



## IFLOWS-Mumbai: Flood Warning System

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### Why in News

Recently, an integrated **flood warning system - known as IFLOWS-Mumbai** was launched making Mumbai the second city in India after Chennai to have such a system.

### Key Points

- **Developed by:** It is developed by the Ministry of Earth Sciences (MoES), in coordination with the Municipal Corporation of Greater Mumbai (MCGM).
- **Working/Features:** The IFLOWS-Mumbai comprises seven modules, namely **data assimilation, flood, inundation, vulnerability, risk, dissemination and decision support system.**
  - It incorporates weather models from **National Centre for Medium Range Weather Forecasting (NCMRWF), India Meteorological Department (IMD)** and field data from the rain gauge network stations.
  - This **Geographic Information System (GIS)**- based decision support system has all relevant details - such as land topography, land use, infrastructure, population, lakes, creeks and data on river **bathymetry (study of the beds or floors of water bodies)** of all rivers namely Mithi, Dahisar, Oshiwara, Poisar and Ulhas.
  - The system has provisions to capture the urban drainage within the city and predict the areas of flooding in advance so that the civic body can issue alerts in advance.
- **Benefits:** This will boost the city's resilience by providing early warning for flooding specially during high rainfall events and cyclones. Bengaluru and Kolkata may also get such a system by 2021.

- **Need**

- Mumbai has the history of flooding during extreme rainfall events. It had faced massive floods in July 2005, and recently in 2017.
- Rise in extreme rainfall events in India that are **driven by warming temperatures** and changes in the monsoon due to climate change.
- According to the **Global Report on Internal Displacement 2020**, nearly five million people were displaced in India in 2019 because of disasters related to Southwest Monsoon and Cyclones.
- According to the **'State of India's Environment 2020 in Figures'** the internal displacements in India caused by disasters and extreme weather conditions were the highest in the world in 2019.