social inequality in world abundance and famine. For example, Karl Marx (1967, orig. 1867) objected to viewing suffering as a "law of nature" rather than the curse of capitalism.
- Still, Malthus offers an important lesson. Habitable land, clean water, and fresh air are limited resources, and greater economic productivity has taken a heavy toll on the natural environment. In addition, medical advances have lowered death rates, pushing up world population. Common sense tells us that no level of population growth can go on forever. People everywhere must become aware of the dangers of population increase.