

# Renewable Energy

## The Non-Negotiable Core of Future Urban Planning

Urbanization in India is taking place at an exponential rate. As per Auguste Tano Kouamé - the World Bank's Country Director for India—the people living in cities will rise from over 360 million in 2011 to over 600 million by 2036. He further projects that urban areas will contribute 70% of the GDP in 2036. This needs uninterrupted energy supply. The real challenge lies in ensuring the energy supply while resorting to sustainability agenda. It is pertinent to highlight that while cities globally consume over 70% of the energy they also contribute over 50% of the greenhouse gases. The source these have been lighting, cooking, appliances, heating & cooling and vehicles. The situation catches serious attention as 17 of the top 20 fastest growing cities in the world are based in India. As per 2019 report of Oxford Economics Surat, Agra, Bengaluru, Hyderabad, Nagpur, Tirupur, Rajkot, Tiruchirappalli, Chennai and Vijayawada would grow relative faster than others.

### Integration in Built Environment

The answer to energy sustainability lies in the urban planning. The energy system being planned now shall meet the twin objective of resilience and optimal use. The infrastructure being created now shall also be congruent to future growth, technology agnostic investment. The regenerative building not only includes the green roof and skin but also cleans the ambient air and sequester carbon. One need not imagine some far-off utopia because it is really quite close—one city away. But the benefits of such an approach go far beyond the environment—though these alone should be enough. By shifting radically away from fossil fuels, we could reduce our carbon footprint enough to curb the worst effects of climate change. Integration of renewable energy into urban design can help make our cities stronger. The built spaces need to imagine beyond net zero to be regenerative i.e. being energy surplus.

### Need of Multi-pronged Approach

The approach needs to go beyond embracement of renewable energy to smart grids, e-vehicle adoption including its charging infrastructure, to exploring adopting District Energy System (DES). DES includes various technologies like combined heat and power (CHP), thermal storage, heat pumps and decentralised energy that develop collaborations between production and supply of electricity; heating, ventilation and air conditioning (HVAC). A decentralized power network is more robust, particularly in times of increasing uncertainty around the climate and its ever more frequent and violent weather fluctuations. It is less susceptible to large-scale blackouts and can recover from disruptions more rapidly.

### Perpetual Return on Sustainable Energy Initiative

This should offer enormous space for innovation in cities. Charging stations for electric cars that run on solar energy could potentially change the way cities move and breathe, decreasing emissions and air

pollution. New advanced power grids would be able to distribute smartly, not wasting one resource and therefore increasing the work efficiency. The crucial aspect of it will be to integrate others infrastructure like power supply, water supply, sanitation, public transport, sewage management, solid waste management.

The economic benefits could also be huge. On one hand, there could be a large amount of money invested upfront; on the other, the long-term saving in energy costs might also be huge. Furthermore, millions of jobs could be provided with renewable energies—in installation, maintenance, and related industries. There is, however, a need for policymakers to design appropriate regulatory frameworks that would allow and promote this kind of innovation in an urban setup. What is important is for developers and construction companies to embrace this new paradigm. They should consider the use of renewable energy in their development project at hand, rather than another addition that would result in added costs.

### Managing Transition to Renewable Energy

Naturally, the change would not come without challenges. A section of experts can also argue that the transformation is too expensive or too complex. They can point to the many renewable sources of energy that are inherently intermittent and the trickiness of retrofitting existing urban areas. In fact, the cost of doing nothing far exceeds this simple transition. The long-term costs of climate change are deep and wide, as it is depleting and will continue to deplete the remaining resources of fossil fuels. In contrast, the investment in renewable energy today might help diminish this future cost through the kind of urban environments that are created—more livable and sustainable in the long run.

Moreover, many of the challenges involved in using renewable energies are surmounting by swift technological development. More effective and cheaper solutions for energy storage could even out the peak and trough of supply. We stand at the threshold of a new era in urban development, and it is up to us to decide. We should choose this moment to reshape our cities into sustainable powerhouses—beacons of the innovation that will help light the way to a cleaner, greener future.



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