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CLIMATE CHANGE AND URBAN HEAT ISLANDS IN KOLKATA METROPOLITAN REGION

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Climate in Kolkata has changed in the last fifty years. After examining the different parameters, the study found the decadal and long term changes in the micro-climate. The surface air temperature over Kolkata has shown an increasing long term trend. The change has been first noticed when an unprecedented growth of population was observed after the independence. In 1951, the number was 2, 544, 677 which has increased to 4, 580, 544 in 2001. More the population means more the need of land. This led to the encroachments of open green spaces for the development of settlements. Subsequently, the land use pattern keeps on changing and the green city turned into concrete city. To support millions of livelihood, industrial development brought a new era of urban expansion. The residential area increased from 79.87 in 1991 to 90.23 percent in 2001. As the city expands in one hand, 83.56 sq. km in 1951 and 187.33 sq.km. in 2001, it degrades environment on the other. Metro city becomes more problematic with growing motor vehicles and public transport on road which is about 9,48,000 registered vehicles in 2006. The speedy growth choked the city environment with black smoke. Pollution levels increased in last decade in a tremendous and uncontrollable way. Limits of SPM concentration in residential region have crossed the annual average. Thus, this increase in pollution level reinforced the local climate to vary substantially. This sign of climatic variability becomes visible when survey was undertaken. Climatic data from 1951-2010 and pollution data of last fifty-five years 1951- 2005 has been examined to get the trend of climatic change with increase in pollution level. The GIS technique has been applied to derive the heat island intensity map. By considering these trends and map, a difference can easily be delineated between the diurnal and monthly temperature of the city with its surrounding regions. The formation of heat island in the localities of Kolkata like, Behala, Dunlop bridge, Cossipore etc. proves the change of climate in Kolkata Metropolitan Region. The ultimate consequence of this change is the environmental degradation. With a wide ranging potential impacts of climate change, a precautionary approach have been taken that seeks to decrease greenhouse gas emissions substantially, including the introduction of energy efficient and renewable energy technologies. The perturbations and disturbances occur across space and time. Thus, the study attempts to make Kolkata as carbon resilience mega city.

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