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REVIEW ARTICLE

Impact of urbanization on environment

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SUMMARY : Urbanization refers to general increase in population and the amount of industrialization of a settlement. It includes increase in the number and extent of cities. It symbolizes the movement of people from rural to urban areas. Urbanization happens because of the increase in the extent and density of urban areas. Urbanization is a process that leads to the growth of cities due to industrialization and economic development, and that leads to urban- specific changes in specialization, labor division and human behaviors. The population is growing at the rate of about 17 million annually which means a staggering 45,000 births per day and 31 births per minutes. If the current trend continues, by the year 2050, India would have 1620 million populations. Due to uncontrolled urbanization in India, environmental degradation has been occurring very rapidly and causing many problems like shortages of housing, worsening water quality, excessive air pollution, noise, dust and heat, and the problems of disposal of solid wastes and hazardous wastes. Due to uncontrolled urbanization in India, environmental degradation has been occurring very rapidly and causing many problems like land insecurity, worsening water quality, excessive air pollution, noise and the problems of waste disposal. This paper emphasizes on the effect of urbanization on environmental components mainly climate, biosphere, land and water resources. Although it is impossible to restrict urbanization it has to be ensured that urbanization proceeds in the right path causing minimum impact on environment.

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Urbanization refers to general increase in population and the amount of industrialization of a settlement. It includes increase in the number and extent of cities. It symbolizes the movement of people from rural to urban areas. Urbanization happens because of the increase in the extent and density of urban areas. The density of population in urban areas increases because of the migration of people from less industrialized regions to more industrialized areas. For instance, urban areas are the major sources of anthropogenic carbon dioxide emissions from the burning of fossil fuels for heating and cooling; from industrial processes; transportation of people and goods, and so forth. Svirejeva-Hopkins *et al.* (2004) suggest that more than 90 per cent of anthropogenic carbon emissions are generated in cities. The clearing of land for cities and roads, and the demand for goods and resources by urban residents, both historically and today, are the major drivers of regional land use change, such as deforestation, which has reduced the magnitude of global carbon sinks. These problems are very complex and their interactions are hard to define. It is very important to examine problems trough the social-economic-cultural system. Even the interconnections between environmental problems are now better known, we still lack exact information on how the issues are linked, on what degree they interact and what are the most effective measures. One problem is to integrate land- and water use planning to provide food and water security (UNEP, 1999).

Urbanization in India:

Urbanization is a process that leads to the growth of cities due to industrialization and economic development, and that leads to urban-specific changes in specialization, labour division

and human behaviors. The population is growing at the rate of about 17 million annually which means a staggering 45,000 births per day and 31 births per minutes. If the current trend continues, by the year 2050, India would have 1620 million populations. Due to uncontrolled urbanization in India, environmental degradation has been occurring very rapidly and causing many problems like shortages of housing, worsening water quality, excessive air pollution, noise, dust and heat, and the problems of disposal of solid wastes and hazardous wastes. Due to uncontrolled urbanization in India, environmental degradation has been occurring very rapidly and causing many problems like land insecurity, worsening water quality, excessive air pollution, noise and the problems of waste disposal.

Causes of urbanization on environment:

The major of urbanization are:

- Migration for employment
- Facilities for education
- Facilities for health
- Technological advancement
- Developmental displacement like: dam, factory etc.
- Changing family pattern

Impact of urbanization on environment:

The impact of urbanization on environment are :

- Impacts on the atmosphere and climate:
  The creation of heat island
  Changes in air quality
- Impacts on the lithosphere and land resources:
  Erosion and other changes in land quality
  Pollutants to air, soil and water
- Impacts on the hydrosphere and water resources
  Flow of water into streams
  Degraded water quality
- Impacts on the biosphere
  Modification of habitats
  Destruction of habitats
  Creation of new habitats
- Impact on urban environment:
  Increase of slum
  Increase in solid waste
  Growth in motor vehicles
  Waste water generation
  Poor living condition
  Increase in unemployment
  Increase in crime

Impacts on the atmosphere and climate:

The creation of heat island:

Materials like concrete, asphalt, bricks etc absorb and reflect energy differently than vegetation and soil. Cities remain warm in the night when the countryside has already cooled.

Changes in air quality:

Human activities release a wide range of emissions into the environment including carbon dioxide, carbon monoxide, ozone, sulfur oxides, nitrogen oxides, lead and many other pollutants.

Changes in patterns of precipitation:

Cities often receive more rain than the surrounding countryside since dust can provoke the condensation of water vapour into rain droplets.

Impacts on the lithosphere and land resources:

Erosion and other changes in land quality:

Rapid development can result in very high levels of erosion and sedimentation in river channels.

Pollutants to air, soil and water:

Pollutants are often dispersed across cities or concentrated in industrial areas or waste sites. Lead- based paint used on roads and highways and on buildings is one such example of a widely dispersed pollutant that found its way into soil. Burying tremendous amounts of waste in the ground at municipal and industrial dumps. Even the industrialized areas, with higher standards of living and greater numbers of cars, produce far more air pollution and greenhouse gases than developing countries, they can reduce environmental hazards by using technology such as smokestack scrubbers, emission systems, and wastewater treatment plants (ENCARTA, 2001).

Impacts on the hydrosphere and water resources:

Flow of water into streams:

Natural vegetation and undisturbed soil are replaced with concrete, asphalt, brick and other impermeable surfaces. This means that, when it rains, water is less likely to be absorbed into the ground and instead flows directly into river channels.

Flow of water through streams:

Higher, faster peak flows change streams channels that have evolved over centuries under natural conditions. Flooding can be a major problem as cities grow and stream channels attempt to keep up with these changes.

Degraded water quality:

The water quality has degraded with time due to urbanization that ultimately leads to increased sedimentation there by also increasing the pollutant in run-off.

Impacts on the biosphere:

Modification of habitats:

The fertilizers that spread across lawns finds its way into water channels where it promotes the growth of plants at the expense of fish. The waste dumped into streams lowers oxygen levels during its decay and cause the die-off of plants and animals.

Destruction of habitats:

There is also complete eradication of habitats as an outcome of urbanization and native species are pushed out of cities.

Creation of new habitats:

New habitats are also created for some native and non-native species. Cities also create habitats for some species considered pests, such as pigeons, sparrows, rats, mice, flies and mosquitoes. Urbanization has, for example, eliminated many bat colonies in caves, but has provided sites such as bridges for these species to nest.

Adverse impact of urbanization on urban environment:

Increase of slum:

There is increasing competition for facilities due to the high standard of living in urban areas, which has triggered several negative effects. Many people including farmers who move to cities in search of a better life end up as casual labourers as they lack adequate education. This leads to one of the worst problems of urbanization - the growth of slums. They are urban areas that are heavily populated with substandard housing and very poor living conditions. As a result several problems arise. Slums are usually located on land, which are not owned by the slum dwellers. They can be evicted at any time by the landowners.

Increase in solid waste:

Mumbai generates the largest amount of Municipal solid waste in 1996, which is 5355 tonnes/day followed by Delhi (4000 tonnes/day), Kolkata (3692 tonnes/day) and Chennai, which is 3124 tonnes/day (Sunil Kumar *et al.,* 2009). But if we consider the per capita generation of solid waste, it is largest in Chennai, which is about 700g/day. The lowest per capita waste generation is in Kolkata, which is about 350g/day.

Growth in motor vehicles:

There has been almost a three-fold increase in the number motor vehicles in India. On an average 10 per cent increase has been found in each year, which is a serious concern for air pollution.

Waste water generation:

Water resources are diminishing not just because of large population numbers but also because of wasteful consumption and neglect of conservation. With rapid urbanization and industrialization, huge quantities of wastewater enter rivers.

Poor living conditions:

Crowding and lack of sanitation are main problems. This contributes to outbreak of diseases. Utilities such as water, electricity and sewage disposal are also scarce.

Unemployment:

Since the number of people competing for jobs is more than jobs available, unemployment is an inevitable problem.

Crime:

Slum conditions make maintenance of law and order difficult. Patrolling of slums is not a priority of law enforcing officers. Unemployment and poverty force people into anti-social activities. Slums become a breeding ground for criminal activities.

Benefits of urbanization:

Though urbanization has drawbacks, it has its benefits too.

Efficiency:

Cities are extremely efficient. Less effort is needed to supply basic amenities such as fresh water and electricity. Research and recycling programs are possible only in cities. In most cities flats are in vogue today. Many people can be accommodated within a small land area.

Convenience:

Access to education, health, social services and cultural activities is readily available to people in cities than in villages. Life in cities is much more advanced, sophisticated and comfortable, compared to life in villages. Cities have advanced communication and transport networks.

Concentration of resources:

Since major human settlements were established near natural resources from ancient times, a lot of resources are available in and around cities. A lot of facilities to exploit these resources also exist only in cities.

Educational facilities:

Schools, colleges and universities are established in cities to develop human resources. A variety of educational courses and fields are available offering students a wide choice for their future careers.

Social integration:

People of many castes and religions live and work together in cities, which creates better understanding and harmony and helps breakdown social and cultural barriers.

Improvements in economy :

High-tech industries earn valuable foreign exchange and lot of money for a country in the stock markets.

Future of urbanization:

Urbanization is set to stay for a long time. It may slow but surely does not show any signs of stopping. In 1985, 45 per cent of the world population stayed in cities. Scientists estimate that 60 per cent of the world population will be city-dwellers by 2025. The main goal of urban planning is to make all amenities and comforts available to the public without imposing many negative effects on society and environment, aptly referred to as "Sustainable growth". The cardinal rule is to plan cities beforehand, rather than let them grow spontaneously and haphazardly. During city planning it should be ensured that adequate infrastructure is available to support the population. Residences should be conveniently located near the civic bodies. This could improve effective provision of the necessary services. Opportunities can be created within rural areas to reduce stress on cities. This also results in a higher standard of living for the people of the country as a whole. Some of the villages in South Kanara district of Karnataka set a good example for this. They have efficient transport and communication system and electricity. Co-operatives have been set up to provide financial aid to peasants. The rural people have been encouraged to engage in cottage industries and commercial activities such as making pickles, handicrafts, sweets and savories. Through cooperative agencies, marketing of these goods also has become easy. This is an efficient method of curbing urbanization, by creating opportunities for people in villages. This reduces the rate of migration. Currently, planning cities for sustainable growth, mainly in the third-world societies, is a major challenge for humanity. Restricting the population boom is another major issue of the third millennium. All these vital factors would decide what the future would look like for humankind and our planet. This graph indicates the total increase in population of urban vs. rural areas. Although, it is impossible to restrict urbanization it can be ensured that the path of the development can move in the right path.

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