

Impact of population expansion on environment and climate in India

Shadananan Nair

Nansen Environmental Research Centre (India)

Gopal Residency II Floor, Thottakkat Road, Kochi – 682011, Kerala, India

Minimising the impacts of growing population on natural resources and environment, and providing basic facilities to all are major challenges in many developing and under developed countries. In India, in spite of the economic expansion associated with industrialisation, large number of population still live below poverty line. India may be the country that struggles the most to control the population growth. Indian population has crossed 1.1 Billion and is increasing. It is expected to stabilise at in between 1.5 to 1.75 Billion by the period 2050-2075. India will soon overtake China to rank 1st in population. In addition to this domestic growth in population, there has been tremendous flow of illegal migrants from nearby countries. There are measures and promotional schemes to control the rise in population, but they do not work efficiently in the heterogeneous society of India. In the rural backward areas with low literacy rate, population is fast expanding. Certain religious groups in India are totally against birth control. One group has even declared incentives and attractive schemes per each number of children exceeding one, with an objective of multiplying the number in short term. The situation changes from one State to another, depending on the social and economic background, as evident from the report of the census of India. The imbalance in growth rate among religions is becoming to a social problem.

Along with rising population, India increasingly faces serious challenge to securities in food, water and energy. Environmental degradation is also worsening. Green revolution helped India to become self-sufficient in food production, but adversely affected the soil fertility. Indian economy and life of majority of the people, especially in the rural areas has been traditionally linked to agriculture and related industries. But, recent change in government policy favouring industries over agriculture is leading the country towards a food crisis. After several decades of remarkable agricultural production and storage, India is passing through a period of food insecurity, expecting a famine when the stocks last, unless emergency measures are taken to overcome the crisis. Lack of unemployment in the rural agricultural sector promotes migration to urban centres, worsening the urban environmental degradation and making the arrangements to provide basic facilities complicated.

Demands of the escalating population exert much pressure on the environment and water resources. Number of residential complexes and special economic zones has been increasing, encroaching into large areas of paddy fields and wetlands. Such encroachments together with pollution are threats to water security also. Per capita availability of reliable water is decreasing sharply. Entire water resources of India have been polluted, most of them beyond safety limit. Overuse and misuse of water lead to severe water scarcity in many parts. Overdraft of groundwater has become a serious environmental issue in States such as Tamil Nadu and Gujarat. Because of the growing imbalance between exploitation and recharge, water table is depleting fast. In the coastal

zones, this results in salinity intrusion into aquifers. Power sector in India is also facing a big crisis. It is doubtful, if any State in India is free from load shedding, at least a part of the year.

Impact of population expansion is reflected in local climate and climate change leads to the migration of population. Release of greenhouse gases, encroachment into forests and wetlands and loss of vegetation cover affect local climate and water resources. Population induced climate change is more evident in the urban centres. Local temperature is steadily increasing in the major cities. Climate change is a major threat to the thickly populated extensive coastal zones of India. Indian coasts are highly vulnerable to the sea level variations and the increasing frequency and intensity of tropical storms and waves. This may lead to massive migration to interior, inviting severe conflicts over resources. Retreat of the Himalayan glaciers also is another challenge. Floods and droughts become more frequent and severe. Fast melting of glaciers may soon affect the runoff in the major rivers of north India. Here also, large-scale migration to reliable basins can be expected.

Unfortunately the policies, acts and regulations for the control of rise in population and migration, and for the degradation of environment become farce due to various social, economic and political reasons. The climate change adaptation strategy also is quite inadequate. This paper is a comprehensive assessment of the impact of population growth on climate, environment and natural resources and also on the impact of climate change on the population in India. Data from the India meteorological department and reports from various agencies including the Census Department, Ministry of Water Resources and Ministry of Environment have been used for this. Changes in water availability in different States have been computed using the modified water balance model, incorporating the predicted change in population and climate. Current policies and strategies have been critically reviewed. Suggestions for an appropriate policy and adaptation strategy and guidelines for their effective implementation have been provided.