Urban Flooding

Urban Flooding is an inundation of land in a constructed setting, particularly in densely populated areas. It happens when rainfall or allied instances overwhelm the capacity of drainage systems.

Urban flooding is a major issue in many cities of India as of late. Hence, this article will be of immense use for candidates appearing for the IAS Exam this year as questions related to Urban Flooding can potentially be asked from the Public Administration segment.

Overview of Urban Flooding

Urban Flooding is a major issue in many parts of the world and is a natural disaster that takes place every year. Rise in sea-levels caused by global warming is only accelerating the problem further. Although it is a common notion that urban dwellings near floodplains are most likely to be affected, there are other factors that are in play as well. Some of those factors are as follows

1. Flash-floods
2. Melting of snow
3. Water released from damaged sewer systems
4. Overflow from drainage

In urban areas, flood effects can be exacerbated by existing paved streets and roads, which increase the speed of flowing water. Impervious surfaces prevent rainfall from infiltrating into the ground, thereby causing a higher surface run-off that may be in excess of local drainage capacity.

Urban flooding is a serious problem as urban areas play host to vital economic infrastructures that need to be protected at all times. Any damage or loss of these vital infrastructure will lead to economic losses of great magnitude. In addition, it will lead to loss of life and property and a large sum of resources will be lost when they are put into relocating people to safe areas.

Urban Flooding in India

Urban flooding has been increasing as of late in India, severely affecting major cities. Some of the most significant events of urban flooding include Mumbai Floods of 2005, Kolkata in 2007, Delhi in 2009, Bangalore in 2015 and the Hyderabad floods of 2020.

Flooding in India reaches its peak during the monsoon seasons. There are times when storm surges at coastal cities can cause flooding as well. Other causes include failure to release water from dams can also have severe impact. In addition, the urban heat island effect has resulted in an increase in rainfall over urban areas. Global climate change is resulting in changed weather

patterns and increased episodes of high intensity rainfall events occurring in shorter periods of time. Then the threat of sea-level rise is also looming large, threatening all the coastal cities.

Factors that lead to Urban Flooding in India

Urban flooding in India is a result of myriad factors some of which are:

- Storm water drainage systems whose capacities are overwhelmed when a rainfall of high intensity happens.
- Haphazard and irregular planning of cities compounded by problems of illegal encroachments which eliminate natural watercourses necessary to drain excess water.

Consequently the capacity of the natural drains has decreased, resulting in flooding. Improper disposal of solid waste, including domestic, commercial and industrial waste and dumping of construction debris into the drains also contributes significantly to reducing their capacities. It is imperative to take better operations and maintenance actions.

The problem will only further increase as rapid surge in population leads to urbanisation on an almost industrial scale. Demand for living space is being met by encroaching on floodplains without any regards for proper urban planning. As the years will tick by, the problem of Urban Flooding is only bound to increase.

Steps taken to Mitigate Urban Flooding

One of the best solutions to reduce the chances of flooding is to build away from floodplains and high flood hazard zones. It is a challenging task to identify such zones and water bodies but using geospatial analysis can lend crucial aid in identifying such areas.
New construction in flood prone areas must be strictly monitored and regulated and in areas where constructions had already finished or rather encroached upon. Structural flood control measures, like increasing stormwater drainage capacitors must be taken into account.

Government initiatives like the Sponge Cities mission and Atal Mission for Rejuvenation and Urban Transformation (AMRUT) can go a long way in helping civic authorities to plan cities keeping flood risks in mind. Further, residential and commercial stakeholders can be further motivated to install green infrastructure options like rain gardens, green roofs, and rain water harvesting systems.

In addition to reducing flood risks, these systems store water for drier seasons and help in recharging groundwater. It is only prudent to invest in making our cities resilient so that when disaster strikes, we can bounce back to normal with minimum loss of life and property.

Along with the government taking these measures the general public must also be educated about the dangers of buying houses in low lying areas or near floodplains. Such steps may not yield immediate results but the steps taken might lead to tangible results in the future.