



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' 2nd-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)**

