POPULATION GROWTH: AN EMERGING CRISIS ON WATER AVAILABILITY

MADAN KOIRALA[*]

INTRODUCTION

Out of the various activities mankind made in the recent years the most remarkable is population outburst. That is why almost two centuries ago Malthus feared about the problem of mankind because of geometric ratio of increase of human population whereas the food stuff increased with an arithmetic ratio. There is a tremendous growth of human population in last few decades. In 1800 A.D. human population of the earth was less than 1 billion. In 1950 it reached around 3 billion. Now it is 5.1 billion. China, a single country is representing a population of 1.2 billions. If no remarkable change in world's situation would happen, within three decades the population of the earth would be 8 billions, and in 2100 A.D. it would be doubled. Out of this rapid increase in population, about 90% would be added in the developing world and the developed world would be added with additional 10% only. Health services provided to the population is lowering infant mortality, death rate of individuals is also declining. These factors ultimately contributing to the increase of population.

The natural resources supporting to human population such as land, water, oil, fresh air would be in the same quantity. Because of the competition of human beings

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[*] *Mr. Koirala is Associated with Central Department of Zoology, T.U., Kirtipur.*

for resources it would be depleted. The way of resources being used by human beings is not in a renewable manner, which cause in early depletion of the resources, resulting in a problem to future generation.

The trend of population growth is in such a manner that less resourceful areas i.e., developing countries are in massive pressure of population growth where as the developed world who have managed their needs for happy living are with least or less pressure.

Water being the necessary component for everyday life should have properly supplied. But the population in developing world, either they have or not the natural source of water, are not properly supplied with water and live in a hardship.

Water specialists have described the hydrological cycle as a great pump which keeps the Earth habitable. There is a finite source of water circulating around the globe. Every year 113,000 cubic kilometers of water fall on the continents, evaporated transparency mostly from rivers, lakes and streams. This flow of water can cover the land surface of the earth to a depth of 83 centimeters that sustains human and natural ecosystem in a natural basis.

The problem is that hydrological cycle doesn't spread water in equitable manner, even within the country it is unevenly distributed. In a crude sense the world is divided into the 'haves' and the 'have not' based on the precipitation level of water whether below or above according to the potential demand. By this yardstick, most of Africa, much of Middle East and north Asia, the western United States and north-western Mexico, parts of Chile and Argentina, and nearly all of Australia are areas of severe water deficits.

On global basis, about two billion people live in areas suffering from chronic water shortages. As human populations continue to grow, particularly in sub Saharan Africa and parts of Asia, there is less and less water for each individual. There is little doubt that water scarcity will be an increasingly serious problem for the water short countries of Africa, Asia and Latin America over the course of the 1990s. Already, in water scarce countries like Saudi Arabia, 4,000 people must compete for every million cubic metre of water on a yearly basis. By comparison, in water-abundant countries such as France, Italy and UK, only around 350 people are competing for the same amount of water. According to expert's view once the number of individuals depending on one flow unit (1 million cubic metre of water per year),

increases above 2000 the country is likely to suffer from inherent water deficit problems.

QUALITY ASPECTS OF WATER

As the time is passing on, the world is confronting more problems on water. Not only the problem of water availability but the quality of the water available for drinking, irrigation, and industrial use is being degraded. Out of the total rainfall source 75% of water is used in agricultural, 20% for industrial and 5% for drinking purposes. Developed world are using the same water source up to 17 times, through recycling. For e.g., the "Queen of Polish Rivers" Vistula is so polluted with assortment of industrial and municipal wastes, that its water is almost unusable along most of its 1,068 km length even for industrial purpose. The industrialized countries of North America and Europe have managed to dump billions of tons of pollutants into their rivers, estuaries and coastal waters.

Meanwhile, groundwater resources are being over-used and ruined on a scandalous scale throughout the world. Near industrial zones and cities, groundwater aquifers are being fouled with chemical poisons . China reports that 41 out of 44 large cities suffer from polluted groundwater. Even under agricultural land, ground water is often contaminated with nitrates leached through the soil because of over-use of chemical fertilizers. In the United States out of 124,000 wells sampled 24,000 proved to be contaminated with high level of nitrates. Philippines, is recently facing a calamity from red tide, in some water reservoirs. India facing a problem because of heavy contamination in major river systems like Ganges and Brahmaputra. Drinking water of some major cities of Nepal is found to be below the usable standard as prescribed by WHO, because of underground and open surface contamination.

Air pollutants from industrial smokestacks also contribute to the degradation of water resources. Sulphur and Nitrogen Oxides mixing in the atmosphere, form the main ingredients of acid rain. When these acids enter the terrestrial and aquatic ecosystem they alter the chemistry of soils and water, turning them acidic. Not only do freshwater lakes and streams turn into graveyards, unable to support aquatic life, but crops and entire forests are dying due to the combined effects of acid rain, other pollutants and natural pathogens. In the long run this problem may be more serious because of continuous flow of these health hazards in biogeochemical cycles, especially through the acidification of groundwater.

The water and sewage pipes under cities throughout the world leak like sieves, resulting in strong contamination with Coliform and other pathogens. Increasing urban population is resulting in decline of per capita water availability and health expenses from government, where as the intensity of problem is increasing day to day.

IMPACT ON ENVIRONMENTAL SUSTAINABILITY

Over exploitation of water and other natural resources is endangering the mankind day by day. In the arid parts of the industrialized North, the chronic over-exploitation of water resources, particularly groundwater reservoirs, has resulted in severe water shortages for irrigated agriculture. In addition, poorly planned and managed irrigation systems have created large areas of salinized and alkalized cropland, sterilized by salts and alkalis in the irrigation water.

Towards the South also groundwater resources are being depleted and degraded. Agricultural pumping in India's Tamil Nadu region has caused its water table to drop 30 metres in a decade, and Bangkok's water table has dropped 25 metres since the 1950s. Causing salt-water intrusion into some wells. Because of 'consumer junkies' nature of human beings regarding water usage, water resource are always depleted. Over exploitation of vegetation resulted in massive flood in Nepal, India, Bangladesh, recently. Even USA suffered flood problem from Mississippi. Besides, inappropriate and polluting land use practices have direct consequences for the water quality in ground water source, rivers and lakes, and coastal areas. Inmost of the countries, plan making mechanism the connections between what happens on land and what happens on water is not made.

DEVELOPING AND DEVELOPED WORLD: DIFFERENT TYPES OF PROBLEMS

Water resource problems in the developing world and developed world are profoundly different. As in the first world, water courses are polluted and irrigation projects mismanaged, but in many areas of developing world water is simply scarce.

Bringing in water from water surplus areas is either impossible or too expensive. So, these days a 'politics of water' have started among nations either haves or have not.

WHAT CAN BE DONE ?

At the core of the problem is the approach taken by temperate zone engineers. "How much water do we need and where do we get it ?". This approach is wrong-headed and dangerous, especially in a water constrained environment. The question that should be asked is, "How much water is there and how should we best benefit from it."

The real challenge facing the semi arid and arid tropics would be to find out what opportunities exist for shaping socioeconomic development within existing water constraints. The population of the third worlds have to accept their own environment and its harsh realities and start planning a land use strategies which make optimal use of their limited water supplies.

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