Q17

Discuss the distribution and density of population in the Ganga River Basin with special reference to land, soil and water resources.

UPSC Civil Services Mains 2025 · GS I · 15 marks · Women, Population and Urbanisation

Role of women and women's organization, population and associated issues, poverty and developmental issues, urbanization, their problems and their remedies.

Core demand of the question

- Map population density in the Ganga basin from the delta to the plains and the hills
- Tie density to alluvium, soil fertility, water and hazards
- Use Uttar Pradesh, Bihar, West Bengal, and contrast the dry west and the terai

Revision summary

The Ganga plains from western Uttar Pradesh through Bihar to the Bengal delta are among the world's densest rural regions.

Alluvial soil, shallow water and a long growing season explain that density.

Himalayan hills and some dry western margins of the basin are thinner.

The same water that feeds the field produces flood, and some groundwater is now chemically unsafe.

Cities on the corridor are the urban expression of the same fertile strip.

Introduction

The **Ganga river basin** is one of the most crowded pieces of the Earth. People did not gather there for a view of the Himalaya. They gathered because **silt, shallow groundwater and a long growing season** could feed a village, then a town, then a million. Distribution and density still follow **land, soil and water**, with floods as the bill.

Body

The dense core

From western Uttar Pradesh through **Bihar** to the **West Bengal** delta, rural densities are among India's highest. **Alluvial soils** - khadar and bhangar - hold water and nutrients. Canals and **tube wells** made a second green-revolution layer, especially in the western basin. **Patna, Varanasi, Kanpur, Prayagraj, Kolkata** sit on that corridor because a river is a road as well as a field. The **delta** packs people onto every unflooded levee.

Where it thins

The **Himalayan** districts of Uttarakhand and Nepal's hills (the basin's head) are steeper, colder, and thinner. The **Chambal-badland** and some **western dry** margins of the basin hold fewer people per square kilometre. The **Sundarbans** edge is dense but **fragile**: people live

with tide and tiger because the alternative is the already packed mainland.

Soil, water, hazard

Fertile **alluvium** explains the crowd. **Arsenic** in some groundwater, **fluoride**, and **polluted surface water** now tax that gift. Annual **flood** in north Bihar is the river taking back the plain it made. Density without drainage is a **disaster statistic**. Urban Kolkata and the million-plus UP cities show **rural density become urban crush** on the same soils.

The geographical explanation is therefore simple and harsh. The Ganga plains are a **gift of Himalayan sediment and monsoon water**. That gift supports a dense agrarian civilisation. It also concentrates **flood, pollution and land fragmentation** on the same map.

Flow diagram

Himalaya headwaters -> Western Western UP canals canals

Western UP canals -> Bihar floodplain

Bihar floodplain -> Bengal delta

Western UP canals -> Very high density

Bihar floodplain -> Very high density

Bengal delta -> Very high density

Himalaya headwaters -> Lower hill density

Conclusion

Population in the Ganga basin is thickest on fertile, watered alluvium from western Uttar Pradesh through Bihar to the Bengal delta, and thinner in the hills and dry margins. Land, soil and water explain the crowd. Flood and pollution are the same map's other face.

Facts & figures

Khadar and bhangar
New and old alluvium of the Ganga system; khadar is more flood-prone and often more fertile.

North Bihar floods
Annual inundation where Himalayan tributaries meet the plain, a hazard that sits on the dense population map.

Arsenic belt
Parts of the Bengal delta and adjoining plains have natural arsenic in groundwater, a water-resource limit on the same dense belt.