https://doi.org/10.69974/glslawjournal.v5i2.108

GLS Law Journal, Vol. 05, Issue 02; July - December 2023

Illegal Sand Mining: an Unsustainable Approach Encroaching Environment

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Abstract:

There are continuous efforts being made to outshine every other nation in the contexts of development. Efforts are channelled to prove that India is a YES country to every sort of development soon to be labelled as the developed country touching altitudes of development. Lesser do we find any budgetary allocation at the large scale being put up just to ensure that developmental activity does not coincide rather encroaches our environment affecting climate, biodiversity and living entities. Juxtapose it is reported that budgets are being cut short which were allocated for it. As per the World Wildlife Fund, sand is the most extractive resource. To put it thus, sand mining is done to meet up the demands of ever rising construction industry which is currently taking leaps and bounds to catch up with the rising urbanisation. But this is done at the cost of rivers which thus change their course affecting marine lives further causing floods to the worse. The economic needs and the ever-rising competition have led to illegal sand mining. This has become a pan India problem, where restricting this illegal activity invites goons/mafia taking tolls on the lives and threatening the whistleblowers. This paper is an attempt to address this grave situation of illegal sand mining in India. Whether there is any framework to check such activities? Where does India stand to rebuild the already lost habitat and encroached riverbeds? What is the sustainable solution of the problem of illegal sand mining? How to check the Sand mafia and goons? Finally, the road ahead how to replenish and make efforts to save this resource for future use.

Keywords: *Illegal Sand Mining, Environment, Climate, Urbanisation, Resource, Unsustainable*

Introduction:

"If you put the federal government in charge of the Sahara Desert, in 5 years there'd be a shortage of sand." – Milton Friedman

Man by nature has been an excavator. Everything available free of cost is understood as an unlimited resource which can be fully exploited on one's own terms. However, nature has taught man that it won't now tolerate its hideous activity at the cost of earth. Where many people are battling just for the basic sustenance, juxtapose others are contesting to fulfil their lavish lifestyles. This profligacy comes at a huge cost of the environment which taking the shape of climatic disasters and degraded environment.

Development is a necessity of today. It is the most sort after activity which shall always be on the priority of all the nations. Be it developed countries; every nation wants to achieve the highest altitude of development. Since wants are limitless, so is the development which is directly proportional to it. For the fast-paced development, where time is restricted and development must be spurted on a large level, there is a hunt for resources which are available at a cheaper cost. For building and construction infrastructure, the main raw material is sand. At any cost it must be ensured to be utilised on a large basis. Hence mining is the discernible way of extraction since sand can be extracted on a large level for large scale usage. Mineral mining, sand mining is the go-to option for the big construction companies hunting for sand. Gravel, sand, clay, and loam make up the many varieties of soil, which are a cheap natural resource. Gravel, river sand, and pit sand are soil constituents that take years to produce but

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https://doi.org/10.69974/glslawjournal.v5i2.108
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can be extracted in a short space of time. Underground geological resources like sand and gravel are created as mountain rocks erode and are moved downstream by streams and rivers. Mwangi asserts that soil serves a variety of purposes, including agriculture, habitat preservation, and construction. However, the emergence of the cash economy has led numerous profit-driven businesses to engage in both legal and illicit mining of soil, some of which have no heed to the environment.[2]

The economic, social, and environmental elements of man in mining locations have been touched by sand mining activities in one way or another. For most of the people, sand trading offers a great deal to eke out a living. Due to the financial benefits of sand mining, many community and traditional leaders offer communal areas inside of their domains to miners. People engage in this activity because sand mining enables them to support themselves by using locally available natural resources.[3] This predicament is brought on by a rise in sand demand for building, but it also puts a tremendous amount of pressure on the ecosystem. As per Kondolf[4] Sand mining is one of the most evident and direct contributors to environmental deterioration. One of the building materials with a great economic worth is sand. Wang [5]argue that the nature has been harmed by the widespread sand mining activity in many rivers. Sand is in greater demand due to its crucial value and function in construction.[6] The locations close to where sand mining takes place are more likely to be impacted. Sand removal from rivers, tributaries, flood plains, and waterways impairs the operation of riverine ecosystems, and a few of the perturbations are brought on by the mining methods and tools utilised.

Sand is used for a variety of things, such as stabilising coasts, creating artificial islands, and reclaiming land, but it can also have a harmful impact on the ecosystem.[7] When sand extraction rates are higher than the rates at which the material is produced naturally, environmental problems arise.[8] Sand mining is the primary source of natural aggregates, such as those used in construction, that are used all over the world.[9] However, whether on a local or large scale, sand mining operations are damaging to the environment.[10] Since mining and environmental protection are not mutually exclusive, you cannot do both at the same time..[11]

Sand: A Treasured Resource

Approximately 32 and 50 billion tonnes of aggregate (sand and gravel) are reportedly removed globally each year, according to a UNEP assessment. Buildings, roads, and other infrastructure in all cities are built with sand and gravel, which has supported the construction industry since the Roman era. It is also the preferred substance for reclaiming of land. Transport is frequently the limiting "cost" for use because aggregate deposits are currently widely available and can

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[2] Tariro Madyise, *Case Studies Of Environmental Impacts Of Sand Mining And Gravel Extraction For Urban Development In Gaborone*, 1 SAU 15-134 (2013).

[3] Onwuka, S. V., Duluora, J. O., and Amaechi, I. E., *Socio-Economic impacts of Sand and Gravel Mining activities in Nsugbe, Anambra state Nigeria*. Vol.12 (2), AJAS 229-235 (2013).

[4] Kondolf, G. M., Williams, J. G., Horner, T. C. & Milan, D., *Assessing Physical Quality of Spawning Habitat* 56 AFSS 65:100-120 (2008).

[5] Wang, Z., Ding, J., and Yang, G., *Risk Analysis of Slope Instability of Levees under River and Sand Mining Conditions* V5 (3) WSE, 340-349 (2012).

[6] Kori, E., and Mthanda, H., *An Assessment of Environmental Impacts of Sand and Gravel Mining in Nzhelele valley, Limpopo Province, South Africa*, 46 IPCBEE 3, 3-7(2012).

[7] Ashraf, M. A., Maah, J. M., Yusoff, I., Wadij, A., and Mahmood, K., *Sand Mining Effects, Causes and Concerns: A Case study from Bestarijaya, Selangar Penisular* 6 (6), SRE 1216-1231 (2011).

[8] Mattamana, B. A., Varghese, S., and Kichu, P., *River Sand Inflow Assessment and Optimal Sand mining policy Development*. 3 IJETAE 456, 457-459 (2013).

[9] Mngeni, A. & Musampa, C. & Nakin, Motebang, *The effects of sand mining on rural communities* 10 SDP 443-453 (2016).

[10] *Id*.at 9.

[11] Chapman, E et al., Communities At Risk: Frac Sand Mining In Upper Midwest, 10 (Newton 2014).

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be extracted using cheap technologies, necessitating the utilisation of numerous sources close to markets.[12]

Sand has several beneficial purposes, such as strengthening buildings when combined with cement and concrete, plastering, blending with concrete to create foundations, and moulding bricks for the construction of homes and rental properties that provide money for local communities.[13] Due of sand's accessibility and abundance, villagers may construct sturdy, modern homes at low cost. In both developed and developing countries, sand and gravel are essential resources for economic development activities. Although expensive, these resources are valuable in industry and construction because they may be recovered from river channels, flood plains, and glacier deposits. In business, trade, and industrial activities, development is the process of steadily getting bigger, better, and more advanced. The expansion of towns and cities necessitates the building of more robust infrastructure, including paved roads, commercial shopping centres, and housing for the city's ever-increasing population. There will presumably be environmental disturbance as urban areas grow. In its 2002 report, the United Nations Conference on Environment and Development encouraged states to grow while also recognising the need to conserve and restore all natural resources. According to the paper, excessive soil extraction for urban growth is a global environmental issue. Utilizing soil as a source of raw materials results in resource depletion and negative effects.[14]

Without sand or gravel, there wouldn't be any ceramics, glass, electronic chips, or buildings. At the other extreme, there wouldn't be any rivers, oceans, or sandy beaches either. The activity that supports the "development" engine is sand mining, commonly known as sand dredging or just dredging. The building industry would cease to exist without sand, one of the largest industries in the world. However, not all types of sand would be appropriate. Since desert sand is unsuitable for construction, such sand is typically collected from riverbeds, rivers, and beaches in developing countries. A severely skewed supply-demand scenario is produced by the combination of rising global demand and the rapid depletion of such resources relative to natural replenishment. In 2020, it's anticipated that the worldwide construction market would be worth $12 trillion USD annually, or almost 13% of global GDP (Global Construction Perspectives, 2012). This industry represents the backbone of economic expansion and is regarded as a key driver of growth and a key development indicator. Over the past 50 years, the building sector in India has accounted for over 40% of all investments made in development. However, according to Transparency International's study, it continues to be one of the most corrupt industries, as measured by the Bribe Payers Index.[15]

Major producers of sand are as follows:[16]

Country Production in 2019 (in 1000 Metric Ton)
China 190.000
United States 110.000
Netherlands 54.000
Spain 36.000
Turkey 14.000
India 12.000
Malaysia 10.000

[12] : Koehnken, L., and Rintoul, M., *Impacts of Sand Mining on Ecosystem Structure, Process and Biodiversity in Rivers* 9 WWFR 12, 13-20(2018).
[13] *Supra* note. at 1.
[14] *Id*. at 13.
[15] Pereira, K. Sand Mining—The Unexamined Threat to Water Security. (June 2, 2022 , 1:09 PM) http://ismenvis.nic.in/Database/ Illegal_sand-mining_India_3457.aspx (accessed on 3 May 2020)
[16] Leal Filho, W.; Hunt, J.; Lingos, A.; Platje, J.; Vieira, L.W.; Will, M.; Gavriletea, M.D., *The Unsustainable* Use of Sand: Reporting on a Global Problem. 13 Sustainability 2, 2-16 (2021).

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Germany 7.500
United Kingdom 4.000
Australia 3.000

Impact of Sand Mining:

In order to reduce the harmful environmental effects of the widespread use of sand and the expansion of mining operations, immediate action is required. Based on where sand is mined and obtained, different environmental effects may result. Pit sand, river sand, and sea sand are the three primary natural sand sources.[17] Illegal actions related to sand mining and its transportation have been observed in numerous regions of the world, which has compounded the environmental effects of legal mining and sourcing. They more frequently occur in poor and underdeveloped countries.[18]

Since so much sand is currently being mined, rivers, deltas, and coastal and marine ecosystems are suffering greatly. For example, land is being lost to coastal or river erosion, water levels are dropping, and the sediment supply is declining. and is also having an impact on social and economic growth.[19.] The extent of these negative consequences goes beyond the immediate area to broader areas that are far from the locations where sand is removed.[20]

Some of the adverse environmental impacts of sand exploitation are as[21:]

- Fauna
  Habitat destruction for different species, Depletion of fish populations, Hindrance of fish migration, Replacement of lotic species by lentic species, Extinction of certain local species, Invasive species, Reduced fish reproduction, Impacts in food web structure, Oxygen depletion.
- Flora
  Loss of benthic organisms, Vegetation removal, Destruction of riparian habitat.
- Land/Soil
  Bed degradation, flattening of the longitudinal riverbed gradient, Bank erosion, Lowering the average of riverbed elevation, Beach erosion, Reduced integrity of coastlines with lower capacity to handle stormy weather.
- Water
  Changes to landscape, Water Channel incision, Channel widening, Channel erosion and instability, Waterway siltation, Increased water turbidity, change of river flow pattern, Deterioration of water quality (including groundwater), Deepening of the water depths, Saltwater movement upstream, Changes in tidal level, range, and duration.
- Air
  Dust pollution, Noise and vibration.

These harms also affect the social and economic aspects of sustainable development. The extent of harm depends on the type and extent of sand mining, the vulnerability of the various ecological components and biodiversity, and regional factors.[22] While sand mining directly benefits the region or nations (by creating jobs and generating tax money, for example), the direct and indirect negative environmental effects can have a detrimental influence on other

[17] Lakshmi, K.; Ashwini Manjunath, B.T.; Karthick, T.R.; Manjunath, M.S. Partial replacement of sea sand and desert sand in place of river sand for mortar in construction. 2 GRDJE 80, 81–85 (2017).
[18] UNEP-GEAS. Sand, Rarer than One Thinks. (June 21, 2022, 2:00 PM) https://na.unep.net/geas/archive/pdfs/GEAS_Mar2014_ Sand_Mining.pdf.
[19] Torres, A.; Brandt, J.; Lear, K.; Liu, J. *A looming tragedy of the sand commons*. 11 Science 357, 970–971 (2017).
[20] Gavriletea, M.D. Environmental Impacts of Sand Exploitation. Analysis of Sand Market. 9 SJR 1000- 1118 (2017).
[21] *Id*. at 16.
[22] Montoya, J.M.; Pimm, S.L.; Solé, R.V. *Ecological networks and their fragility*. 8 NCBJ, 442, 259–264 (2006).

https://doi.org/10.69974/glslawjournal.v5i2.108
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economic sectors, such as agriculture, tourism, fishing, and public health.[23] and society (e.g., protection from the floods, drinking water accessibility, prevention of the erosion).
The latest analysis is particularly alarming in light of the fact that sand resources are required in many parts of the world in order to assist mitigate the negative effects of climate change. Sand in coastal areas is one of the only resources that can help reduce the direct effects of rising sea levels on land areas because the International Panel on Climate Change predicts that the sea level will rise by almost one metre by 2100. Governments that permit sand removal from rivers, inlets, and coastal areas run the risk of escalating the environmental harm that sea-level rise brought on by climate change would do in those nations. Indeed, in the coming years, they may need to invest significant resources to reinforce coastal areas that have been made more vulnerable as a result of sand mining.[24]

The boisterous sand mafia/goons

Due to illegal sand mining and a hype in demand of sand, the goons have taken the control of the activity. No less than a theft, these sand mafias have posed a bigger challenge, adding more to the existing problem. These recalcitrant elements have no compassion to the poor souls, they straight away take the lives with impunity.
If a member of the Kandi Sangharsh Committee, Mr. Paramjit Singh, is to be believed which was established in 2018 to combat the sand and gravel mafia, the sand mafia's modus operandi might vary, but one frequently utilised strategy is to expand mining operations outside government-approved area. "The mafia mines on the entire garage if the government has authorised mining on a piece of land the size of a vehicle," he claimed.[25] Activists claim that the Sand Mafia takes advantage of the villagers in many ways. For instance, imposing a "goonda tax" on stone-crusher owners. In essence, the mafia gives stone-crushers raw materials in exchange for a "tax" that makes gravel.[26] In addition to collecting goonda tax, the mafia exploits peasants by providing questionable employment possibilities and breaking promises. "They give young people from rural areas who are unemployed a tractor trolley with flexible EMIs and offer them Rs 500 per day plus a bottle of alcohol to transport materials from the site illegally."[27]
Mafia-fighting activists claim their concerns are usually disregarded and that they are often harassed, even by the authorities.

Regulatory and Monitoring Framework of India:

Sand being a limited natural resource is being exploited at a large level. Hence it will in the near future might diminish. For saving it and for justifies use, it needs to be regulated and monitored.
Sand extraction without a valid permit is a crime according to Sections 120B read with Section 34 of the Indian Penal Code, 1860. This gives the police the authority to file a First Information Report (FIR) under the Indian Penal Code, 1860, and the Criminal Procedure Code, 1973, to look into the incident and submit charge sheets to use the Indian Penal Code provisions viz., Section 378 and 379 in the case of theft of public property. Additionally, the driver's licence and the vehicle's permit should be revoked or suspended in accordance with the Motor Vehicle

[23] Levrel, H.; Pioch, S.; Spieler, R. *Compensatory mitigation in marine ecosystems: Which indicators for assessing the "no net loss" goal of ecosystem services and ecological functions?* 6 MPJ, 36, 1202–1210 (2012).
[24] *Id.*at 16.
[25] Sand mafia, goonda tax': Illegal mining is no secret, but still an election issue in Punjab, The Print https://theprint.in/india/sand-mafia-goonda-tax-illegal-mining-is-no-secret-but-still-an-election-issue-in-punjab/814363/ (last visited: June 22, 2022)
[26] *Id.* at 27.
[27] *Supra* note.at 27.

https://doi.org/10.69974/glslawjournal.v5i2.108

Act of 1989 and any applicable regulations. Sand mining is regulated and illicit mining is prevented by the environment ministry's "Enforcement & Monitoring Guidelines for Sand Mining 2020."

The term SAND is connoted meaning under the provision of Section 3(e) of Mines and Minerals Development and Regulation Act, 1957 (MMDR Act). Following are the key frameworks: [28]

- The State Government was given the authority to establish regulations MMDR, Act of 1957, Section 23 C, to prevent unauthorised mineral mining, transit, and storage. However, it has lately come to light that there have been multiple instances of unauthorised mining in the country and in certain cases, many cops have died while carrying out their responsibilities to reduce the prevalence of illegal mining. The state loses money due to the unlawful and unregulated mining, and the ecology is harmed.
- The Ministry of Environment, Forestry, and Climate Change published Environmental Impact Assessment Notification 1994. (MoEF&CC) and is only relevant to major minerals covering more than 5 ha. The MoEF&CC released the EIA Notification 2006 for Major & Minor Mineral more than 5 Ha in order to include minor minerals in the EIA preview as well.
- For ethical and sustainable sand mining in the nation, the MoEF&CC published Sustainable Sand Mining Management Guidelines in 2016. The basic idea is supported by regulations, which also encourage environmental conservation, minimise adverse physiological, hydrogeological, and social effects, and support sustainable economic growth.
- The SSMMG-2016 places special emphasis on locating potential sources for sand mining, replenishing river bed material (such as sand, boulders, gravel, and cobble), creating district survey reports, and creating environmental standards that are appropriate for sand mining projects.
- According to Section 47 of the MMDRA, 1957, anyone who violates the terms of these rules faces a maximum sentence of one year in prison, a maximum fine of INR 5000, or both if the violation persists. Additionally, there is a daily fine of INR 500 for each day the violation persists after the offender has been found guilty of the violation.
- A Public Interest Litigation (PIL) may be filed with the court, a report may be made to the Ministry of Environment and Forests' National River Conservation Directorate, or a complaint may be made under the 1974 Air Pollution Control Act. A citizen can inform his state government about illegal mining by writing a mail or submitting an online application to the National Green Tribunal (https://ngtonline.nic.in/ngtonline).

Judicial Intervention

"There is no disputing the fact that succeeding stages as well as the stage at which Environmental Clearance is obtained require an efficient institutional monitoring structure. The creation of the District Survey Report and the Management Plan is the emphasis of the guidelines. We believe that all of the safety precautions recommended in the sustainable sand mining guidelines and in the notification dated 15.01.2016 should be strictly adhered to. It is well known that despite the existence of the aforementioned suggested rules, illicit mining still occurs on the ground. The matter has not been thoroughly addressed or effectively by the current mechanism." The State Boards, SEIAAs, and DEIAAs' current monitoring system is completely ineffective, so it must be updated in

[28] Ministry of Environment, Forest and Climate change, Enforcement & Monitoring Guidelines for Sand Mining, (June 22, 2022, 12:09 PM) http://environmentclearance.nic.in/writereaddata/SandMiningManagementGuidelines2020.pdf

https://doi.org/10.69974/glslawjournal.v5i2.108
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order to effectively monitor sand and gravel mining. Additionally, a specific monitoring system needs to be established."[29]

In Original Application No. 481/2016, it is claimed that mining is taking place in violation of environmental clearance requirements due to the District Administration's complicity with the miners. According to the application, an efficient procedure must be developed to prevent the use of unlawful mining.."[30]

In **A. Chidambaram v. District Collector,**[31] The High Court of Madras issued an injunction to the Tamil Nadu government to forbid the removal or extraction of sand from waterways. where the current level of the sand bed is lower than the necessary level that was set by the state because such activities were contributing to environmental degradation in that area.

Similarly, in **Paristhithi Samrakshana Sangham v. State of Kerala,**[32] The High Court of Kerala ruled that when the government must choose between serious harm to economic interests and irreparable harm to the environment, environmental protection should take precedence. The court further ruled that a sand audit must be completed before anyone is granted a permission to mine sand in the area in question.

The High Court of Bombay's order on September 23, 2010, banning sand mining throughout Maharashtra while requesting that the state government develop a new sand mining policy due to the issue's importance to the environment, was the most well-known of these rulings. However, a month later, once the state administration had laid forth a draught of the new policy, the court itself lifted the restriction. Similar to this, in Andhra Pradesh, the High Court issued an interim order regarding a public interest litigation (PIL) brought by two farmers, halting sand mining in the state. [33]

The government has been encouraged by the courts to place restrictions on sand mining activities in India. According to the High Court of Kerala in Soman v. Geologist, because the idea of sustainable development has become a part of environmental law, the state is compelled to include any requirements when awarding the licence for sand mining. as a result of Article 21 of the Indian Constitution. The Kerala Minor Mineral Concession Rules do not specifically identify these restrictions, but the state may nevertheless apply them in accordance with Article 21 of the Indian Constitution, the court ruled.[34]

Additionally, the courts have been adamant about developing thorough policies for mining and carrying them out. Notably, The MoEF report from March 2010 and the model guidelines created by the MoM must be implemented by all states, union territories, the MoEF, and the Ministry of Mines (MoM) within six months of the date of the ruling, according to the Supreme Court of India, which was rendered on February 27, 2012, in the case Deepak Kumar v. State of Haryana. The courts must receive the corresponding compliance reports from the states and the ministries The MoM has been given additional instructions to take action as soon as possible to put the Minor Minerals Conservation and Development Rules of 2010 into effect. Additionally, the MoEF's recommendations and the MoM's model guidelines were taken into consideration as state governments and union territories were instructed to take prompt action to establish required rules.[35]

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[29] Sudarsan Das v. State of West Bengal & Ors, NGT 173/2018.
[30] Mushtakeem v. MoEF & CC & Ors., NGT O.A. 44/2016
[31] (2010) A.C.J. 1912.
[32] (2009) I.L.R.Kerala 415.
[33] Sand Mining: A Need for Stricter Laws and Stringent Enforcement, ELR, (June 22, 2022, 12:40 PM) https://www.elr.info/sites/default/files/files-pdf/india_update_2012_07_indiaupdate3.2.pdf
[34] *Supra* note.at 32.
[35] *Id*.at 34.

https://doi.org/10.69974/glslawjournal.v5i2.108

Conclusion & Suggestion

As the illegal sand mining and extraction is increasing so is the resource depleting at the same pace. Having the regulatory framework at the hand, still there needs a lot of legal backing on the subject. Whilst the subject of sand mining seems to not affect a layman but deep down in the lives of people who are residing nearby the sand mining sites suffer the most. They are the victims of the sand goons, the whistleblowers who work for the justice are mostly at the risk of their lives. Activist, media persons are often targeted too. Mainly corruption is not done independently. After study of various areas where illegal sand mining is rampant, it can be said undeterred that the bigwigs are thoroughly involved in the process. Bribery, rogue, hooliganism is common and is taking place due to involvement of the decision makers. So, blaming only a group cannot suffice the problematic situation.

Following suggestions can be placed on the subject:

1. Since the resource is a depleting one, if extracted beyond a limit, it can cause serious environmental damage like damage to the riverine, alterations to the flow of the river more so, depletion of the water resource. Hence mining on such sites where rivers may get affected should be totally banned or should be capped with a limit. Physical survey of the mining site should be religiously undertaken.
2. Strict compliance with the rules and guidelines of the mining as per the orders issued by the Ministry and the Courts.
3. Environmental Clearance should be given only after compliance of the rules and regulations issued in this regard.
4. Mining operations should be limited to 3 metres in depth, 14 of a river's width away from the bank, and no closer than 7.5 metres.[36]
5. To check on the mafias/goons, use of UAVs/drones can be utilised so as to inspect any recalcitrant elements on the mining site.
6. Safeguarding the officers employed for this purpose. Equipping the officers with the technological aids may help them perform their duties efficiently check for the scoundrels.
7. Capacity building of the police officials who undertake the cases/FIRs/reporting of the illegal mining activities.
8. Appointment of a special task force to check on the mafias and goons.
9. Engaging the general public for the awareness of illegal mining and report for the same to the nearby police stations.
10. Holistic approach to engage and deliberate with the legislators, bureaucrats and judiciary to address the problem which may arise time and again to check on the treasured resource i.e. sand and ways to conserve the same by engaging in the discussions and empowering every citizen to preserve the same.

[36] *Supra* note. at 30.