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PEOPLE

Smart cities leading the battle against climate change

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India, which was once a country of millions of self-sustaining villages, today is one of the world's most rapidly urbanizing countries. More than 34% of the country's population is living in urban areas with the numbers growing constantly and it won't be long before the majority of the population would be living in urban areas. It is also expected that India is going to take over China as the most populated country in the world in 2023. India is also one of the most critically impacted countries by climate change. The recent flood-like situations in Bengaluru and Jaipur have shown us how dangerous the wrath of nature can be. It is very critical that the master plans of the cities are upgraded as per the rapidly evolving requirements of the particulate region.

Traditional Indian cities are overcrowded and unplanned. The infrastructure in these cities is inefficient and under tremendous pressure. In most cases, the infrastructure has been designed to meet the immediate needs of the people without much concern for the environment. All these factors combined have caused serious damage to the environment in the country and contributed heavily to global climate change. Things, however, are changing now. Due to increased awareness and large-scale government interventions, the situation has started improving.

While individuals are contributing at their level by reducing, reusing, recycling, conserving resources, and planting more trees, the government is taking larger steps like promoting renewable energy, electric vehicles and developing smart cities. Smart cities have proved to be one of the most important tools for combating climate change and conserving the environment. In the subsequent paragraphs, we will discuss how smart cities have been contributing towards the fight against climate change.

Optimization of resources: One of the most basic characteristics of any smart city is the optimization of resources. By optimizing the use of resources like electricity and water, smart cities decrease the dependence on natural resources. This is done with the help of the Internet of things (IoT) and geospatial technologies. Smart street lighting is an example of this type of utilization. In traditional cities, street lights keep burning electricity continuously through the night. In smart cities, smart street poles with motion sensors automatically dim the lights or shut them down during periods of low or zero movement. The motion sensors at the light poles automatically turn the light on as any vehicle starts approaching. Similarly, heating, cooling, and ventilation in public buildings are optimized to save electricity.

Smart mobility: Vehicular pollution is one of the highest contributors to pollution in cities. Vehicles stuck in traffic jams continuously burn fossil fuels and emit greenhouse gases. Efficient public transport reduces the need for private vehicles in the city, which consequently reduces traffic jams and vehicular pollution. Public transport like metro trains and buses run on cleaner fuel thus polluting much less compared to fossil fuel-powered vehicles. With CCTV cameras and IoT, smart cities monitor the traffic situation in the cities and use techniques like traffic diversion, congestion pricing, etc. to control situations like traffic jams or overcrowding of public places. Smart cities are also now being designed to meet the needs of electric vehicles (EVs). The dearth of charging stations is the biggest deterrent to the mass adoption of EVs. However, in smart cities with an ample number of charging stations, EVs will become an obvious choice for people.

Alternate energy: The use of alternate sources of energy is a significant tool against climate change. Fossil fuels are not only environmentally very expensive to extract and transport but also are perhaps the biggest reason for GHG (greenhouse gas) emissions. Smart cities are designed to fulfill as much of their fuel requirements as from the alternate sources of energy and gradually keep decreasing their dependency on fossil fuels.

Waste reduction and recycling: Reducing waste and recycling can make a huge difference in environmental conservation. By reusing and recycling material, smart cities reduce their dependency on natural resources. It also means less waste needs to be disposed of. This further means less amount of toxic material going into the land, air, and water. Waste-to-energy plants help smart cities sustainably manage their waste and generate electricity with it.

Blue and green infrastructure: Blue and green infrastructure are another significant feature of any smart city. Besides adding to the aesthetic value of the city, the green infrastructure aids in the absorption of CO2 in the city. It also provides a porous surface for the rainwater to seep underground. Transpiration from plants is also instrumental in bringing down the local temperature. Blue infrastructure holds the stormwater and prevents its flow down the stream. Besides storing water for periods of scarcity, blue infrastructure also helps in the replenishment of underground water. This reduces the need for potable water which often requires huge amounts of energy for transportation from the source to the city.

The estimates by UNDP in 2020 suggested that 70% of the greenhouse gas emissions in the world come from cities. If these emissions could be reduced even to half, it will make a huge difference to the efforts against climate change. By optimizing resources, reducing dependency on fossil fuels, and reducing waste production, smart cities are paving the way for a smarter and environmentally sound future. With the smart cities mission, the Government of India has already taken the right step in the right direction.