

SAND MINING – A THREAT TO THE MARINE AND RIVER FLORA AND FAUNA

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ABSTRACT:

Sand mining is a practice that is becoming an environmental issue in India. Sand is a part of our architecture all around the world and an important ingredient in the concrete and mortar mixture for construction. Regular mining erodes the river and sea beds destroying ecosystems causing water scarcity affecting Indian agriculture in particular and world in general apart from biodiversity destruction in both the places. Sand has been classified as a 'minor mineral'. Mining of minor minerals without approvals from the Central Government has been disallowed from February 2012. The lack of a disciplined system for clearances has allowed the miners to continue sand mining causing major environmental impact in the rivers running through states of Kerala, Tamil Nadu, Karnataka, Maharashtra, Gujarat, Bihar, Andhra Pradesh, Punjab, Haryana etc., which are deeply affected by mining practices. A considerable drop in river habitats sediment balance has been recorded. Illegal mining is still rampant and thriving despite the loose efforts from the government. We need good infrastructural development, but not at the cost of our environment and marine life.

Key words: Sand Mining, Biodiversity, Environmental impact, Sediment balance.

INTRODUCTION: Sand mining is a practice that is becoming an environmental issue in India. Conservation and environmental NGO Awaaz Foundation in partnership with the Bombay Natural History Society filed public interest litigation in the Bombay High Court seeking a ban on mining activities along the Konkan coast. It presented the issue of sand mining as a major international threat to coastal biodiversity at the Conference of Parties 11 Convention on Biological Diversity, Hyderabad in October 2012. For a long time now, sand mining our river beds for the construction has been a common practice. Sand is a part of our architecture all around the world – an important ingredient in the concrete and mortar mixture for construction. The destructive anthropogenic activity in the past 3-4 decades is indiscriminate extraction of construction grade sand from the river and sea channels and adjoining areas. Our pace of construction has tripled over the past few years. India consumes an estimated 450 million cubic meter of concrete annually, which approximately translates to 1 tone per Indian. Habitat alteration is also inevitable when morphological adjustments take place. Wet land area and flora are highly destructed along with fauna. As reported in The Hindu, it is expected to clock more than 10 per cent compounded annual growth rate, which could make it the world's third largest construction industry by 2025. Sand is not only used for construction but also for the extraction of minerals like rutile, ilmenite and zircon.

MINING ISSUES OF ENVIRONMENT: The techniques for sand mining are: 1. Excavator machines 2. Blasting techniques using explosives 3 Manual mining. As the former two methods are destructive manual mining to certain extent is preferred. Excessive in stream sand mining is a threat to bridges, river banks and nearby structures. Sand mining also affects the adjoining groundwater system and the various uses that local people make of the river. Instream sand mining results in the destruction of marine and riparian habitat through large changes in the channel morphology. Sand mining impacts the local wild life like nesting in turtles, crocodiles, molluscan animals and micro organisms. Impacts include bed degradation, bed coarsening, lowered water tables near the streambed, and channel instability. These physical impacts cause degradation of riparian and aquatic biota and may lead to the undermining of bridges and other structures. Continued extraction may also cause the entire streambed to degrade to the depth of excavation. Sand mining generates extra vehicle traffic, which negatively impairs the environment. Where access roads cross riparian areas, the local environment may be impacted. Regular mining erodes the river beds, destroying ecosystems and causing water scarcity. For a Country like India, whose primary occupation has been known to be

agriculture this, is another level of ecosystem being affected apart from the marine habitats. According to the Ojos Negros research group degraded stream habitats result in loss of fisheries productivity, biodiversity and recreational potential. Native species in streams have adapted to these habitats before human life came into existence on earth and started altering habitats. These alterations have caused overall declines in biological diversity and productivity. The most important effects of instream sand mining on aquatic habitats are bed degradation and sedimentation, which can have substantial negative effects on aquatic life. Removal of vegetation and destruction of the soil profile destroys habitat above and below the ground as well as within the aquatic ecosystem, resulting in the reduction in faunal populations. According to Mr. Manoj Misra of the NGO Jamuna Jiye Abhiyan in The Hindu Aug 2 2013 coordinated "Sand Mining is equivalent to Robbing Water."

RULES AND REGULATIONS: Mining of minor minerals without approvals from the Central Government has been disallowed from February 2012. An environmental clearance from the Union ministry of Environment and Forests (MoEF) is needed in order to continue mining. The clearance criteria and the system are weak and continuously modified – the clearances now need to be obtained from the State Environment Impact Assessment Authorities (SEIA).

AFFECTS: Excessive in stream sand and gravel mining causes the degradation of rivers beds in stream mining lowers the stream bottom, which may lead to bank erosion. Depletion of sand in the stream bed and along coastal areas causes the deepening of rivers and estuaries, and the enlargement of river mouths and coastal inlets. Actually sand prevents the River Course and act as a buffer for the river bed. Depletion may also lead to saline-water intrusion from the nearby sea. The effect of mining is compounded by the effect of sea level rise. Any volume of sand exported from stream beds and coastal areas is a loss to the system. The lack of a disciplined system for the clearances has allowed the miners to continue sand mining. The rivers running through states of Kerala, Tamil Nadu, Karnataka, Maharashtra, Gujarat, Bihar, Andhra Pradesh, Punjab, and Haryana are deeply affected by mining practices. A considerable drop in river habitats has been recorded. Mangrove plants belonging to families Rhizophoraceae, Lythraceae, Arecaceae, Acanthaceae, Combretaceae; plants like Avicennia and Rhizophora which are natural sand binders are dwindling from their natural habitat due to Illegal mining which is still rampant and thriving despite the loose efforts from the government. Regular monitoring and a rigid system for obtaining permits could curb majority of these illegal mining hot-spots. Regional level environmental impact assessments should be done to estimate the hydro-geology of any river stretch and the amount of sand that can be extracted from it sustainably. Alternative methods need to be considered and research needs to be encouraged. Environmental and Sustainability experts have been re-iterating the importance of the 3 R's. Reduce, Reuse and Recycle. We need to mend our ways and look at recycled materials reuse materials as substitutes for sand. Looking at the pace at which we are moving, we might end up sucking our rivers dry.

CONCLUSION: Alternative materials like crushed aggregate, recycled crushed concrete could easily replace sand and has already been brought in practice. We need good infrastructural development, but not at the cost of our environment. We have 2 choices - either develop our nation in a sustainable way and conserve our ecosystem; or head towards a barren concrete jungle, scared with the death of natural ecosystems. Standards like *Bureau of Indian Standards* and the *National Building Code* for construction need to be revised looking at the need for sustainable and more environment conscious ways for construction. Awareness drives would help initiate this change at individual and policy level.

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