General Studies-3; Topic-Disaster and disaster management.

Sponge Cities

1) Introduction

- A sponge city is a city that is designed to passively absorb, clean and use rainfall in an ecologically friendly way that reduces dangerous and polluted runoff.
- Associated techniques include permeable roads, rooftop gardens, rainwater harvesting, rain gardens, green space and blue space such as ponds and lakes.

2) Present Status

- Trillions of litres of free, rain water drop onto the world's cities each year – yet most of it is channelled straight into gutters, drains and rivers.
- While natural systems retain water, concrete structures tend to waste it.
- This represents a waste of a valuable natural resource.
- Rising global temperatures are making rainfall from storms more destructive and frequent.
- It can lead to devastating urban floods.
- Urban flooding has become a recurrent feature in Indian metros.
- Cities are getting bigger and climate change is threatening to bring more extreme weather events.
- There is no long-term vision on how to tackle such climate challenges.
- In the last couple of years, Mumbai, Ahmedabad, Chandigarh and Chennai have faced the same challenge.
- When we build cities, we tend to build on wetlands and ponds, which actually have the ability to soak in extra water.

3) Sponge Cities

- Scientists are proposing "sponge cities", where almost every raindrop is captured, controlled and reused.

- A sponge city follows the philosophy of innovation: that a city can solve water problems instead of creating them.
- Instead of funnelling rainwater away, a sponge city retains it for use within its own boundaries.
- Some might be used to recharge depleted aquifers or irrigate gardens and urban farms.
- Some could replace the drinking water we use to flush our toilets and clean our homes.
- It could even be processed to make it clean enough to drink.
- Indian cities must become 'sponge cities' to tackle urban flooding.

4) Significance

- It's a new way of thinking about storm water, not as a problem but as an opportunity and a resource to augment our water supply.
- In the long run, sponge cities will reduce carbon emissions and help fight climate change.
- Sponge cities also come with wider social benefits.
- Properly implemented sponge city can reduce the frequency and severity of floods and improve water quality.
- By capturing storm water, we are preventing beach pollution.
- Greening the city by planting new plants.
- Associated strategies such as green space can improve quality of life, improve air quality and reduce urban heat islands.
- Water can be used to keep green spaces verdant, provide an outdoor area for the people who live and work in the building, and even be used to grow food.
- This in-turn can improve urban eco-system diversity by providing new habitats for a wider range of organisms.

5) China's Sponge Cities

- Nowhere has embraced the idea of sponge cities as enthusiastically as China.
- The Chinese government is building water-absorbent projects in 30 cities as part of its "sponge city initiative."
- The plan is to manage 60% of rainwater falling in the cities.
- Develop ponds, wetlands, build permeable roads and public spaces that enable stormwater to soak into the ground.
- By 2020, China hopes that 80% of its urban areas will absorb and re-use at least 70% of rainwater.
- However, transforming entire cities into sponges will require massive investment.
- With growing urbanisation in India and increasing urban floods, it is time for India to move towards sponge cities.