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# Evaluation of Citizen Priorities and their Impacts on the Environment through the Smart City Mission in Belagavi City, India

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Harms, Valerie. 1994. *The National Audubon Society: Almanac of the Environment*. New York

Cities in an urban environment change the local climate dramatically. Temperatures are always warmer in the city than it is in the surrounding areas creating a sort of "heat-island" (Harms, 1994). In a city, the solar energy is not used in the same way as in open landscapes with vegetation and trees. Concrete, stone, asphalt, and roofs tend to act as solar collectors and emit and absorb heat. The burning of fossil fuels also emits greenhouse gases like carbon dioxide that heat up the atmosphere around the source and usually the source is within urban environments.

Urban environments produce air pollution that harm the natural environment. Much of air pollution is concentrated in and around urban areas, where automobiles and industry emit mass amounts of waste into the environment. Visible air pollution, known as smog, is present in nearly all urbanized areas. Not only are humans affected adversely by bad air quality, animals also suffer. Air pollution can also curb vegetation growth and reduce crop yields. Air pollution from human activities harm all living creatures in the urbanized world.

Poor air and water quality, insufficient water availability, waste-disposal problems, and high energy consumption are exacerbated by the increasing population density and demands of urban environments. Strong city planning will be essential in managing these and other difficulties as the world's urban areas swell.

Together with many social and economic benefits of urbanization, there are also environmental problems. Cities comprise less than 3% of the Earth's surface, but there is an extraordinary concentration of population, industry and energy use, leading to a massive local pollution and environmental degradation. In the cities, approximately 78% of carbon emissions are due to human activities. The ecological footprints of cities go (through emissions, consumption and other human activities) far beyond their urban boundaries to forests, agriculture, water and other surfaces, which supply their residents so that they have an enormous impact on the surrounding rural, regional and global ecosystem.

The environmental impacts of modern cities go beyond their surrounding regions. Size, rate, and connections of the modern metropolis show a global impact. The ecological footprint is one measure of these effects. The ecological footprint of cities is defined as the total amount of productive land needed to maintain current activities and the removal of waste. The ecological

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footprint of cities such as New York and Tokyo are hundreds of times larger than their actual size and are also faced with problems such as acid rain, reduction of the ozone layer and global warming.

In most cities, a man transformed nature, vegetation was replaced with concrete, asphalt, and other surfaces, transformed or buried riverbeds, caused city climate and created huge artificial transfers of energy, water, and various substances. Growing cities are changing hydrological relationships and thereby influence the size and frequency of floods. Knowledge of urban hydrology and geomorphology is not only a key to good urban planning but should be available to each resident.

| **SCALE** | **Impact on Environment** | **SOME SPECIFIC EXAMPLES** (This list of examples is not intended to be comprehensive) |
|---|---|---|
| **Within house and its plot** | Biological pathogens | Water-borne, water-washed (or water-scarce), airborne, food-borne, vector-borne, including some water-related vectors (e.g. Aedes mosquitoes breeding in water containers where households lack reliable piped supplied). |
| | Chemical pollutants | Indoor air pollution from fires, stoves or heaters. Accidental poisoning from household chemicals. Occupational exposure for home workers. |
| | Physical hazards | Household accidents – burns and scalds, cuts, falls. Physical hazards from home-based economic activities. Inadequate protection from rain, extreme temperatures. |
| **Neighborhood** | Biological pathogens | Pathogens in waste water, solid waste (if not removed from the site), local water bodies. Disease vectors, e.g. malaria-spreading Anopheles mosquitoes breeding in standing water or filariasis-spreading Culex mosquitoes breeding in blocked drains, latrines or septic tanks. |
| | Chemical pollutants | Ambient air pollution from fires, stoves....; also perhaps from burning garbage if there is no regular garbage collection service. Air and water pollution and wastes from ‘cottage’ industries and from motor vehicles. |
| | Physical hazards | Site-related hazards, e.g. housing on slopes with |

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| | | risks of landslides; sites regularly flooded, sites at risk from earthquakes. |
| **City (or municipality within larger city)** | Biological pathogens | Pathogens in the open water bodies (often from sewerage); also at municipal dumps; contaminated water in piped system. |
| | Chemical pollutants | Ambient air pollution (mostly from industry and motor vehicles; motor vehicles' role generally growing); water pollution; hazardous wastes. |
| | Physical hazards | Traffic hazards. Violence. 'Natural' disasters and their 'unnaturally large' impact because of inadequate attention to prevention and mitigation. |
| | Citizens' access to land for housing | Important influence on housing quality directly and indirectly (e.g. through insecure tenure discouraging households investing in improved housing, and discouraging water, electricity and other utilities from serving them). |
| | Heat island effect and thermal inversions | Raised temperatures a health risk, especially for vulnerable groups (e.g. elderly, very young). Air pollutants may become trapped, increasing their concentration and the length of people's exposure to them. |
| **City-region (or city periphery)** | Resource degradation | Soil erosion from poor watershed management or land development or clearance; deforestation; water pollution; ecological damage from acid precipitation and ozone plumes; loss of biodiversity. |
| | Land or water pollution from waste dumping | Pollution of land from dumping of conventional household, industrial and commercial solid wastes and toxic/hazardous wastes. Leaching of toxic chemicals from waste dumps into water. Contaminated industrial sites. Pollution of surface water and groundwater from sewage and surface runoff. |
| | Pre-emption or loss of resources | Fresh water for city pre-empting its use for agriculture; expansion of paved area over good quality agricultural land. |
| **Links between city and global issues** | Non-renewable resource use | Fossil fuel use; use of other mineral resources; loss of biodiversity; loss of non-renewable resources in urban waste streams. |
| | Non-renewable | Persistent chemicals in urban waste streams; |

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| | sink use | greenhouse gas emissions, stratospheric ozone depleting chemicals. |
| | Overuse of 'finite' renewable Resources | Scale of consumption that is incompatible with global limits for soil, forests, freshwater.... |

The effects of human activity on the environment stretch back thousands of years, to the time of our very earliest ancestors. Since Homo sapiens first walked the earth, we have been modifying the environment around us through agriculture, travel and eventually through urbanization and commercial networks. At this point in earth's physical history, our impact on the environment is so substantial that scientists believe "pristine nature," or ecosystems untouched by human intervention, no longer exist.

The study on evaluation of Citizen Priorities and their impacts on the Environment would be a wise step to understand and evaluate in context of planning projects like Smart City Mission, ongoing in selected cities in India.