Climate Resilient Cities – Need and Approach

Mains: *GS I - Urbanization, their problems and their remedies*

Why in News?

Currently, urban areas are largely exposed to extreme vulnerability to flooding, extreme heat, cyclones, landslides and earthquakes and there is a need to build s climate resilient cities.

What are climate resilient cities?

- **Climate resilient cities** - Climate-resilient cities are urban areas designed and managed to withstand and adapt to the negative impacts of climate change, such as rising sea levels, extreme weather, and heat waves
- **Strategies** – They achieve this by
    - Integrating climate information into urban planning,
    - Developing strategies to reduce vulnerability,
    - Implementing adaptation measures like green infrastructure,
    - Building robust systems to ensure continued functionality despite environmental shocks and stresses.

    - **Notable climate-resilient cities** – These include
        - **Rotterdam** – Innovative water management and floating architecture.
        - **Singapore** – Integrating green infrastructure and smart technologies.
        - **Auckland** – The spongiest city using natural waterways for flood protection.
        - **Copenhagen** and **Ahmedabad** – Employing strategies like green roofs, rainwater catchment, and urban heat island mitigation through extensive greening.

What is the need for climate resilient cities?

- **Rapid urbanization** – In another 25 years, the country's urban population is likely to soar to almost a billion, with some megacities becoming larger than individual countries.
- **Unplanned infrastructures** – A large share of urban infrastructure is yet to be designed and built.
- India's cities have a narrow window of opportunity to prepare for the future.
- **Job creation** –In just five years from now, Indian cities are expected to generate over 70% of new jobs.
- It will be critical for India's cities to draw up a blueprint for the future that will bring out the talent and entrepreneurship of its aspiring young generations.
- **Demand for housing** – By 2070, cities will need over 144 million new homes, along with the transportation systems and municipal services that can cater to these unprecedented numbers.
- The way these new housing units are planned, located, designed, constructed, and maintained will have a profound impact on cities and their inhabitants.
- Ensuring that new housing is part of compact city design with forward-looking planning can help make India's cities more prosperous, inclusive and climate-resilient.
- It will therefore be essential to make early investments in climate-resilient urban design and infrastructure to avert billions of dollars in annual damages while saving countless lives.
- **Risk of floods** – As the construction of new housing and infrastructure proceeds apace, more than two-thirds of India's urban dwellers will face the risk of pluvial or surface flooding, potentially racking up losses of $5 billion by 2030, and $30 billion by 2070.
- **Extreme heat** – The impacts of extreme heat, together with the urban heat island effect, are causing nighttime temperatures in major Indian cities to exceed those of surrounding areas by 3°C to 5°C year-round.
- **Transportation** – The efficiency of transportation is also vital for the productivity of a city and its people.
- Today, however, more than a quarter of India's urban roads are directly exposed to some level of flooding.
- In some cities, if just 10 to 20 per cent of roads are inundated, more than half of their transportation systems are likely to be disrupted.

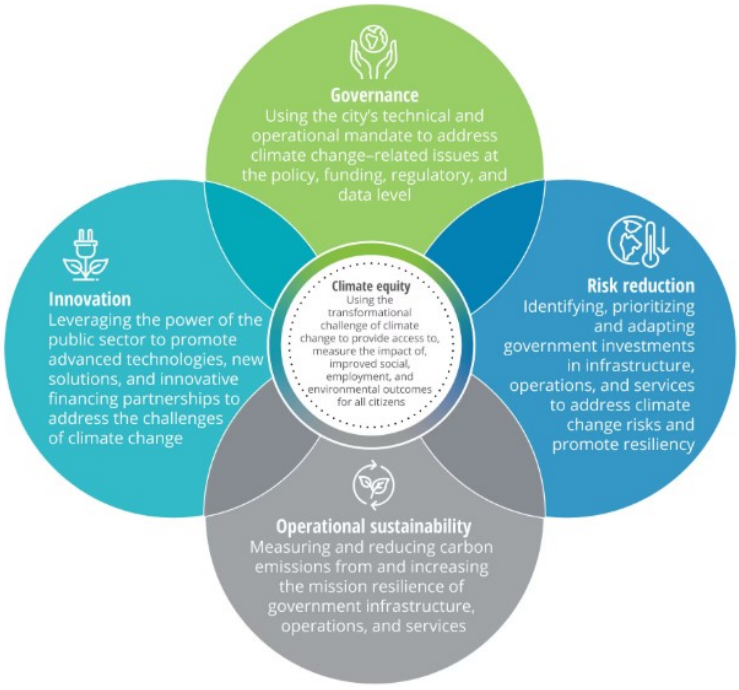
What are the approaches to build climate resilient cities?

- **Mapping flood risks** – Areas that are vulnerable to floods should be mapped and early warning to be developed based on the local needs.
    - **For example,** Kolkata has adopted a city-level flood forecasting and warning system.
- **Improving drainage** – Drainage and storm water channels need to be strengthened to avoid frequent flooding of residential areas.
    - **For example**, Chennai is improving storm water management and flood preparedness to support the most vulnerable populations.
- **Road Building and maintenance** – Developing alternative routes for roads that

become blocked and can help avert climate-induced disruptions to economic activity.

- **Large investments** – More investment to be made in modernising municipal services including waste collection and converting waste to energy.
- It can improve the quality of air, water and soil, with far-reaching impacts on urban productivity and quality of life.
- **Building institutional capacity** – Institutions must be built in order to withstand any adverse situation arising from the sudden catastrophes and disasters
    - **For example,** Ahmedabad's Heat Action Plan by increasing tree cover and canopies, replacing heat-intensifying roofs with easily doable cool roofs, and shifting the working hours for outdoor labourers.
- **Promote collaboration** - Get the support of both the government and the citizens, for the undertaking is too large to go it alone.
- **Private sector participation** – promoting private sector engagement to bring efficiency and innovative financing and technical capacity for driving this major endeavour.
- **An integrated approach** — Cities that demarcates high-risk areas as no-build zones, improves city-wide drainage, promotes nature-based solutions that can absorb excess rainwater, and installs flood warning systems can help reduce this risk.
    - **Brazil,** for instance, which is now 80% urban, has moved beyond channelisation and structural flood control towards this more integrated approach.

Multidimensional Approach to Climate Resilient Cities



What lies ahead?

- Over the next three decades, the cost of developing climate-resilient and low-carbon urban infrastructure and services could amount to $10.95 trillion.
- While the investment is tremendous, it has the potential to save billions of dollars annually.
- Climate resilient cities could transform urban living by attracting investment,

generating new jobs, fostering innovation and unlocking the full potential of India's people.
- Scaling up the measures to India's largest and most affected cities can not only avert hundreds of thousands of deaths every year, but also protect economic productivity, even during the peak summer months.

Reference

The Indian Express| Climate resilient cities