UGANDA MARTYRS UNIVERSITY-NKOZI

MA-EDUCATION AND DEVELOPMENT

Education for Sustainable Development

Unit 3: Population Education and Environment Education

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POPULATION

Population is the number of people (human beings) living in a given area at a given point in time. (Tayebwa 1998, Kichodo 2004). Ddumba (2004) states that population is the aggregate of the people who live in a country at a given instant of time. It includes both national and non-nationals, permanent and temporary residents.

EDUCATION

Education is the process of awakening knowledge, skills and values which are latent in a leaner. Duminy et al (1996) affirms this by saying that education is an intentional and acceptable influencing of someone to that has effect on that person. To Maicibi (2006), education is any formal or informal instruction aimed at the transfer, consumption and accumulation of knowledge, skills, ability and change of attitude. This makes education interactive process within a learning environment which aid transmission and development of a person's capability to make independent decisions through creative and critical thinking through situation in life for making one survive and contribute in the societal development.

ENVIRONMENT

In a layman's term, an environment is the surrounding. According to Muthoka (1998), environment is a set of interlocking systems (natural or biosphere and man-made or social) within which all living things interact. It could be a physical element - physical environment that includes the built environment, natural environment - air conditions, water, land, atmosphere etc or it could be human environment - people surrounding the item or thing. This is also known as the social environment and includes elements like the spiritual environment, emotional environment, home, family etc. The environment is a fluid dynamic thing. It is 'not' it 'becomes'

The natural environment consists of the physical and biological environment.

The physical environment consists of the Atmosphere, Hydrosphere and Pedo-Lithosphere.

The biological environment includes the plants, animals and micro-organism.

Man-made environment is the social environment where human habitat emerges as a result of people changing and reorganizing their surroundings to meet their needs and wants (people, socio-cultural, economy, political systems e.t.c).

Environmental education refers to organized efforts to teach about how natural environments function and, particularly, how human beings can manage their behavior and ecosystems in order to live sustainably. The term is often used to imply education within the school system, from primary to post-secondary. However, it is sometimes used more broadly to include all efforts to educate the public and other audiences using print materials, websites,

media campaigns, etc. Related disciplines include outdoor education and experiential education.

Environmental education is a learning process that increases people's knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action. Focus of Environment education is on: -Awareness and sensitivity about the environment and environmental challenges -Knowledge and understanding about the environment and environmental challenges -Attitude concern for the environment and help to maintain environmental quality -Skills to mitigate the environmental problems -Participation for exercising existing knowledge and environmental related programmes.

Journey towards Modern Environment Education

The roots of environmental education can be traced back as early as the 18th century when Jean-Jacques Rousseau stressed the importance of an education that focuses on the environment in Emile: or, On Education. Several decades later, Louis Agassiz, a Swiss-born naturalist, echoed Rousseau's philosophy as he encouraged students to "Study nature, not books.

Stockholm Declaration: June 5-16 1972 - The Declaration of the United Nations Conference on the Human Environment. The document was made up of 7 proclamations and 26 principles "to inspire and guide the peoples of the world in the preservation and enhancement of the human environment.

The Belgrade Charter: October 13-22 1975 - The Belgrade Charter was the outcome of the International Workshop on Environmental Education held in Belgrade, Yugoslavia. The Belgrade Charter was built upon the Stockholm Declaration and adds goals, objectives, and guiding principles of environmental education programs. It defines an audience for environmental education, which includes the general public.

The Tbilisi Declaration: October 14-26 1977 - The Tbilisi Declaration "noted the unanimous accord in the important role of environmental education in the preservation and improvement of the world's environment, as well as in the sound and balanced development of the world's communities." The Tbilisi Declaration updated and clarified The Stockholm Declaration and The Belgrade Charter by including new goals, objectives, characteristics, and guiding principles of environmental education.

Later that decade, in 1977, the Intergovernmental Conference on Environmental Education in Tbilisi, Georgia emphasized the role of Environmental Education in preserving and improving the global environment and sought to provide the framework and guidelines for environmental education. The Conference laid out the role, objectives, and characteristics of environmental education, and provided several goals and principles for environmental education.

Population education therefore is the use of education to increase and promote knowledge and understanding of the number of people, their distribution and their implication on the natural environment.

To Muthoka (1998 p 55) population education has three objectives. That is to:

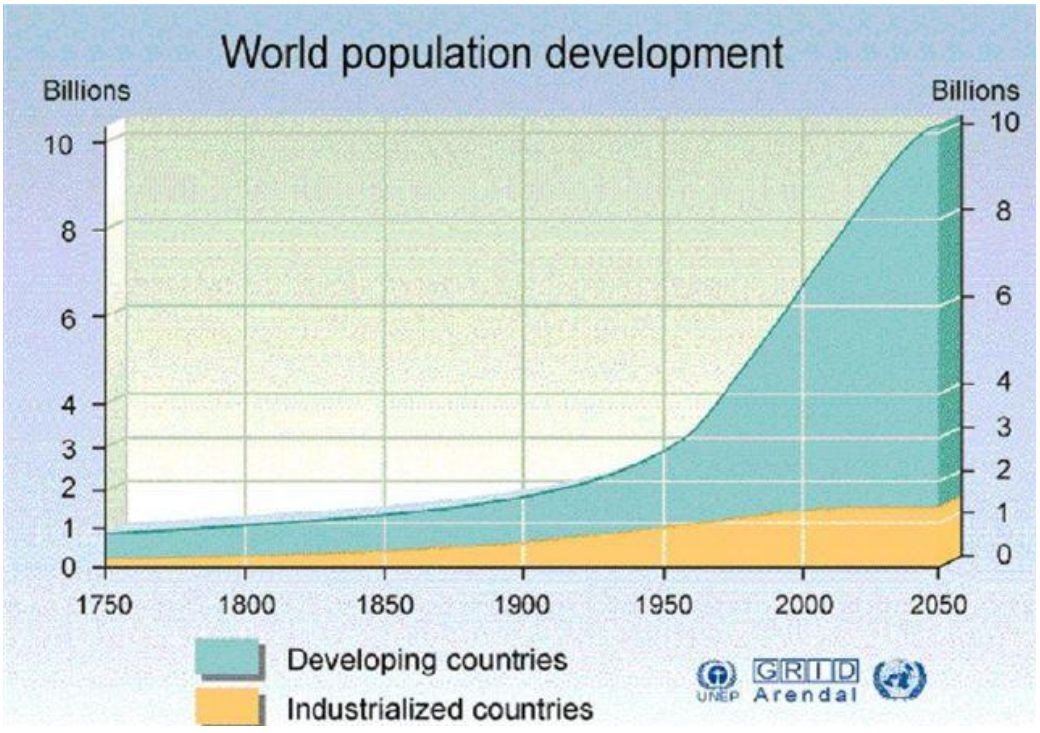
- *Impart knowledge on population characters, basic demographic concepts, processes, methodology and national and international population policies/programs.*
- *Help the learners develop skills to analyze population related issues and problems, practice decision making regarding alternative population situations, appropriate utilization of natural, human resources and population policy formulation.*
- *Help learners to develop responsible attitudes towards family well-being, national population programs, use of natural resources and improvement of environment.*

The objectives are all aiming at the reduction of environmental degradation.

It is important to note that while sociologist are concerned with social problems that arise from the changes in population structures, environmentalist and educationist should generally be more interested in how the population can impact the environment and how they can be educated on their roles in managing the environment positively for their benefit and the benefit of the future generation.

GLOBAL POPULATION TREND

The world's population has grown very rapidly within the second half of the 20th century. This can be referred to as population explosion (Muthoka 1998). Between 1850-1950; population grew from 1.25-2.5 billion. In 1998 the population was 5.6 billion. In2006, the population was 6.1billion. This dramatic growth is mainly in developing countries where death rates and infant mortality rates are gradually reducing yet the birth rates are increasing day and night.



[See also figure 3.1 p. 54 Muthoka 1998]

In the context of East Africa, Byamugisha (2003) states that the most densely populated country is Uganda with a population density of 52 persons per km^2. Due to ill-balanced population distribution in the country, Byamugisha (2003) says that some regions in recent times have experienced general environmental degradation in form of deforestation, soil erosion, swamp reclamation and general change in climatic regimes.

POPULATION DATA

This is information about the people in a given area at a given period of time in terms of gender, age and occupation. The sources of population data are mainly population census, sample survey and vital-mortal registration. Among these, population census is however the best methods for population data collection. Ddumba (2004) defines population census as a simultaneous enumeration and recording of demographic data by government at a particular time pertaining all persons who live in a particular territory. Muthoka (1998) says that population census involves collecting compiling and publishing demographic economic social data in a territory.

It is very important to establish correct population data because the environment and sustainable development needs proper planning and utilization of resources in relation to the people in that given area. Tayebwa (1998) says that Population data provides statistical information for planning and making decision at all levels.

POPULATION CHANGE

This is interplay of fertility, mortality and migration of people in a particular country. Population change is the growth or decline in population over time, and can be quantified as the change in the number of individuals in a population using "per unit time" for measurement. The term population growth/change can technically refer to any species, but almost always refers to humans, and it is often used informally for the more specific demographic term population growth rate, and is often used to refer specifically to the growth of the population of the world.

The theory of demographic transition

This theory explains population growth in historical perspective. This theory has five stages explaining the demographic transition or population in the world.

[See Ddumba J. S., Basic Economics for East Africa p 592 figure 15.1]

Stage I: High Stationary Phase

Here, there is stagnation in population growth rate. It presents with very high death rates due to poor living conditions, poor Medicare and poor technology for production. There is also very high birth rate because of low education, high demand for children and polygamy. , most people in this stage live in rural areas with subsistence agriculture as the dominant occupation. There is widespread poverty; children are assets, sources of income and insurance to parents at old age. Consequently, the high birth rates and death rates remain constant approximately equal leading to a static equilibrium with zero population growth rates. The example for this stage is the agrarian society of Europe by 1750 AD.

Stage II:

Here the birth is still very high with death rate declining steadily due to what Ddumba (2004) says are improved technology, high production, better standard of living and better health facilities. There is rise in income and productivity levels. The birthrate is high because children are taken to be important as they add family income. With stable birth rate and declining death rate, population increases leading to population explosion. Tayebwa (1998) says that at stage II of the demographic transition, population increases at an increasing rate. This is the stage at which most developing countries are.

Stage III

This is a stage of declining population growth rate. Declining birth rate is accompanied by rapid decline in death rates. Consequently, population growth rate declines. Birth rates fall because of improved standard of living, high education and family planning. While death rates continue to fall because of high standard of living and better Medicare.

Stage IV (low stationary phase)

At this stage, there is low birth rate balance by low death rate. The birth rate declines and tends to be equal to death rate so that the population growth rate is almost zero. Ddumba (2004) says

that in this stage, the standard of living is generally high. Education permeates the entire society. Old customs, dogmas, beliefs are discarded. Individualism grows. There is late marriage leading to low birth rate. The rapid fall in death rate is explained by improved Medicare, nutrition and standard of living.

Stage V: Declining stage

Here the decline in birth rate is higher than the decline in death rate.

Muthoka (1998) states that Population change or growth can take three forms i.e. negative change if it is declining or positive change it if is increasing or even remaining at zero indicating stable population. None of these rates of change is a problem unless it does not correspond to the rate of economic growth and available resources. Developing countries with zero population growth rates, there is always under utilization of resources and wastefulness of existing services. In developing countries where population growth rate is rapid, population increases at the rate that planners are unable to cater for adequately.

Rapid population growth rate in developing countries therefore, directly affects the environment and the quality of life in terms of food, goods, services, energy, land and pollution. Muthoka (1998) says that as the population grows exponentially, the demands for food, goods and services such as water, health, sanitation, housing, transport, education and recreation increases. This to Byamugisha (2004) implies that satisfaction for increased demands results into depletion of natural resources due to over utilization and from pollution (from urban centers, slums, waste deposition in water e.t.c).

What matters in study of environment and population is not the number of people. To Muthoka (1998) the carrying capacity of the land is what matters. Maham (1988) on the other hand is cited by Muthoka saying that the carrying capacity of the land is about the maximum number of people who can be supported in perpetuity in an area with a given technology and consumption habits without causing environmental degradation. Over whelming increase in population can cause soil erosion, overgrazing, over cropping, swamp reclamation, deforestation, and e.t.c because increase in population increases competition for environmental resources.

Increase is soil erosion is attributed to over cropping, overgrazing or other pressure on the land.

The rate at which trees grow for firewood is far much slow compared to the rate at which the demand for same is rising.

As population grows, completion for natural resources also increase and large number of people have less access to productive resources like land. They find themselves in food crisis, housing shortage, in adequate health and sanitation facilities.

This may create absolute poverty which triggers large scale internal migration or what UNEP (1985) calls environmental refugees.

Malthusian population theory

In the 18th century, reverend Malthus, a British economist was among the first people to point out the dangers of over population. He came up with a theory which had the following assumptions:

- Population growth depends on food supply. When food increases, population increases also.
- Population grows at a geometric rate. That is, by constant percentage for example 2, 4,8,16 etc.
- Food and income grows at arithmetic rate, that is, by constant amount for example 2, 4, 6,8,10 etc.

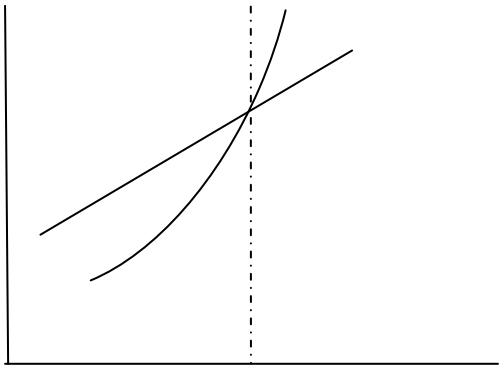
Therefore, man's biological capacity to reproduce himself/herself exceeds her food producing capacity. This implies that at one time, population would be too much to be fed by the available food and there would be famine, misery, congestion and death.

The population trap is the level at which population growth stops because of shortage of food or resources to support it. This trap represents the population that can be supported by available food.

Malthus identified two types of checks, that is, Negative checks and Positive checks.

Positive check: this check on population growth is in a crude way and it involves famine, death and wars.

Negative checks: these check on population growth by reducing birthrate for example through late marriages and family planning.



ABC represents food growth

DBF represents growth of population when there are no positive checks.

DBC is the actual growth of population when there are positive checks

Population growth cannot go beyond B (to F) because beyond point be people would start dying due to shortage are other related problems.

Critique to Malthusian's theory

Malthusian's theory has however faced many challenges or critiques as seen below.

The theory assumed that resources for example land are fixed and therefore food production cannot increase faster than population. He ignored the fact that the quality of resources can be improved for example land can be improved by irrigation and organic farming.

He assumed that there can be no improvement in technology which would lead to a continuous increase in food supply to support increasing population.

He assumed that there can be no trade which can bring the flow of food to feed the increasing population.

Food may not be the only determinant of population growth, other factors like migration, culture and level of education affects population growth rate too.

He never indicated the time when the food trap would occur (a situation where food production is equal to population growth).

Meaning of some concepts

Birth rate

This refers to the total number of children born alive per year per 1000 of the total population.

Fertility rate

This is the number of live births in a given population per year. It is the number of children a female human being is capable of producing throughout her reproductive life

Death rate

This is the number of people dying per year per 1000 of the population.

Under population

This occurs when population in an area falls short of sufficient number of people to utilize the available resources.

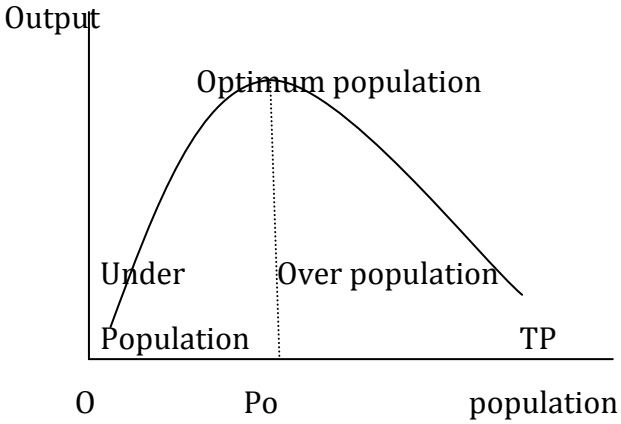
Optimum population

This occurs when the number of people in a given area matches with the resources available. In economics term, Tayebwa (1998) posit that is when the available labour combines with other factors of production to yield maximum output.

Overpopulation

This occurs when population in a given area is greater than the resources available. It can be due to large number of people like in Kampala city or due to poor quality of the resources (low people carrying capacity) e.g. Karamoja.

A diagrammatical representation of under, optimum and over population



Population growth rate

This refers to the speed at which the population a country in creases over a period of time usually one year.

[See Ddumba J. S., 2004. Basic Economics for East Africa p 615 figure 15.10 and Muthoka (1998) Environment Education p. 61 figure 3.2]

POPULATION COMPOSITION

To Muthoka (1998) population composition refers to age, sex structure, and occupation, rural urban and ethnic make up of people in a given area.

POPULATION DISTRIBUTION

Kichodo (2003) says population distribution refers to how a country's population is spread over the unit land areas. It is a pattern of settlement and dispersal of population expressed in terms of population density by the average number and category of persons per unit areas

Concepts under population distribution

A. Age structure

This is the distribution of population by age. In the aces of developing countries, there is high percentage of population of the young people below 15years. This is because there is high population growth rate. There is a small population of people age 65years and above. This is because there is low standard of living, poor nutrition housing and Medicare.

Developing Countries Developed Countries

In developed countries, there is low percentage of people between 16 -64 years because of labour mobility.

B. Geographical Population Distribution

Densely populated areas

Densely populated are mainly in areas with conducive socio-economic, political and productive resources. Muthoka (1998) says that many people cluster in urban areas and rural parts of high productivity. Byamugisha (2004) enumerates some of these areas in Uganda to include Lake Victoria shores (Buganda and Busoga regions), Kigezi highland, Mt. Rwenzori and Elgon slopes and Ssese Island in L. Victoria.

Moderately populated areas

Moderately populated areas are basically urban centers. These include south western Uganda highland (Bushenyi, Mbarara, Ntungamo, Masaka, Rukungiri), northern Uganda districts (Gulu, Apac, Lira), West Nile Region (Nebbi, Arua).

Sparsely populated areas

These are areas with harsh environmental conditions, disease or those that have been gazette by government for particular reasons. In Uganda they include areas around L. Edward, George and Albert. Ankole Masaka dry corridor, north eastern Uganda (Moroto and Karamoja) and Kabalega, Kidepo national game parks and Mabira forest.

C. Occupational Population Distribution

This is about the portion of the population with is productive or contributing heavily to the economic development of the country.

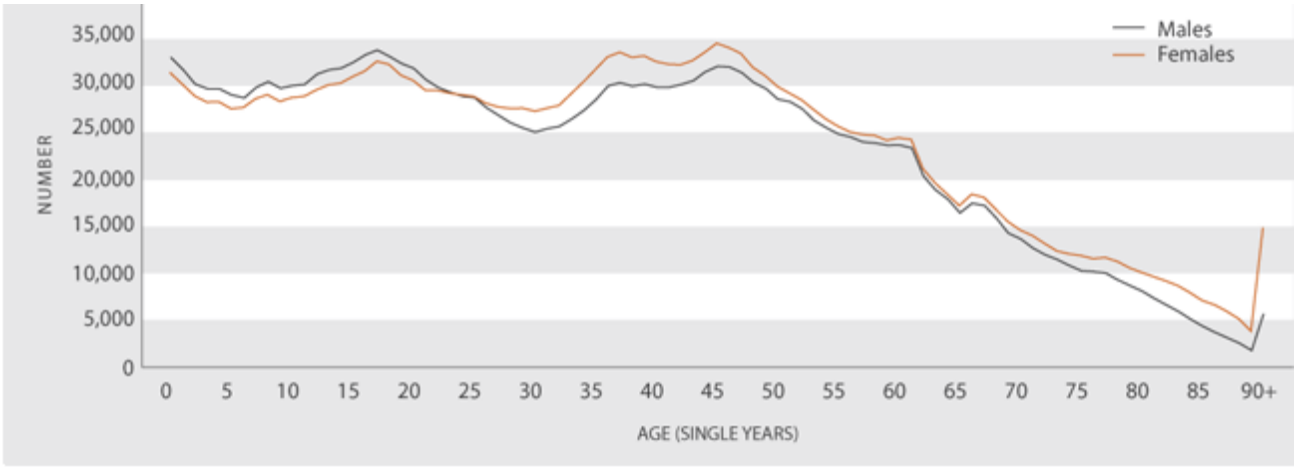
Developing Countries Developed Countries

In developing countries, the productive population is overwhelm by the very young (below15) and the old (above 65). They form a big group of dependants on the employed/productive population.

In developed countries, the young are few due to low birth rates and the old are many because of better standard of living. They are not so much dependants to the productive population because they live on saved incomes.

D. Sex Composition

This is the distribution and composition of the population by sex or gender. Population of women is usually higher than those of men. Below is a graphical representation of population in Uganda by sex composition.



[See also Muthoka (1998) Environment Education p 64figure3.3]

NB: population distribution unlike rapid population growth may not have very direct bearing on the environment. This is because of the land carrying capacity. The few people in low productivity areas may have as high as impact on the local environment as many people in high productivity area.

Factor influencing population distribution.

- Soil: more fertile soils supports great number of people because of food production e.g. Kenya high lands and the basin of lake Victoria. On the other hand, areas with infertile soil such as latosols which has little mineral, supports low population densities e.g. middle belt of West Africa.
- Relief: In extremely high mountainous regions such as Rwenzori, the slopes are too steep; vegetation and soil are almost non existent and sometimes covered by ice. This makes the area inhabitable by humans. The lowlands that are arable however attract heavy population because the climate is always favorable, cultivation is possible and rainfall is often abundant.
- Drainage: Badly drained areas have limited use for agriculture and are generally sparsely populated.
- Vegetation: Areas with dense rainforest like those in Congo basin hinder penetration, communication and development of infrastructure. This restrict human settlement and as such population.
- Mineral resources: development of mining is responsible for population growth of several places in Africa, for example, Zambian copper belt, Shaba province in DRC, Johannesburg in South Africa and Lake Magadi regions in Kenya.
- Industrialization: Manufacturing industries attract population because of employment opportunities and social amenities associated with them. For example, Pretoria, Johannesburg, Cairo, Kampala, Lagos and Nairobi.
- Political climate: areas experiencing good conducive political climate tend to be more populated while those with unfavorable political conditions e.g. political instability, tend to be sparsely populated.
- Urbanization: Due to rapid growth of urban centers, the tendency of rural-urban migration also increases. To world health organization (1992), this form of migration takes the greatest attention today in many developing countries. It is mainly facilitates by improved road network. This unplanned shift from poor inaccessible areas to industrial and commercial centers in search for better standard of living and employment. This not only swells the population in the urban areas but also impacts the health and environments commendably since people compete to get resources for survival.

- Government policy: Governments can have policies to gazette certain areas for national parks or forest. This makes them to become sparsely populated.

POPULATION MANAGEMENT

This is the process of making population in a country match desirably there source base and its utilization.

Muthoka (1998) presents a dilemma of two schools of thoughts about population management. The first one says that for sustainable development to be achieved, the population growth should be stabilized through special programs and policies. The second school of though says that concern should not be put on the population in terms of whether it is growing fast or not after all, population has tremendous potential as resource for development(i.e. labour and consumers).

To properly harmonize population the environment considerations should be made on the following areas.

People should be taught to utilize their natural improved environmental resources in a manner that maintains an ecological balance between their needs and the ability of nature to sustain them.

Environmental laws should be enacted and enforced on all aspects of improving environmental quality such as pollution of air, water e.t.c.

Developing countries should expand the economy with special stress on rural areas. They should consider water supply, agriculture, nutrition and functional literacy. This will reduce the pull of people to the urban centers such removing congestion and improving the standard of living.

Family planning

Family planning program focuses on reducing unwanted fertility by helping individuals meet their own reproductive goals in a safe and ethical manner. To Ddumba (2004) family planning reduces overall fertility and population growth but also it enhanced client's health and wellbeing. The family planning methods provide different ranges of services. In developing countries, very few people accept it because they fear that they will get deformed children later or not get children at all or fear the negative side effects like uterus cancer. Besides, some religious bodies also condemn the use of artificial family planning methods e.g. the Roman Catholic Church.

Investing in adolescents

Population momentum can be controlled by investing in adolescents to raise especially the girls' social and economic prospects and enhancing their self esteem. This increases planned child bearing, reproductive health education and income levels.

Economic incentives and disincentives

Economic incentives can be given to small families e.g. free education [remember UPE 4 children per household policy could have been an incentive to small families] housing, Medicare. Disincentives can be in form of taxation.

Formal education

This leads to postponement of marriage. Female education also encourages women to concentrate on the quality of children rather than the number of children.

Population control policy

The government can set up policy to restrict or check population growth rate. An important example of mandated population control is China's one-child policy, in which having more than one child is made extremely unattractive. This has led to allegations that practices like forced abortions, forced sterilization, and infanticide are used as a result of the policy. The country's sex ratio at birth of 114 boys to 100 girls may be evidence that the latter is often sex-selective

Legalizing abortion

As Population control is the practice of curtailing population increase, usually by reducing the birth rate. The New Catholic Encyclopedia (1980) reports surviving records from Ancient Greece document on the first known examples of population control. These include the colonization movement, which saw Greek outposts being built across the Mediterranean and Black Sea basins to accommodate the excess population of individual states. Infanticide and abortion were encouraged in some Greek city states in order to keep population down

In conclusion, population in environment study is very important to consider because it shows the extend to which there is proportional rate of resource utilization. It has impacts on the environment in terms of over exploitation of the natural resources for the satisfaction of human. Positive ethical attempts should therefore be put in place by both developing and developed countries to protect the natural environment against the unjust and greedy mode of consumption of the natural resources.

DISCUSSION QUESTIONS

Population Education and Environmental Education

Date: 3rd February 2010

1. Population explosion and high population growth rates are responsible for environmental degradation in Uganda. Discuss.

2. How can you as an educator encourage meaningful population growth in Uganda?

3. a) Discuss the ways how any of the components of environment listed below can be affected by unplanned population increase.

    - Atmosphere
    - Hydrosphere
    - Pedo-lithosphere
    - Biosphere

    b) As a sustainable development activist, what approaches would you give to promote sustainability of the component of environment you have chosen in (3 a) above.

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