

# **Sand Mining – The Unexamined Threat to Water Security**

*Sand mining is surprisingly an intensely politicised phenomenon that has gone unchecked for many decades in India. This article by **Kiran Pereira**<sup>1</sup> attempts to tease out the bigger picture about the dangers of dredging indiscriminately in the quest for modernization and how these threats are compounded by corruption in the sector and a lack of integrity.*

Imagine this: a group of reporters are visiting a picturesque creek of a river on the western coast of India and are taking some photos. They are approached within minutes by a menacing gang in a large vehicle who interrogate them on their presence in the area. One of them roars “Who gave you permission to shoot here? We have purchased the entire creek for Rs 28 crore (approx. 5.1 million USD). We own it now.” Fearing violence; the frightened group flees the site in their car but are followed by the large vehicle. They drive at 100 kilometres per hour through the lonely mountainous section in a furious bid to reach safety. Just when they believe that they escaped in the nick of time, they are forced to stop the car as another large vehicle intercepts their path. Within minutes, they are surrounded by 20 to 25 people who start breaking the windows of the car. Their camera is snatched away and smashed to smithereens. The group barely avoids getting lynched. Despite a criminal case being filed, none of the attackers are convicted (Rajadhyaksha, 2010, Abdulali, 2012).

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Such an incident wouldn't be so shocking if the group were investigating clandestine mining activities in private property, but the mining site in question was public space and the group was investigating the business of indiscriminate sand mining. Very few people would place 'precious' metals and diamonds in the same category as sand or gravel. In the public consciousness, the former are definitely deemed more valuable than the latter. Yet, one would be surprised at how fundamental sand or gravel is to our very existence. Without sand/gravel, there can be no buildings, no glass, no electronic chips, and no ceramics and taken to its extreme, without sand there can be no sandy beaches, no rivers and perhaps no oceans as well. Sand mining also called sand dredging or simply dredging is an activity that underpins the 'development' engine. Without sand, one of the largest industries in the world, the construction industry would come to a grinding halt. But not all kinds of sand would fit the bill. In developing countries, such sand is mostly taken from riverbeds, creeks and beaches where available because desert sand is not suitable for construction. With global demand exploding and such sources being mined faster than nature can replenish, it creates a highly skewed supply-demand situation. The global value of construction is expected to reach 12 trillion USD per annum in 2020 or about 13 per cent of global GDP (Global Construction Perspectives, 2012). By and large, this industry is the lynchpin of economic growth and is popularly considered a primary engine of growth and an important indicator of development. In India, the construction industry

has accounted for around 40 per cent of the development investment during the past 50 years (Wikipedia, 2012). However, according to research from Transparency International, it remains one of the most corrupt sectors according to the Bribe Payers Index (Poortman, 2011).

Incidents such as those described above are surprisingly very real and very common across many parts of the world especially in developing countries such as India. After China and the United States, India has the world's largest construction business which accounts for 9 percent of its 2 trillion USD economy. The country plans to invest 500 billion USD in building up its infrastructure and 500 million USD has been earmarked for the construction industry alone (Lakshmi, 2012). "India does not have any regulatory and monitoring framework to excavate sand in a sustainable manner. Until now, people used to think sand is a low-value, minor mineral that is inexhaustible. But that will have to change now because the demand is too huge" (*ibid*). With India's growth, the unprecedented demand for sand in order to build factories, high-rise apartments, offices, schools and basic infrastructure such as highways, runways and parking lots is beginning to take a toll on river systems, coasts and the people who depend on them for their livelihoods.

The author researched the fiercely contested landscape around sand mining in India through a case study of three villages in the state of Maharashtra for her Master's thesis in 2011. In late September 2010, the Mumbai High Court issued a blanket ban on sand dredging (including by those who had licenses) in the state for want of a comprehensive policy around it. The court observed that the activity was damaging river beds and increasing the threat of floods and no policy had been promulgated thus far although the court had first expressed the need for such a policy a decade ago (Legal India, 2010). The ban brought the construction industry to a grinding halt and threatened many mega projects within the state like the 'Monorail, Metrorail, the Mumbai SeaLink (extension plans), slum rehabilitation and low-cost housing projects and redevelopment of over 20,000 old buildings in the country's western megapolis'. The shortage of sand was said to have risen to 40 percent over the previous year and a half (TOI, 2011). The Mumbai centre of Builders' Association of India (BAI), the apex body of builders and contractors and the Maharashtra Chamber of Housing Industries alleged that the ban was promoting unfair business practices and the cost of sand had almost tripled from Rs 6000 to Rs 16000 (*110 to 300 USD*) per truckload (Patil, 2010). In addition, the ban was said to affect

almost 10 million people who were employed in the building industry including 2.7 million of them in Mumbai alone (Hindustan Times, 2010). Revenue officials from the state government declared that the ban had affected the annual revenue target of Rs 1400 crore INR (260 million USD) and it had caused the state exchequer to lose Rs 800 crore (150 million USD) (Khapre, 2011).



A visit to the villages where sand was being sourced from painted a completely different, though not unrelated picture in the complex landscape. Most of the sand being dredged was sent to contractors in Mumbai, the financial capital of the country. Corruption was found to be widely prevalent in every aspect of the trade. Some of the findings were:

- Sand was being dredged illegally and operations were claimed to be carried out non-stop 24 hours a day all the year round including during monsoons.
- Round-the-clock operations were facilitated by mechanical dredgers and suction pumps which were deemed to be illegal.
- The constant noise of the mechanical dredgers was said to hamper sleep and normal operations of schools in the area.
- Several mangrove forests had been destroyed by illegal construction of storage docks, roads and other infrastructure to facilitate easy removal, storage and transfer of sand from the river. This made Mumbai and the neighbouring regions more vulnerable to floods.
- Local people were denied a voice in the matter. Despite opposition from several *Panchayats* (local governments), dredging operations were still carried out with impunity

because a mafia controlled the trade and many involved were either close relatives or friends of local politicians.

- The livelihoods of local fishermen were being threatened by the sand barges which often destroyed their nets. Yet the fishermen claimed that no one was willing to register an official complaint. They were instead threatened and intimidated against making a fuss about such incidents.
- Many institutional processes to promote consultation with various stakeholders were short circuited when consultations were sometimes deliberately scheduled at times that were inconvenient to the villagers. For e.g. in a village, that was predominantly Muslim, consultation meetings were scheduled on Friday afternoons. Since religious commitments took precedence, most villagers could not attend the consultations. This was then construed to be a lack of participation and decisions were made on their behalf.
- Reporters, activists and anyone who threatened to disrupt status-quo were subject to physical assault, violence and intimidation. Such intimidation tactics were personally experienced by the author when the car was stopped for five minutes on a bridge in order to survey and photograph the mountains of sand stocks on the river bank. The car was immediately approached by a youth on a motorcycle who relayed the vehicle number to a third party on his mobile phone and stood within hearing distance assessing threat to dredging operations.
- Back in the city of Mumbai, the building contractors interviewed admitted to being aware that it was routine practice to dredge several sites even if permits were specifically obtained for one site or dredge for several meters below the specified depth/several kilometres beyond the specified area.
- The contractors also admitted in confidence that were obliged to purchase sand from specific sources in the area. Any attempts to source sand from elsewhere failed because the sand-laden trucks were not allowed into the city unless they also paid a commission to the controlling mafia in addition to the cost of the sand. This made it economically infeasible and therefore they were forced to purchase sand at the rates dictated by the mafia.

Coming back to the bigger picture around the issue of sand mining, since sand is classified as a ‘low-value, high volume’ resource and a ‘minor’ mineral (Joy *et.al.*,2009) in terms of its economic value despite being dredged in gargantuan proportions, there is a clear lack of incentive for either the governments or for science to develop true alternatives. Crushed rock is sometimes advocated as an alternative. However, this too has grave environmental impacts since it leads to razing of critically important habitats on mountain ranges such as the Western Ghats which is a crucial watershed region. This defeats the very purpose of such an alternative. More commonly however, whenever there is a shortage of sand for construction purposes, the usual way of overcoming it is to import sand from neighbouring states without regard to environmental and social consequences in that location. Several examples can be cited here. For e.g. India imported sand from Pakistan when sand mining was banned in 2011 (Suryavanshi, 2011), Singapore imported sand from Cambodia when Indonesia and Malaysia banned export of their sand (Global Witness, 2010). But indiscriminate sand mining can have several disastrous consequences. Some of the negative impacts, besides the ones mentioned already, are listed in the table below:

**Table 1: The Negative Impacts of Sand Mining**

<i>Negative Impacts of Sand Mining</i>	<i>Examples</i>
<b>Threat to water security resulting from the loss of groundwater storage due to lowering of the alluvial water table.</b>	<ul style="list-style-type: none"> <li>• In-stream mining in small river valleys could reduce alluvial aquifer storage from one to sixteen percent, depending on local geology and aquifer geometry.’ (Kondolf <i>et al.</i>, 2001, p54)</li> <li>• Take the example of major rivers in Kerala such as the Pampa, Manimala, and Achankovil. According to one study, ‘indiscriminate mining has lowered the Pampa an average of three to four metres, and up to six metres in some areas. This has serious implications on water availability. By 2050, if sand mining</li> </ul>



	<p>persists, usable water in the Pampa would drop 2,537 cubic meters, water in the Achankovil would drop 459 cubic metres, and the Manimala would drop 398 cubic metres. This constitutes a serious problem for a state that has already seen climate shifts adversely affecting water abundance due to monsoon timings’ (CSE, 2012).</p> <ul style="list-style-type: none"> <li>• As explained above, when the deep ‘sponge’ of sand that acts as a reservoir to charge groundwater wells and aquifers is removed, water is consequently no longer available at shallow depths and wells have to be dug deeper where the quality of water might be different. It also implies a significant rise in water costs and hence makes it accessible only to those who can afford it (Hoering, 2008)</li> <li>• Mining of sand allows for intrusion of sea water and consequent salinisation of well water (Viswanathan, 2002)</li> </ul>
<p><b>Decreased protection from sea water , especially during ocean disasters</b></p>	<ul style="list-style-type: none"> <li>• Sand mining increases shoreline erosion rates especially when mined unscientifically (Brynes <i>et. al.</i>, 2000)</li> <li>• Decreased protection from erosion by seawater for beachfronts after sand extraction. Habitat loss including destruction and fragmentation of fragile, endangered ecosystems such as mangroves, coral reefs (Myers, 1999) which makes the</li> </ul>

	coasts more vulnerable during ocean disasters
<b>Loss of livelihoods</b>	<ul style="list-style-type: none"> <li>• Tourism potential destroyed (Young and Griffith, 2009)</li> <li>• Occupations such as agriculture, fishing Coir Weaving severely impacted (Viswanathan, 2002)</li> </ul>
<b>Governance Issues</b>	<ul style="list-style-type: none"> <li>• Establishment of illegal activities and a mafia around sand mining (Gunaratne and Jayasooriya, 2007)</li> <li>• In India, a sand mine auction ban in 2010 cost the Maharashtra govt 800 crore INR (<i>i.e. approximately 146.9 million USD</i>) (Khapre, 2011)</li> </ul>

In order to tease out the big picture better, it is critical to join the dots of these isolated phenomena mentioned above. We now live in a world where more than half is urbanized and the rest is on a quest to rapidly become so. If we are to truly seek sustainability beyond empty definitions, resources such as sand need to be valued not just as a means to an end but also valued for the ecological role played and the foundation they provide to society itself. There is also a greater need than ever for the integrity principles of transparency, accountability and participation (TAP) as proposed by the Water Integrity Network to be adopted in the way this industry functions and the way it is governed. What we need is a policy approach that is interdisciplinary and holistic. With over 17.5% of the world's population living in India, a lot hinges on how India manages its resources. It is crucial to recognise that availability of natural resources depends on the integrity of ecosystems that provide them. Uncharismatic though it may be, failure to tackle the problem of sand mining could have devastating effects on the water resources that allow life to flourish in this part of the world.



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