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CUET · GEOGRAPHY · CLASS XII · CODE 313

Geographical Perspective on Selected Issues and Problems

CUET unit: Geographical Perspective on Selected Issues and Problems

By **UniDrill** · NCERT-grounded study material

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📌 Snapshot

- Four major environmental and social issues are linked to India's growth — environmental pollution, urban waste disposal, rural-urban migration with slums, and land degradation.
- Pollution is classified into **air, water, land and noise** — with named river-pollution stretches (Ganga, Yamuna) and government missions (Namami Gange, Swachh Bharat) that CUET tests frequently.
- Concrete case studies — **Daurala** near Meerut on the "Polluter Pays" principle; **Jhabua** watershed in MP; **Dharavi** in Mumbai — are converted by CUET into case-based MCQs.
- The NRSC classification of wastelands (natural vs human-induced) and the 2011 rural-population share (~69%) are both high-yield factual hooks.
- This topic is tested primarily through direct-recall (diseases, pollutant sources, river stretches), statement-based items on slums/migration, and assertion-reason on land degradation and the Polluter Pays principle.

📖 Detailed Notes

2.1 Core concepts

- Environmental pollution is defined as **"the release of substances and energy from waste products of human activities."** It is classified on the basis of the medium through which pollutants are transported and diffused into **(i) air pollution, (ii) water pollution, (iii) land pollution and (iv) noise pollution**. (NCERT §Environmental Pollution, Ch. 9, p. 95)
- **Water pollution** arises mainly from indiscriminate use of water by an increasing population and industrial expansion. Surface water from rivers, canals and lakes is never pure — it carries small quantities of suspended particles, organic and inorganic substances. When the concentration of these substances increases beyond the self-purifying capacity of water, it becomes polluted and unfit for use. (NCERT §Water Pollution, p. 95)
- Pollutants are also created from **natural sources** (erosion, landslides, decay and decomposition of plants and animals), but pollutants from human activities — industrial, agricultural and cultural — are the real causes of concern. **Industry is the most significant contributor** to water pollution. (NCERT p. 95)

- Major water-polluting industries are **leather, pulp and paper, textiles and chemicals**. Fertilisers used in modern agriculture induce an increase in the **nitrate content** of surface waters. Cultural activities like **pilgrimages, religious fairs and tourism** also pollute water — NCERT explicitly lists this category as a third source. (NCERT §Water Pollution, p. 96)
- **Polluted river stretches (NCERT Table 9.2, p. 96):**
- **Ganga** — three stretches: (i) downstream of Kanpur, (ii) downstream of Varanasi, and (iii) Farakka Barrage. Polluters: industrial waste from Kanpur; domestic waste from Kanpur, Prayagraj, Varanasi, Patna, Kolkata; dumping of carcasses.
- **Yamuna** — most polluted from **Delhi to its confluence with the Chambal** and between **Mathura and Agra**. Causes: extraction by Haryana and UP for irrigation reducing dilution, agricultural run-off raising micro-pollutant levels, and Delhi's domestic and industrial waste.
- **Water-borne diseases** caused by contaminated water include **diarrhoea, intestinal worms and hepatitis**. WHO data show that about one-fourth of communicable diseases in India are water-borne. (NCERT §Water Pollution, p. 97)
- **Namami Gange Programme** — Union Government's flagship programme to clean the Ganga. Objectives include: sewerage treatment in towns; monitoring industrial effluents; river-front development; afforestation along banks; surface cleaning; creation of "Ganga Grams" in Uttarakhand, UP, Bihar, Jharkhand and West Bengal; and public-awareness drives. (NCERT box, p. 97)
- **Air pollution** is defined as the addition of contaminants — dust, fumes, gas, fog, odour, smoke or vapour — to the air in substantial proportion and duration harmful to flora, fauna and property. Combustion of fossil fuels, mining and industries release **sulphur dioxide (SO_2), nitrogen oxides (NO_x), hydrocarbons, CO_2, CO, lead and asbestos**. Air pollution causes various respiratory, nervous and circulatory diseases. **Smoky fog over cities ("urban smog")** is a result of atmospheric pollution and can cause **acid rains** — the pH of the first rain after summer is always lower than subsequent rains. (NCERT §Air Pollution, pp. 97-98)
- **Noise pollution** is the state of unbearable and uncomfortable conditions to humans caused by noise from different sources. Its intensity is measured in **decibels (dB)**. The main sources are factories, mechanised construction and demolition, automobiles and aircraft; periodical but loud sources include sirens, loudspeakers, etc. **Traffic noise tops the list as the biggest nuisance.** Noise pollution is location-specific and declines rapidly with distance from the source. (NCERT §Noise Pollution, p. 98)
- **Urban waste disposal** — solid waste is a variety of old and used articles, including metals, glassware, plastic, ash, floppies and CDs, etc., also called **refuse, garbage and rubbish**. The two sources are **household and industrial/commercial**. In metros like Mumbai, Kolkata, Chennai and Bengaluru, about **90 per cent of solid waste is collected**, but in most other Indian cities **30-50 per cent** is left

uncollected, causing typhoid, diphtheria, diarrhoea, malaria and cholera. Untreated wastes ferment slowly and release **toxic biogas including methane** to the atmosphere. (NCERT §Urban Waste Disposal, pp. 98-100)

- **Daurala case study** (near Meerut, since 2003) illustrates the **"Polluter Pays" principle** — when industries polluted groundwater in Daurala, an NGO with the help of the polluting industries built an overhead water tank, a **900-m pipeline**, desilted the village pond, set up rainwater harvesting and planted **1,000 trees**. The cost was borne by the polluting industries — operationalising the universal law that the polluter must pay to restore ecology and human health. (NCERT Case Study, p. 99)
- **Rural-urban migration** in India is driven by high urban labour demand, low rural job opportunities and unbalanced development. About **60 per cent of urban growth** after 1961 has come from natural increase, while **rural-to-urban migration accounts for ~29 per cent** of urban growth. This stream is overwhelmingly **male-dominated** because urban informal-sector wages are too low to support a family, so spouses and children stay back in the village. The Ramesh-of-Talcher welder case study illustrates remittances and assimilation problems. (NCERT §Rural-Urban Migration, pp. 100-101)
- **Slums** are residential areas of least choice — dilapidated houses, poor hygiene and ventilation, lacking drinking water, light and toilet facilities. **Dharavi in Mumbai is Asia's largest slum**, with thriving small-scale production of ceramics, embroidery and leather goods. The **Swachh Bharat Mission (SBM)** is part of the urban renewal mission aimed at improving slum quality of life. India's rural population was approximately **69 per cent in 2011**, meaning urban share was about 31%. (NCERT §Problems of Slums, pp. 101-103)
- **Land degradation** is defined as a **temporary or permanent decline in the productive capacity of land**. Its processes are **soil erosion, waterlogging, salinisation and alkalinisation**. The **National Remote Sensing Centre (NRSC)** classifies wastelands by satellite remote sensing into two broad categories — (a) **natural agents**: gullied/ravinous land, desertic/coastal sands, barren rocky areas, steep sloping land, glacial areas; (b) **natural and human-induced**: waterlogged and marshy land, land affected by salinity and alkalinity; and (c) **human-induced**: degraded shifting cultivation, degraded forest, degraded pasture, mining and industrial wastelands. **Wastelands caused by man-made processes are more important than those caused by natural processes.** (NCERT §Land Degradation, pp. 103-104)
- **Jhabua case study** (Madhya Pradesh, westernmost agro-climatic zone, mostly inhabited by **Bhils**) — watershed programmes funded by the **Ministry of Rural Development** and the **Ministry of Agriculture** under the **Rajiv Gandhi Mission for Watershed Management** treated about **20 per cent of the district's area**. In the **Petlawad block / Sat Rundi hamlet of Karravat village**, Bhils planted trees on **Common Property Resources (CPRs)**, fodder grass on pastures, and adopted

social-fencing (community vigilance to keep cattle out) to regenerate degraded land. (NCERT §Case Study, p. 104)

2.2 Definitions to memorise

Term	Definition	Page
Environmental Pollution	Release of substances and energy from waste products of human activities	95
Water Pollution	Concentration of suspended/organic/inorganic substances exceeding the self-purifying capacity of water, making it unfit for use	95
Self-purifying capacity	Inherent ability of natural water to dilute and degrade pollutants without external intervention	95
Air Pollution	Addition of contaminants (dust, fumes, gas, fog, odour, smoke, vapour) to air in substantial proportion and duration harmful to flora/fauna/property	97
Noise Pollution	Unbearable and uncomfortable state to humans caused by noise from different sources, measured in decibels (dB)	98
Decibel (dB)	Unit of measurement for noise intensity	98
Smog	Smoky fog over cities caused by atmospheric pollution; can produce acid rain	98
Acid Rain	Rainwater with low pH caused by air pollutants (SO_2, NO_x) dissolving in atmospheric moisture	98
Solid Waste	Variety of old and used articles — metals, glassware, plastic, ash, floppies, CDs — also called refuse, garbage, rubbish	98
Methane	Toxic biogas released by fermentation of untreated urban wastes	100
Polluter Pays Principle	Universal law that the entity causing pollution must bear the cost of restoring ecology and human health	99
Slum	Residential area of least choice — dilapidated houses, poor hygiene/ventilation, lack of drinking water, light and toilet facilities	103
Dharavi	Asia's largest slum, located in Mumbai	103
Land Degradation	Temporary or permanent decline in productive capacity of land	103
Salinisation / Alkalinisation	Accumulation of salts / alkalis in topsoil rendering it infertile	103
Waterlogging	Saturation of soil with water reducing aeration and productivity	103

Term	Definition	Page
Wastelands	Lands degraded by natural or human processes, classified by NRSC remote sensing	103
Ganga Grams	Villages developed under Namami Gange in 5 states along the Ganga	97
Namami Gange	Union Government programme to clean the Ganga via sewerage, effluent monitoring, river-front and Ganga Grams development	97
Swachh Bharat Mission	Urban renewal mission aimed at improving slum quality of life	103
Rajiv Gandhi Mission for Watershed Management	Programme that treated 20% of Jhabua district area under watershed regeneration	104
Common Property Resource (CPR)	Community-owned land used for tree planting and fodder in Jhabua	104
Social-fencing	Community-enforced restriction on grazing to allow vegetation to regenerate	104
Bhils	Tribal community in Jhabua (MP) who participated in the watershed programme	104
NRSC	National Remote Sensing Centre — classifies India's wastelands using satellite imagery	103

2.3 Diagrams / processes to remember

- **Figure 9.1 — "Cutting Through Effluent" (p. 95):** A photograph of a rower moving through a thick, pervasive layer of foam on the heavily polluted Yamuna at the outskirts of New Delhi. Visual symbol of Delhi-stretch Yamuna pollution; commonly used to set context for case-based items.
- **Table 9.1 — Types and Sources of Pollution (p. 96):** Matches each of the four pollution categories (air/water/land/noise) with specific pollutants (SO_2, NO_x, hydrocarbons; suspended solids, fertilisers, sewage; pesticides, solid waste; traffic, factories, sirens) and their sources. Ideal source for match-the-following MCQs.
- **Table 9.2 — Polluted Stretches of Ganga and Yamuna (p. 96):** Lists Ganga's three stretches (downstream Kanpur, downstream Varanasi, Farakka Barrage) and Yamuna's two (Delhi to Chambal confluence; Mathura to Agra) with named industries, cities and pollutant types. Memorise the city–stretch pairing.
- **Figure 9.2 — Noise monitoring (p. 98):** Image of monitoring activity at Panchpatmalai Bauxite Mine to record industrial decibel levels.
- **Figure 9.3 — Urban waste in Mahim, Mumbai (p. 100):** Photograph showing accumulated unsegregated solid waste in a residential locality — the visual proof of the 30-50% uncollected statistic.

- **Figures 9.4 and 9.5 — Jhabua case study (p. 104):** Two images — community tree-planting on Common Property Resources and community land-levelling work — illustrating participatory watershed management.
- **Polluter Pays process flow:** Industry pollutes → groundwater contamination → NGO assesses damage → polluting industries fund restoration (tank + pipeline + pond desilting + rainwater harvesting + tree-planting) → ecology and community health restored. Daurala (Meerut) since 2003 is the canonical NCERT example.
- **Wasteland classification flow (NRSC):** Satellite imagery → segregation into (a) natural agents [gullied, ravines, sandy, rocky, sloping, glacial], (b) natural + human [waterlogged, saline-alkaline], (c) human-induced [degraded shifting cultivation, forest, pasture, mining/industrial waste]. The NCERT verdict — man-made causes outweigh natural ones — is the most-tested takeaway.
- **Namami Gange action loop:** Sewerage treatment → industrial effluent monitoring → river-front development → afforestation → surface cleaning → Ganga Grams in 5 states → mass-awareness campaigns.
- **Urban migration push-pull map:** Rural push (low jobs, poverty, drought) → Urban pull (industries, services, education) → male-dominated stream → slum formation (Dharavi-type) → SBM intervention.

2.4 Common confusions / NTA trap points

- Students confuse the most significant contributor to water pollution — NCERT explicitly says **industry**, not agriculture or domestic sewage (p. 95).
- Yamuna pollution stretch is **Delhi to Chambal confluence** (not "Delhi to Allahabad"); Ganga's three stretches include **Farakka Barrage** (not "Hooghly" or "Patna" alone).
- Diseases: **diarrhoea, intestinal worms, hepatitis** are water-borne; **respiratory infections, bronchitis, conjunctivitis** are NOT water-borne (NCERT exercise Q1(ii)).
- **Acid rain is caused by air pollution**, not water/noise/land pollution (exercise Q1(iii)).
- Solid waste collected in metros is **about 90 per cent**, but in most other Indian cities only **30-50 per cent** is collected — distractors often use 70%.
- NRSC categorises wastelands; **man-made processes are more important than natural** ones in degradation — students often pick the reverse.
- The Jhabua programme is funded by the **Ministry of Rural Development** through the **Rajiv Gandhi Mission for Watershed Management**, not the Ministry of Environment.
- The Daurala case is near **Meerut**, not Delhi or Mathura; the pipeline length is **900 m** and the trees planted are **1,000** — specific numbers are favoured by NTA.

- Rural-urban migration accounts for **~29% of urban growth**, not "60% of urban growth" — 60% is the share attributed to natural increase and reclassification combined.
- The **rural share of India's population in 2011 was ≈ 69%** (urban ≈ 31%) — common distractors quote 72% (which is the 2001 figure) or 60%.
- **Methane** is the toxic biogas explicitly named by NCERT as being released by fermenting urban waste — not CO_2 or H_2S, although these are byproducts too.
- Noise is measured in **decibels (dB)**, not in hertz; traffic, not industry, is the **single biggest nuisance source** of noise pollution.

2.5 Key data table (NCERT figures only)

Parameter	Figure / fact	Source (NCERT p.)
Major polluting industries (water)	Leather, pulp & paper, textiles, chemicals	96
Ganga polluted stretches	Downstream Kanpur, downstream Varanasi, Farakka	96
Yamuna polluted stretches	Delhi–Chambal confluence; Mathura–Agra	96
Communicable diseases that are water-borne (WHO)	About 1/4 (≈ 25%) in India	97
Solid waste collected in metros (Mumbai, Kolkata, Chennai, Bengaluru)	About 90%	99
Solid waste uncollected in other Indian cities	30–50%	99
Daurala pipeline length	900 m	99
Daurala trees planted	1,000	99
Urban-growth share from natural increase + reclassification	~60% (post-1961)	100
Urban-growth share from rural-to-urban migration	~29%	100
Asia's largest slum	Dharavi, Mumbai	103
India's rural population share (2011)	~69%	103
Jhabua district area treated under watershed	~20%	104
Lead tribal community in Jhabua	Bhils	104
Programme that funded Jhabua treatment	Rajiv Gandhi Mission for Watershed Management	104

🎯 Practice MCQs

📊 PYQ Alignment

This chapter has consistently contributed ~7–8 MCQs per year to CUET (UG) Geography (313). The most-tested hooks are: pollution–disease pairing (diarrhoea/hepatitis/intestinal worms vs. respiratory/bronchitis); polluted river stretches (Ganga at Kanpur/Farakka, Yamuna at Mathura–Agra); source-of-acid-rain identification (air pollution); urban-waste collection percentage (90% in metros, 30-50% elsewhere); Namami Gange objectives (Ganga Grams, sewerage, effluent monitoring); NRSC wasteland classification (natural vs human-induced — man-made dominates); and case-based items on **Daurala** (Polluter Pays principle, 900-m pipeline, 1,000 trees), **Jhabua** (Bhils, Rajiv Gandhi Mission for Watershed Management, social-fencing) and **Dharavi** (Asia's largest slum). Statement-based and assertion-reason formats dominate the slums/migration sub-topic; data-recall items dominate the pollution and wasteland sub-topics.

CUET 2025 — Actual PYQs from this chapter

Q.39 (CUET 2025) Which type of pollution is considered the world's top environmental health risk by the World Health Organization?

- A) Noise pollution B) Water pollution C) Air pollution D) Soil pollution Tests: Air pollution as the top environmental health risk Answer: Not in extracted key

Q.40 (CUET 2025) Identify the correct statements about solid waste disposal: (A) Environmental pollution due to solid waste is low in urban areas of India due to low level of urbanisation. (B) Dumping industrial waste into rivers causes water pollution. (C) Solid waste refers to a variety of old and used articles. (D) Solid waste from industrial units is collected and disposed on low-lying public grounds.

- A) (A), (B) and (C) only B) (B) and (C) only C) (A), (C) and (D) only D) (B), (C) and (D) only Tests: Solid-waste disposal practices and impacts Answer: Not in extracted key

Q.41 (CUET 2025) Which of the following activities contribute to water pollution?

- A) Disposal of untreated sewage B) Industrial effluents C) Agricultural chemicals D) All of the above Tests: Sources of water pollution Answer: Not in extracted key

Q.42 (CUET 2025) Which pollutant is mainly responsible for acid rain?

- A) Carbon dioxide B) Sulphur dioxide C) Oxygen D) Nitrogen Tests: Air pollution — acid rain (SO2/NOx) Answer: Not in extracted key

Q.43 (CUET 2025) Which method is commonly used for solid waste management in urban areas?

- A) Recycling B) Composting C) Landfills D) All of the above Tests: Methods of urban solid-waste management Answer: Not in extracted key

Q.44 (CUET 2025) Which of the following is a major cause of land degradation in India?

- A) Over-irrigation B) Deforestation C) Mining D) All of the above Tests: Causes of land degradation Answer: Not in extracted key

Q.45 (CUET 2025) Which environmental issue results from excessive use of fertilisers and pesticides?

- A) Soil erosion B) Water pollution C) Deforestation D) Desertification Tests: Agricultural chemicals and water pollution Answer: Not in extracted key

CUET 2023 — Actual PYQs from this chapter

Q.13 (CUET 2023) The most important problem faced by big cities due to increasing population is:

- A) Migration towards rural areas B) Increase in slums and squatter settlements C) Decline in medical facilities D) Stagnation of per capita income Tests: Urbanisation problems — slums and squatter settlements Answer: Not in extracted key

Q.31 (CUET 2023) Which one is NOT a cause of water pollution?

- A) Urbanisation B) Landslides C) Rainfall D) Industrialisation Tests: Causes of water pollution Answer: Not in extracted key

Q.32 (CUET 2023) Slums are inhabited by which of the following?

- A) Well-off people B) Higher middle class C) Middle class D) Lower income people Tests: Demographic profile of slum residents Answer: Not in extracted key