This analysis is based on the article published in The Indian Express on the topic "The rising threat to Mumbai."

Context:

A paper published in the journal Nature on October 29, 2019, has identified dangers specifically to Mumbai and other coastal cities.

Findings of the report:

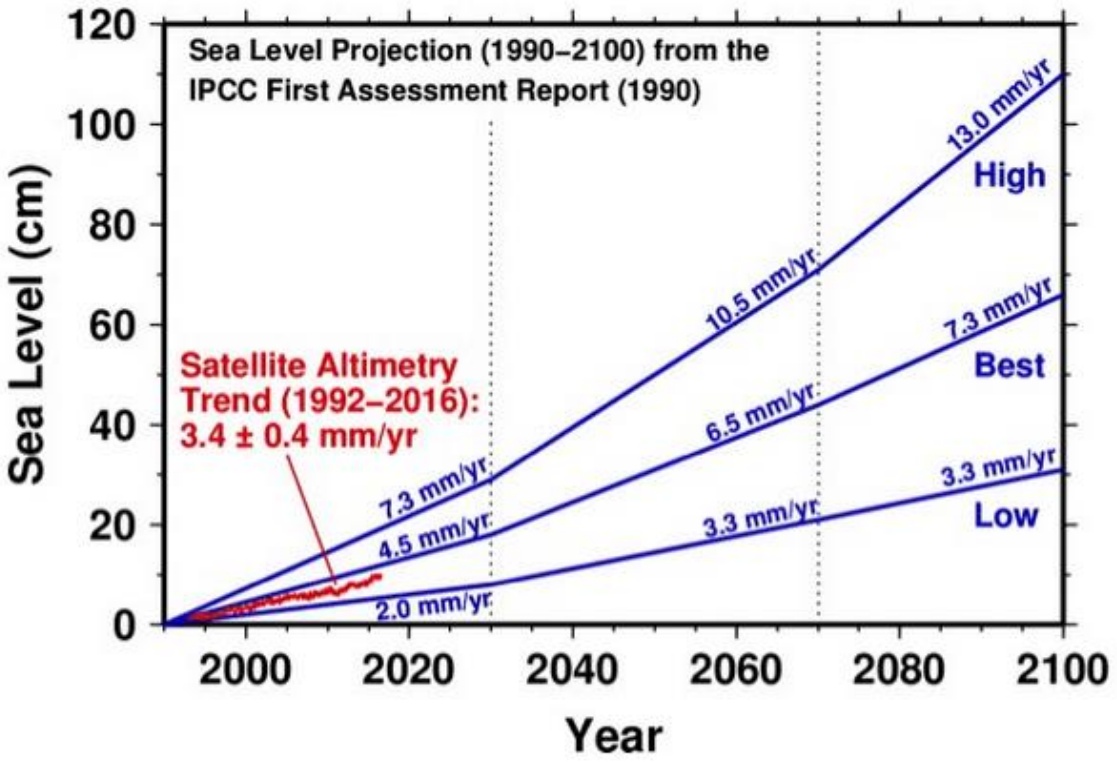
- Anthropogenic climate change will inundate a significant section of Mumbai by 2050.
- Mumbai by 2050 will look the lot like Mumbai in the 1700s if some significant steps are not being taken as the sea will reclaim much of the landfill that the city has been built on.
- As per the reports of IPCC(Intergovernmental Panel on Climate Change) and Nature Journal, published in October 2019, the effects of Climate change are more intensive than was earlier predicted. For e.g., Rise in sea level is significantly faster than earlier models had estimated.
- The IPCC report further warns Mumbai's administrators and planners and states that "in the absence of adaptation, more intense and frequent extreme sea-level events, together with trends in coastal development will increase the expected annual flood damages by 2-3 orders of magnitude by 2100."

Cause of concern:

- Despite the alarming situations and the urgent need for adaption and actions, the ignorant nature of the city for climate adaptation programs and infrastructures in its development planning processes is worsening the climate risks.
- For Example, Mumbai's new Coastal Road project which is now stalled by the Bombay High Court. The project proposed the construction of a 29.2 km road on the western coast of Mumbai, which aims to mitigate "extreme traffic congestion" and "transport-related pollution" in hopes of increasing productivity and quality of life for citizens. Most part of the project is to be built on reclaimed land, which raises the issues of:

a.) reclamation of land makes the city vulnerable to flooding

b.) Studying of the Coastal Road Detailed Project Report and the EIA (Environmental Impact Assessment) has shown that the studies were done for the project creation significantly underestimate sea level rise, which is a key factor for designing a road on reclaimed land.



- The data for the study used was of the 20th century(the period between 1878 and 1993) which indicates an average rise of sea level of 1.27 mm/year while sea level rise actually has increased to 3.2 mm/year in the period 1993-2012 (Unnikrishnan et al. 2015).
- This raises a big question mark on planners' approach as infrastructure is designed for the future, why they are not using current and future projections which will more correctly estimate future climate risk in the design of urban infrastructure.
- There is an urgent need for new imaginaries, designs, plans, and infrastructures, not the materialisation of failed ideas of the 20th century.
- For instance, award-winning landscape architects and planners Dilip da Cunha and Anuradha Mathur have shown those river embankments, sea walls and reclamation do not necessarily prevent inundation from intensified rains and rising seas rather magnify the risk of inundation.
- Wall might prevent inundation in one part of the city while the other part becomes vulnerable.
- Artificial wetlands provide a good solution for excessive water, but its creation is difficult.

What is required to do?

- well-designed coastal protection can result in:

a.) reduce expected damages.

b.) cost-efficient for urban and densely populated areas.

- Measures such as natural barriers, levees, flood barriers and even hard barriers can be an effective solution.
- Infrastructure construction along the coast needs to be stopped.
- Need to integrate anticipated Sea-level rise effects into coastal planning are essential.
- Investing in the rural economy, reducing poverty, reducing unemployment and improving measures for sustainability can improve the lives of people and increase their resilience and openness to "others".