



## Illegal Sand Mining

**For Prelims:** [Sand mining](#), [Mines and Mineral Development and Regulation Act, 1957](#), [Mines and Minerals \(Development and Regulation\) Amendment Act, 2023](#), [Enforcement and Monitoring Guidelines for Sand Mining 2020](#), [Manufactured sand \(M-sand\)](#)

**For Mains:** Environmental and Socio-economic Impacts of Marine Sand Extraction, Sand Mining in India.

**Source:** DTE

### Why in News?

Recently, Bihar police arrested sand smugglers in a major crackdown against [illegal sand mining](#).

- This operation, near the [Sone River](#), signifies a significant step in the ongoing battle against powerful criminal syndicates involved in illicit sand mining activities.

### What is Sand Mining?

- **About:**
  - Sand mining is defined as the **removal of primary natural sand and sand resources** (mineral sands and aggregates) from the natural environment (terrestrial, riverine, coastal, or marine) for extracting valuable minerals, metals, crushed stone, sand and gravel for subsequent processing.
  - This activity, driven by various factors, poses serious **threats to ecosystems and communities**.
- **Source of Sand in India:**
  - **Sustainable Sand Mining Management Guidelines (SSMMG) 2016** suggest that the source of sand in India are through
    - River (riverbed and flood plain),
    - Lakes and reservoirs,
    - Agricultural fields,
    - Coastal / marine sand,
    - Palaeo-channels,
    - Manufactured Sand (M-Sand).
- **Factors Contributing to Illegal Sand Mining:**
  - **Lack of Regulation and Enforcement:**
    - Inadequate regulatory frameworks and weak enforcement mechanisms contribute to the proliferation of illegal sand mining.
  - **High Demand for Construction Materials:**
    - The **construction industry's hefty demand for sand** fuels is illegal extraction, intensifying pressure on riverbeds and coastal areas due to the rising need for sand in construction projects.
    - Rapid **population growth and urbanization** drive the need for construction, escalating the demand for sand.

- **Corruption and Mafia Influence:**
  - Corrupt practices and the influence of organized [sand mafias](#) contribute to the continuation of illegal mining.
    - Collusion between authorities and illegal operators undermines efforts to control and regulate the sand mining industry.
- **Lack of Sustainable Alternatives:**
  - Limited adoption of sustainable alternatives like [manufactured sand \(M-sand\)](#) contributes to overreliance on riverbed sand.
  - Inadequate promotion of eco-friendly alternatives maintains the demand for natural sand, exacerbating environmental consequences.
- **Weak Environmental Impact Assessment (EIA) Implementation:**
  - Ineffective implementation of EIAs for sand mining activities allows for unauthorized extraction.
  - Insufficient public awareness and monitoring mechanisms contribute to illegal mining activities going unnoticed.
- **Consequences of Sand Mining:**
  - **Erosion and Habitat Disruption:**
    - The [Geological Survey of India \(GSI\)](#) notes that unregulated sand mining alters riverbeds, leading to increased [erosion](#), changes in channel morphology, and disruption of aquatic habitats.
    - Sand Mining leads to loss of stability in stream channels, threatening the survival of native species adapted to pre-mining habitat conditions.
  - **Flooding and Increased Sedimentation:**
    - Depletion of sand from river beds contributes to increased [flooding and sedimentation in rivers](#) and coastal areas.
    - Altered flow patterns and sediment loads negatively impact aquatic ecosystems, affecting **both flora and fauna**.
  - **Groundwater Depletion:**
    - Deep pits formed due to sand mining can cause a drop in the [groundwater table](#).
      - This in turn affects **local drinking water wells**, leading to **water scarcity** in surrounding areas.
  - **Biodiversity Loss:**
    - Habitat disruption and degradation arising from activities such as sand mining lead to the significant **loss of biodiversity**, adversely affecting both aquatic and riparian species. The destructive impact extends even to [mangrove forests](#).

## What are the Initiatives to Prevent Sand Mining in India?

- **Mines and Mineral Development and Regulation Act, 1957 (MMDR Act):**
  - Sand is classified as a **“minor mineral”**, under [The Mines and Minerals \(Development and Regulations\) Act, 1957 \(MMDR Act\)](#) and administrative control over minor minerals vests with the State Governments.
  - Section 3(e) of the MMDR Act aims to prevent illegal mining, with the government implementing laws to curb illicit practices.
  - The [Mines and Minerals \(Development and Regulation\) Amendment Act, 2023](#) was recently passed by the Parliament to **amend the MMDR Act, 1957**.
- **2006 Environment Impact Assessment (EIA):**
  - The Supreme Court of India mandated that **approval is required for all sand mining collection activities**, even in areas less than 5 hectares.
  - This decision aimed to address the severe impact of sand mining on the ecosystem, affecting plants, animals, and rivers.
- **Sustainable Sand Management Guidelines (SSMG) 2016:**
  - Issued by the Ministry of Environment, Forests, and Climate Change (MoEFCC), the main objectives of these guidelines include environmentally **sustainable and socially responsible mining**, conservation of the **river equilibrium** and its natural environment by **protection and restoration of the ecological system**, avoiding pollution of river water, and prevention of depletion of **groundwater reserves**.
- [Enforcement and Monitoring Guidelines for Sand Mining 2020:](#)
  - The guidelines provide a uniform **protocol for monitoring sand mining across India**.

- The guidelines cover the identification of sand mineral sources, their dispatch, and their end-use.
- The guidelines also consider the use of new surveillance technologies, such as drones and night vision, to monitor the sand mining process.

## Sone River

- The Sone River, a **perennial river in central India**, is the **Ganges' 2<sup>nd</sup>-largest southern tributary**.
- Originating near **Amarkantak Hill in Chhattisgarh**, it flows through Chhattisgarh, Madhya Pradesh, Uttar Pradesh, and Bihar, forming waterfalls at the Amarkantak plateau.
  - It merges with the Ganges near Patna, Bihar.
- Tributaries include Ghaghar, Johilla, Chhoti Mahanadi, Banas, Gopad, Rihand, Kanhar, and North Koel River.
- Prominent dams include the **Bansagar Dam in Madhya Pradesh** and the **Rihand Dam** near Pipri in Uttar Pradesh.



### UPSC Civil Services Examination Previous Year Question (PYQ)

#### Mains

**Q.** Coastal sand mining, whether legal or illegal, poses one of the biggest threats to our environment. Analyse the impact of sand mining along the Indian coasts, citing specific examples. **(2019)**

