THE SOCIAL, ECOLOGICAL & ECONOMIC IMPACT OF CEMENT DRIVEN CONSTRUCTION X SAND MINING

Siddharth Agarwal Veditum India Foundation | India Rivers Forum



Why sediment is so important in river ecosystems?



reservoirs results in flow being

Irrigation canal

Irrigation and hydroelectricity requirements should not compromise ecological needs

> Floodplain grasslands, like the Terai, which is habitat for animals like the Indian rhino, require periodic flooding to maintain them

Reduced fresh water flows into estuaries can affect coastal and marine processes, as well as fish production and livelihoods of fisherfolk

From: Krishnaswamy et al. 2017. Moving from requiem to revival: India's rivers and riverine ecosystems. Image: Megha Vishwanath

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Sediment flow is already severely restricted by the presence of dams and barrages



And, nowhere is it safe. Everything is mined.



Dredging ongoing at Bhagalpur, a prime habitat of the Gangetic Dolphin Photo: Subhasis Dey (published in SANDRP - 21 June 2016)



After water, sand is the second most extracted natural resource on earth.

Global sand extraction hovers somewhere around 40 to 50 billion tonnes per year

Estimates for India's sand usage in 2020 hovered around 3.25 billion tonnes per year (~ 30 crore trucks of sand).

Now, diving into the process in India



Graphic taken from an EIA report from Haryana

the many sites of violence

- Illegality in allowance (Bihar, 2020)
- Inadequate environmental consideration
- Lack of enforcement mechanisms
- Technology as a tool of the powerful
- Non transparent (non-democratic)

identification &clearances

sand mine

/ River's flow is affected / River loses ability to absorb floods / Macro invertebrates lose habitat / ^leads to vanishing of fish / ^leads to vanishing of higer species / Avifauna / birds lose habitat / Terrestrial animals lose access to river



/loss of life (police, forest guards) /loss of life (journalists, activists) /Infrastructure loss (roads etc) / Large scale fiscal loss to public fund / Increased cost to consumer / Funding of a political economy (dangerous to the idea of democracy)

market

The many sites of violence in sand mining. Prepared by: Siddharth Agarwal



identification and clearances stage

- and guides from the MoEFCC are all in place to protect rivers, and only implementation is faulty.
- Singh Chauhan vs MoEFCC, & others).



- During the India Rivers Week 2020 dialogues, a representative of the Ministry of Environment, Forests and Climate Change (MoEFCC) expressed that the laws

- Other panelists, including Lawyer Parul Gupta clearly pointed out the loopholes in the laws as well as MoEFCC's attempts at diluting even those (as seen in Atul

Sand Quarry, Haryana - Uttar Pradesh Border



Proposed quarry marked out in purple. Boundary taken from the EIA report for this particular site

Sand Quarry, Haryana - Uttar Pradesh Border



Condition of same quarry in 2018

Sand Quarry, Haryana - Uttar Pradesh Border



like borders, language has the ability to invisibilize

mafia = who? - we need to talk about who gains from this

at the mine and village level





Sarus cranes and storks on a bend in the River Ken, Image: Siddharth Agarwal



Deep hole made using excavators at Khaptiha Kalan on River Ken, Image: Siddharth Agarwal

To being this



Extraction can look like this (Single large scale)

Endless lines of trucks carrying sand from River Sone in Bihar, Image: Siddharth Agarwal





But can also look like this (Multiple small scale)

Multiple small scale aggregate extractions on River Mahanda in West Bengal, Image: Siddharth Agarwal



The ecosystem impacts driven by large scale demand continues nonetheless

Extraction of sand like a drive in system. 3 porcelain machines in the middle of River Betwa, Image: Siddharth Agarwal



Footprints of protest in the sands of a mine

Written by Jigyasa Mishra; published by People's Archive of Rural India



REPORTED HUMAN DEATHS RELATED TO SAND MINING IN INDIA

418 people dead between December 2020 & March 2022

data from SANDRP's report (April 2022) India Sand Mining: Violence & Accidents Killed 418 people in 16 months

MAJOR CAUSES OF DEATHS

/ accidents with sand laden trucks / mine accidents (sand + stone mines) / dams flooding mines without warning / sand pits (children most affected) / increasing violence by 'sand mafia'

data is non exhaustive due to under reporting & language barriers. Actual numbers will be higher

map made by Siddharth Agarwal (Asid) www.sidagarwal.in twitter.com/sidagarwal

DIRECT LOSS OF REVENUE TO STATE	TRANSIT INFRA DAMAGES	DAMAGE TO WATER SOURCES
LOSS OF FOOD SOURCES	LOSS OF HUMAN LIFE	INCREASED BURDEN ON CONSUMER
DAMAGED RIVER INFRA (Bridges etc)	DAMAGE TO HEALTH	CORRUPT POLITICAL ECONOMY
LOSS OF BIODIVERSITY	LOSS OF GROUND WATER	FORCED MIGRATION

SOME DIRECT AND INDIRECT FACTORS FOR FINANCIAL LOSSES

Beyond the many flows between ecosystems and cities, of extraction and dumping, a deeper understanding of ecosystems and their relationships with our cities is crucial.

Building of resilience for our cities in isolation will not be of much use when:

- Ecosystems that act both as source as well as sink for our needs and excesses are degraded
- Larger climate related challenges emerge, where buffers built at city levels will fail (as they have often)

Ecosystem level planning is the only way to build real resilience for resource and climate related security, even for cities.

Taking Bangalore's example, ignoring downstream effects and mindlessly extracting aggregate and food from the Kaveri hurts its own water security.

Sand, gravel, and UN Sustainable Development Goals: Conflicts, synergies, and pathways forward (One Earth, Volume 4, Issue 8, 2021) Mette Bendixen, Lars L. Iversen, Jim Best, Daniel M. Franks, Christopher R. Hackney, Edgardo M. Latrubesse, Lucy S. Tusting

Sand, gravel and the Sustainable Development Goals

as we move ahead

Major challenges

- Scale of the problem
- Absence of information
- Lack of co-ordination
- Safety issues in reporting
- Access to Expertise

How to solve?

- Use technology as an aid, and make communities an essential part of it.
- RTIs, PILs, DSRs, Official Sites (though most don't even function).
- Break silos. Co-ordinated action with shared repositories of information.
- Make technology our friend. **Most** information can be collected remotely.
- Build networks with all involved users / actors

Veditum India Foundation is working on an accountability tool (Focused on sand mining)

- Less overwhelming, more control for the user.
- Technology as a tool of the community.
- issue.
- Embeds safety through remote data collection.

- Addressing the problem of scale by making data visible.

- Working with community for information gathering.

- Hoping to make the larger database accessible, and also a point of contact for those reporting/working on the

- Facilitate dialogue and discussion with actors across the sector to increase accountability but also advance discussion and practice with alternative materials

asid@veditum.org

www.veditum.org
@veditum (social)

