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This report is incomplete and work in progress

## India Rivers Forum Overview of Sand Mining in South India

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**November 7<sup>th</sup> 2020**



**Sand Mining in Bharathapuzha, Thrissur**  
Source: pixelshots.blogspot.com

**This Report** has been put together to provide an overview of sand mining related issues of South India in the context of India Rivers Week 2020 theme “Is sand mining killing our Rivers” and South Zone Dialogue on November 7, 2020. This introductory section provides an overview of general issues related to river sand mining in India.

## Table of Contents

Executive Summary .....	2
Biophysical, Geological, Hydrological and Ecological Aspects.....	5
Abstracts of peer-reviewed sediment and sand mining papers .....	13
Box Item 1: Cauvery Sand Mining and Otters - Nisarg Prakash .....	17
A View from Real Estate Industry in South India.....	24
Legal and Regulatory Aspects.....	26
Reports from panelists.....	28
With such rear view, what can we look forward to? .....	31
Other Resources from Wikipedia & SANDRP .....	32
❖ KERALA .....	32
❖ TAMIL NADU .....	33
❖ ANDHRA PRADESH .....	34
Summary.....	35
❖ TELANGANA .....	36
❖ KARNATAKA .....	39
Citizens Efforts .....	44
Legal Interventions .....	46
Government Actions .....	47
Violence .....	51
Summary.....	53
Box Item 2: Reported cases of violence due to illegal sand mining activities in South India..	55
Synthesis & Conclusion.....	57
End Notes: .....	57
Resources: .....	57
SANDRP Sand Mining Blogs: 2015-2020 .....	57
Other SANDRP Blogs on RIVER SAND MINING .....	59

## Executive Summary

The rivers that drain the highly weathered and older geological formations of South India carry less sediment (~two order of magnitude less compared to the Himalayan and Indus-Gangetic-Brahmaputra flood-plain rivers) and annual rates of replenishment at any stretch of a river are much lower. Decrease in rainfall since 1950s in some parts of the Western Ghats and elsewhere have also potentially reduced the sediment transport abilities of Southern rivers. A small decrease in rainfall can lead to a significant reduction in sediment load and

the loss of some peak flushing flows downstream of dams can also reduce mobility of sediment.

Furthermore, sediment trapped in reservoirs behind dams has caused in reduction in sediment load by up to 80% in some rivers (e.g. Kaveri).

The boom of real estate and infrastructure development in cities and towns of South India post 2000 (eg Bengaluru, Hyderabad, Kochi) led to a massive demand for sand and proliferation of sand mining, legal and illegal in rivers of South India.

Available evidence and knowledge suggest major ecological, socio-ecological and socio-economic impacts of sand mining in this zone. There is evidence of conflict, legal challenges and local mobilization against sand mining.

## Introduction

A general introduction to sand mining is available here:

<https://indiariversforum.org/indiariversweek2020/>

[https://indiariversforum.org/wp-content/uploads/2020/10/irw2020\\_northindiasandminingoverview\\_sandrp\\_oct20.pdf](https://indiariversforum.org/wp-content/uploads/2020/10/irw2020_northindiasandminingoverview_sandrp_oct20.pdf)

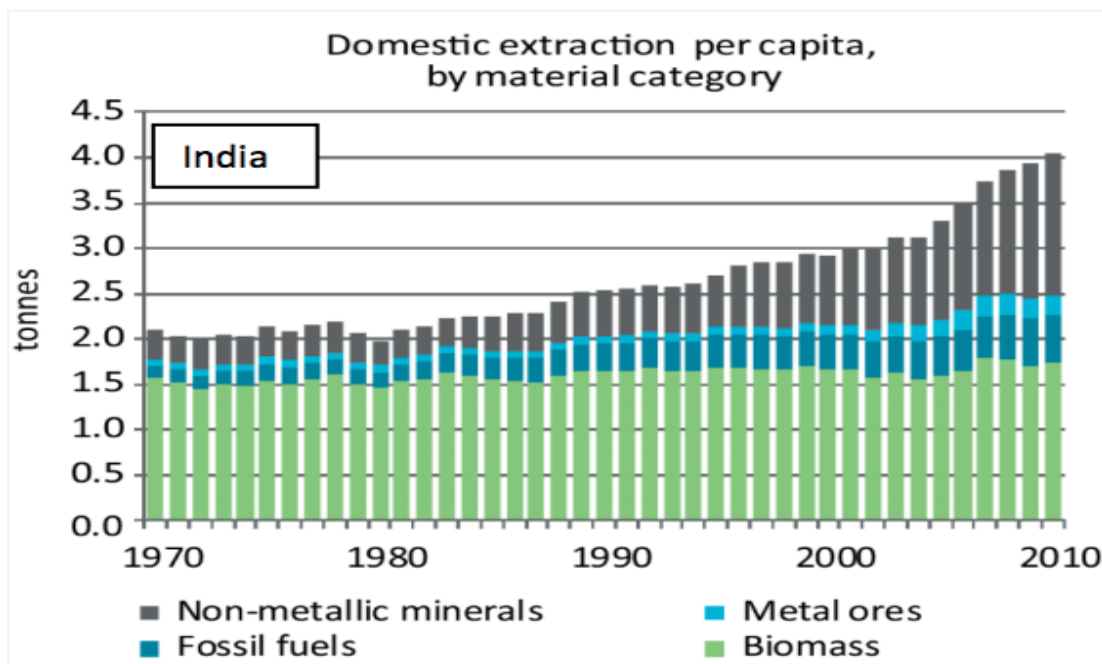


Figure 1: Domestic Extraction (per capita) of natural resources in India from 1970-2010



Figure 2: Map of South Indian States

## Biophysical, Geological, Hydrological and Ecological Aspects

Here we illustrate key issues related to sand mining for Southern region using selected graphics and bullet points.

1. **Sand as part of sediment plays a very important role in the ecology, ecosystem services and livelihoods from the headwaters to the estuaries and deltas in South India. We have to mention that although overall sediment dynamics are integral to the ecology of rivers, estuaries and deltas, our emphasis is on the sand fraction of sediment.**

### Why sediment is so important in river ecosystems?

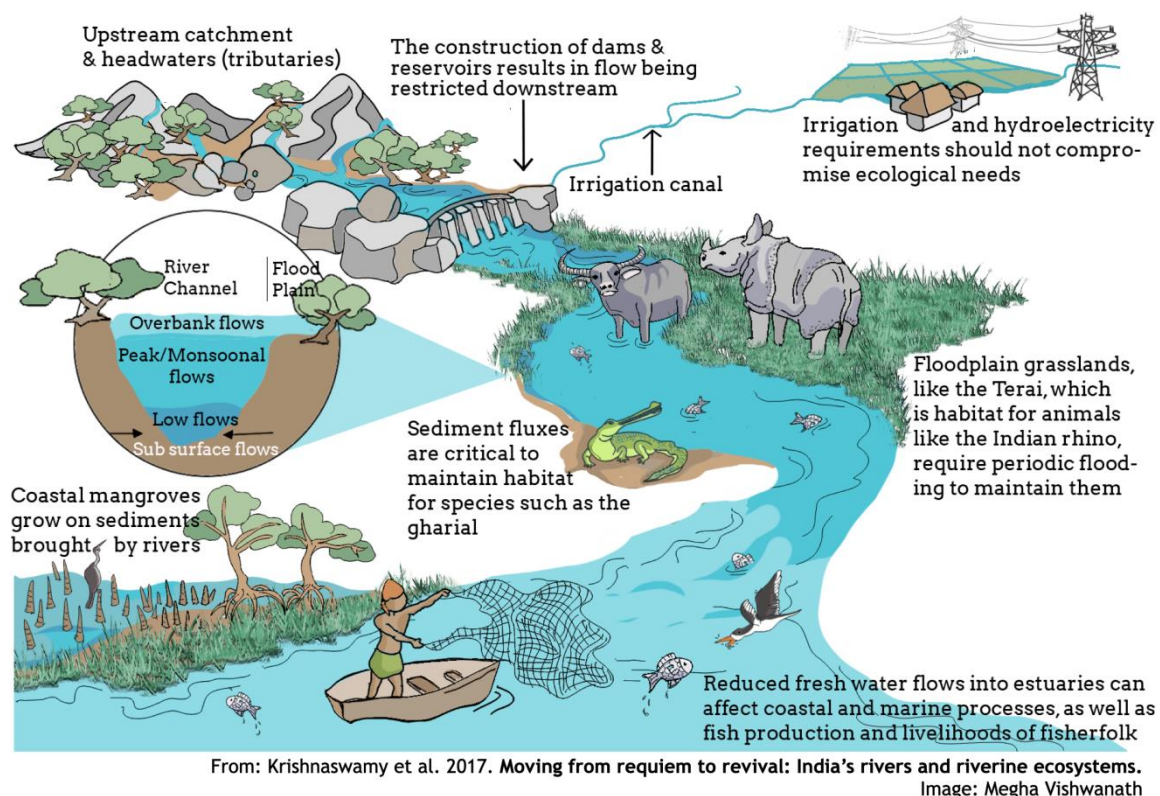


Figure 3: River Ecosystem and Sediment fluxes

2. Southern rivers produce a smaller amount of sediment (and sand) compared to northern rivers and are thus naturally less capable of replenishing sand lost to sand mining.

**Table 1. Sediment yield of rivers in the Indian sub-continent.**

River	Basin area (km <sup>2</sup> )	Run-off (10 <sup>6</sup> m <sup>3</sup> /yr)	Sediment load (10 <sup>6</sup> t/yr)
Ganga <sup>2</sup>	7,50,000	4,93,000	329
Brahmaputra <sup>2</sup>	5,80,000	5,10,000	597
Indus <sup>3</sup>	9,70,000	2,38,000	100
Irrawady <sup>3</sup>	4,30,000	4,22,000	265
Narmada <sup>8</sup>	87,900	46,700	70
Tapi <sup>8</sup>	49,000	18,000	25
Godavari <sup>9</sup>	3,13,000	92,200	170
Krishna <sup>4</sup>	2,51,400	32,400	4
Mahanadi <sup>7</sup>	41,000	54,500	15.7
Mahi <sup>6</sup>	25,500	11,000	9.7
Brahmani <sup>6</sup>	28,200	16,300	20.4
Kaveri <sup>6</sup>	66,300	21,500	1.5

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Figure 4: Sediment yield of major rivers in the Indian sub-continent

**Table 1**

Large peninsular rivers: hydrological parameters of basin; present day water and sediment flux and comparison with previous estimates.

River and place of origin	Area (km <sup>2</sup> )	Length (km)	Elevation (m)	Rainfall (mm)	Water flux (km <sup>3</sup> yr <sup>-1</sup> )			Suspended sediment flux (Mt yr <sup>-1</sup> )			Change in annual sediment load (%) <sup>A</sup>
					Historical <sup>a</sup>	Long term <sup>b</sup>	Current <sup>c</sup>	Historical	Long term <sup>b</sup>	Current <sup>c</sup>	
<i>Rivers flowing into the Bay of Bengal</i>											
Godavari (Sahyadri Range)	312,812	1465	1067	1042	92.25	84.3	76.7	95.5 <sup>1</sup> 170 <sup>2</sup> <b>170</b> <sup>3</sup> 38.8 <sup>4</sup>	45.4	44.2	−74
Krishna (Mahadev Range)	258,948	1401	1337	784	32.4	16.8	12.5	4.11 <sup>5</sup> 64 <sup>2</sup> <b>4.11</b> <sup>6</sup> 0.32 <sup>4</sup>	1.09	0.52	−87
Mahanadi (Maikala Range)	141,589	851	442	1417	54.4	48.2	49.9	68.0 <sup>7</sup> 15.7 <sup>8</sup> <b>30.6</b> <sup>6</sup> 13.2 <sup>4</sup>	17.6	10.0	−67
Cauvery (Sahyadri Range)	81,155	800	1341	1092	11.5	7.56	6.99	32.0 <sup>9</sup> <b>1.59</b> <sup>10</sup> 1.4 <sup>6</sup> 0.47 <sup>4</sup>	0.37	0.32	−80
Pennar (Nandi Hills)	55,213	597	762	700	5.2	1.99	2.5	7.0 <sup>11</sup> 6.9 <sup>6</sup> 0.26 <sup>4</sup>	1.60	1.62	−77
Brahmani (Ranchi Plateau)	39,033	799	600	1305	16.3	17.04	14.9	<b>20.3</b> <sup>6</sup> 13.3 <sup>4</sup>	7.12	5.10	−75
<i>Rivers flowing into the Arabian Sea</i>											
Narmada (Maikala Range)	98,796	1312	1057	1180	46.7	28.1	19.5	69.7 <sup>9</sup> <b>61.0</b> <sup>6</sup> 44.4 <sup>4</sup> 28.5 <sup>12</sup>	20.2	3.23	−95
Tapi (Satpura Range)	65,145	724	752	830	9.71	7.83	6.53	100 <sup>9</sup> <b>24.7</b> <sup>6</sup> 10.5 <sup>4</sup>	19.5	14.6	−41
Mahi (Aravalli Range)	34,842	583	500	700	10.8	4.51	4.49	22.0 <sup>9</sup> <b>9.7</b> <sup>6</sup> 5.88 <sup>4</sup>	2.73	3.13	−68
Sabarmati (Aravalli Range)	21,674	371	762	800	1.45	0.54	0.42	<b>4.6</b> <sup>6</sup> 0.018 <sup>4</sup>	0.163	0.163	−96
Total					280.8	220.1	238.0	341.9 <sup>6</sup>	117.3	82.93	−75.7
<sup>1</sup> Biksham and Subramanian (1980) <sup>d</sup> ; <sup>2</sup> Milliman and Syvitski (1992); <sup>3</sup> Biksham and Subramanian (1988); <sup>4</sup> Chandramohan et al. (2001); <sup>5</sup> Ramesh and Subramanian (1988) <sup>e</sup> ; <sup>6</sup> Ramesh and Subramanian (1993); <sup>7</sup> Holeman (1968); <sup>8</sup> Chakrapani and Subramanian (1990) <sup>f</sup> ; <sup>10</sup> Narayana and Babu (1983); <sup>11</sup> Vaithyanathan et al. (1988) <sup>g</sup> ; <sup>12</sup> Gupta and Chakrapani (2005)											

<sup>1</sup>Biksham and Subramanian (1980)<sup>4</sup>; <sup>2</sup>Milliman and Syvitski (1992); <sup>3</sup>Biksham and Subramanian (1988); <sup>4</sup>Chandramohan et al. (2001); <sup>5</sup>Ramesh and Subramanian (1988)<sup>6</sup>; <sup>6</sup>Ramesh and Subramanian (1993); <sup>7</sup>Holeman (1968); <sup>8</sup>Chakrapani and Subramanian (1990); <sup>9</sup>Narayana and Babu (1983); <sup>10</sup>Vaithyanathan et al. (1988)<sup>11</sup>; <sup>12</sup>Gupta and Chakrapani (2005)

<sup>a</sup> From Ramesh and Subramanian (1993).

<sup>b</sup> For the maximum period as shown in Appendix A.

<sup>c</sup> Average of 10 recent years (Appendix A).

<sup>d</sup> Five years between 1969 and 1974.

<sup>e</sup> Five years between 1984 and 1989.

<sup>f</sup> Five years between 1980 and 1981, 1985 and 1986 (except 1984 and 1985).

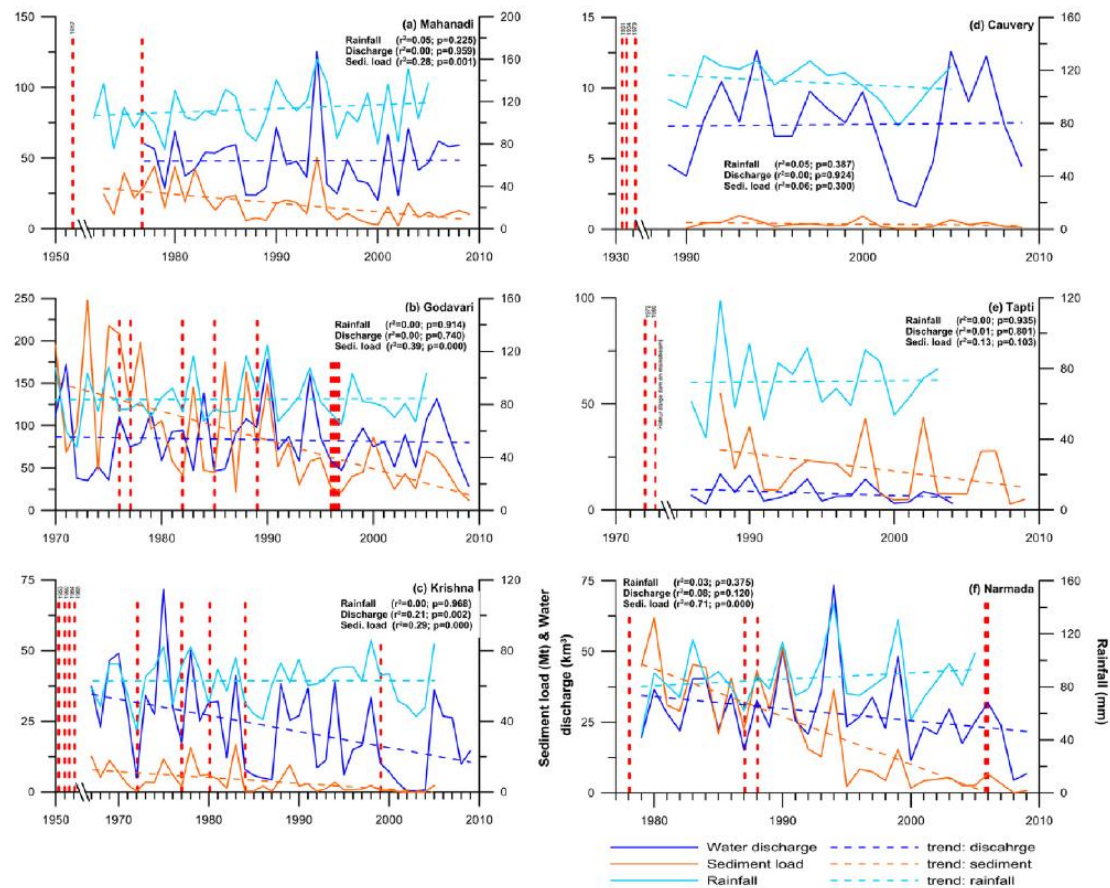
<sup>g</sup> For 9 years between 1971 and 1981 (except 1976 and 1977).

<sup>A</sup> To calculate percentage decline in annual sediment load *current* estimates were compared with the *historical* estimates shown as bold.

Figure 5: Hydrological parameters of large peninsular river basins



Figure 6: Annual variations and trends in water discharge ( $\text{km}^3$ ) and sediment flux (Mt) at the terminal gauge stations of six large peninsular rivers. The annual rainfall (cm) data (basin average) have also



**Fig. 2.** Annual variations and trends in water discharge ( $\text{km}^3$ ) and sediment flux (Mt) at the terminal gauge stations of six large peninsular rivers. The annual rainfall (cm) data (basin average) have also been plotted for reference. Vertical dashed lines represent the number of mega dams in basin with the year of closure. Note that in the recent past no mega dam was constructed in the Cauvery and the Tapi basins.

been plotted for reference. Vertical dashed lines represent the number of mega dams in basin with the year of closure. Note that in the recent past no mega dam was constructed in the Cauvery basin.



3. **Sediment load in Southern rivers has been declining due to natural factors like negative trends in rainfall but largely due to the effects of sediment trapping in reservoirs.**

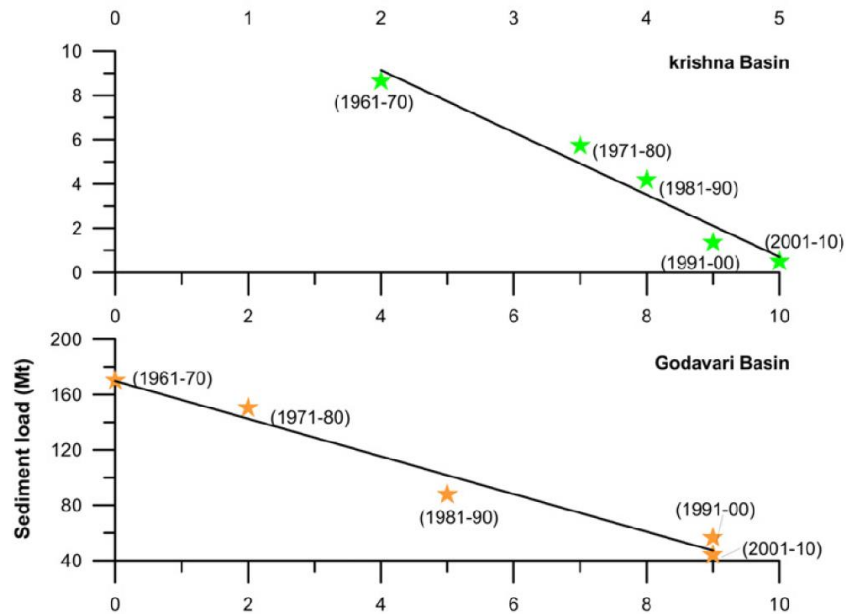


Figure 7: Decline in sediment flux of large Asian rivers coincides with an increasing number of mega dams in respective catchments at a decadal scale. Source: Gupta, H., Kao, S.J. and Dai, M., 2012. The role of mega dams in reducing sediment fluxes: A case study of large Asian rivers. *Journal of Hydrology*, 464, pp.447-458.

4. Sand mining can potentially have major impacts on groundwater and dry-season stream flow. This is poorly studied. Here is what coffee planters in Kodagu feel about this phenomena.

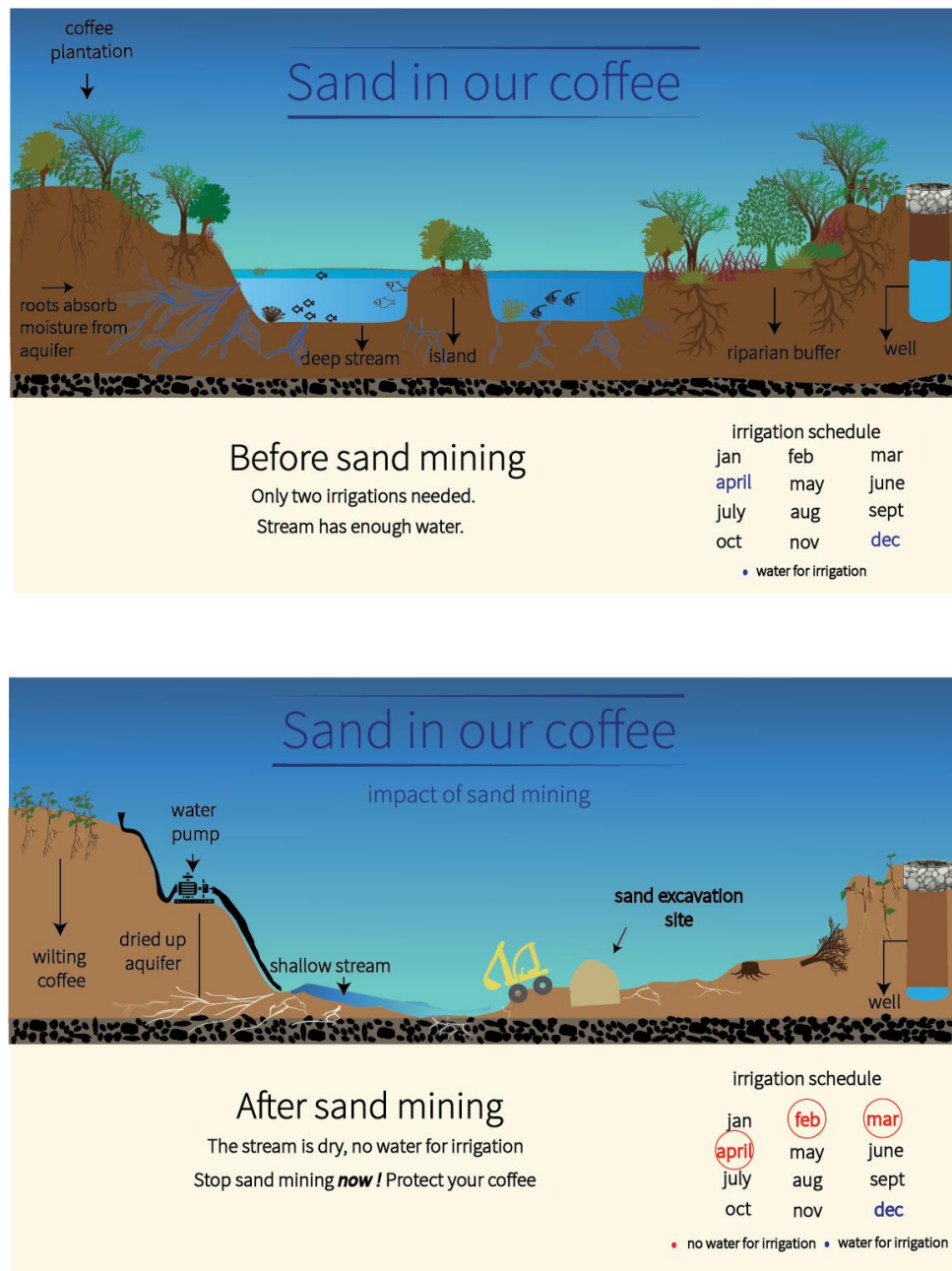


Figure 8: Perception of Coffee planters in Kodagu on how sand mining can impact base-flow and water resources in dry-season.

Also see: Hemalatha, A.C., Chandrakanth, M.G. and Nagaraj, N., 2005. *Effect of sand mining on groundwater depletion in Karnataka* [10.22004/aq.econ.43619](#) (No. 1524-2016-131818, pp. 1-15), which suggests that environmental ground-water storage externality of a truck-load of sand in Bengaluru is over 12% of the sale price of the sand. This of course does not take into account other ecological externalities.

5. There are environmental and ecological impacts associated with sand mining that affect our rivers, estuaries, and floodplains.

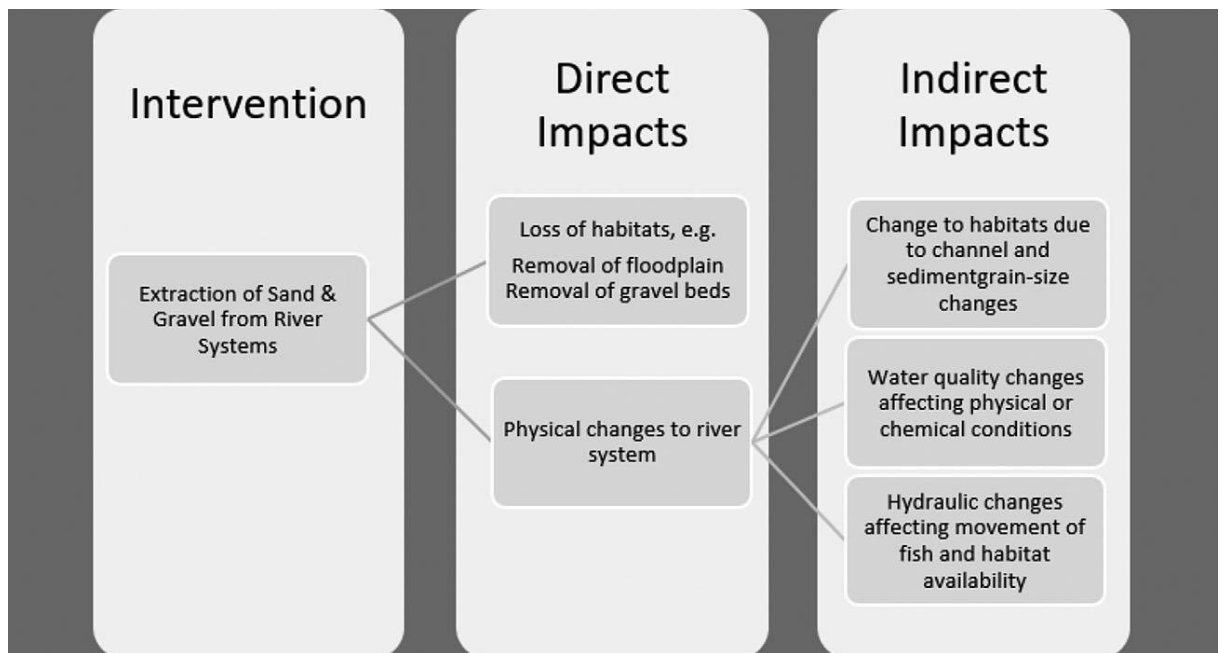


Figure 9: Direct and indirect impacts of sand mining on rivers (Source: Koehnken L. et. al., 2020)

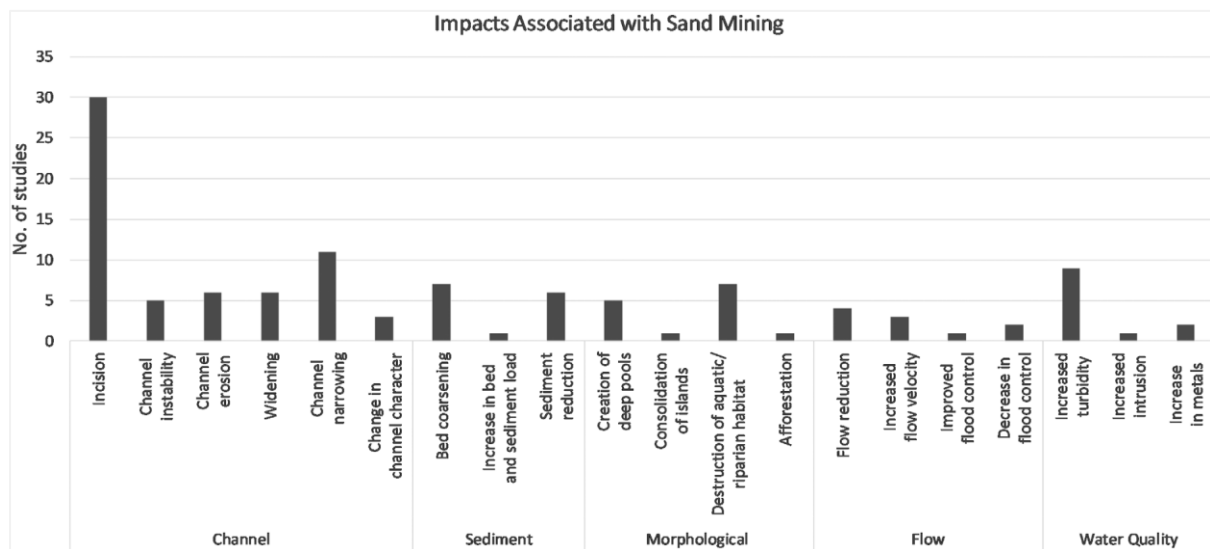
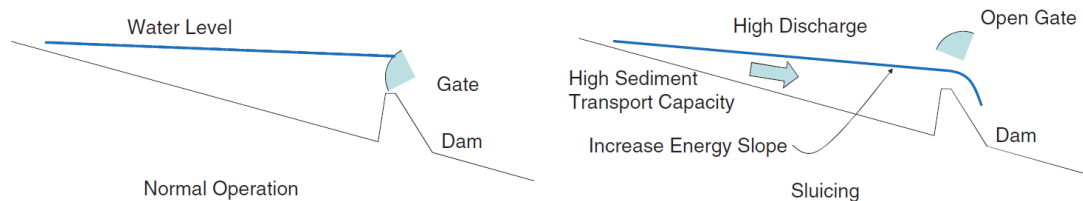


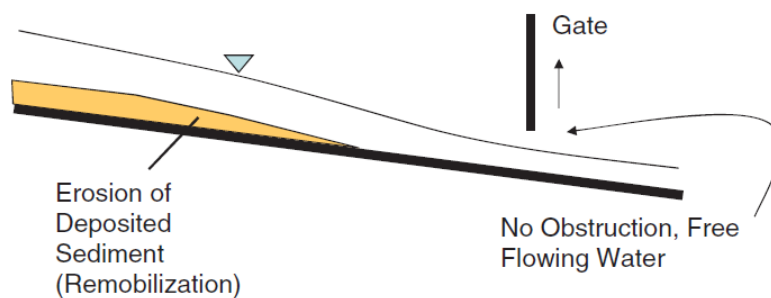
Figure 10: Abiotic impacts to river systems (Source: Koehnken L. et. al., 2020)

6. Since so much sediment including sand is trapped behind dams in reservoirs can we manage to mobilize some of this to resupply depleted sites downstream? Evidence from other parts of the world suggests that we need to investigate these approaches for reservoirs in Southern India whose irrigation water storage capacity is rapidly declining due to accumulating sediment. How much of this is sand and how this can contribute to better river health is a knowledge gap.

Sediment sluicing:



Drawdown sluicing:



Figures 11: Can we manage reservoirs to increase downstream sediment (and sand supply) for river ecosystems and sustainable sand extraction? The feasibility of both these techniques has to be explored for Indian dams and reservoirs. Source: Kondolf, G. M. et al. (2014)

“Sluicing (or drawdown routing) permits sediment to be transported through the reservoir rapidly to avoid sedimentation during high flows; it requires relatively large capacity outlets. Drawdown flushing involves scouring and re-suspending sediment deposited in the reservoir and transporting it downstream through low-level gates in the dam; it works best in narrow reservoirs with steep longitudinal gradients and with flow velocities maintained above the threshold to transport sediment. Turbidity currents can often be vented through the dam, with the advantage that the reservoir need not be drawn down to pass sediment. In planning dams, we recommend that these sediment management approaches be utilized where possible to sustain reservoir capacity and minimize environmental impacts of dams”.

Kondolf, G. M. et al. (2014), Sustainable sediment management in reservoirs and regulated rivers: Experiences from five continents, *Earth's Future*, 2,256–280, doi:10.1002/2013EF000184.

## Abstracts of peer-reviewed sediment and sand mining papers

Gupta, H., Kao, S.J. and Dai, M., 2012. The role of mega dams in reducing sediment fluxes: A case study of large Asian rivers. *Journal of Hydrology*, 464, pp.447-458.

In order to sustain the ever-growing population and to meet water and energy requirements of the rapidly growing economies, most of the large rivers draining through East, Southern and Southeast (ESSE) Asian region have been regulated all along their courses, over the past few decades. For instance, ESSE Asian countries (China, Taiwan, Vietnam, Myanmar, Thailand, India, Pakistan and Bangladesh) host about 250 mega dams and several tens of thousands of large and small reservoirs. The present study provides a revised estimate on annual suspended sediment fluxes of the large rivers draining through ESSE region, including the latest data of the Indian peninsula rivers. In the last 50 years, the combined annual sediment flux of the large Chinese rivers has been reduced from 1800 million tons (Mt) to about 370 Mt. We estimate that at present the Indian peninsular rivers collectively transport about 83 Mt of sediment annually. The Ganga–Brahmaputra and the Indus, contribute 850 and 13 Mt of sediments, respectively to the oceans. Our revised estimates suggest that at present the large rivers of ESSE region, collectively delivering 2150 Mt of sediment annually to the oceans. We show that at decadal scale, decline in sediment fluxes of the large Asian rivers are proportional to the number of mega dams present in the respective catchments. We also demonstrate that storage of sediment-laden water of major flood events (major event), led to huge sediment trapping behind mega dams. Thus, ongoing and planned dam constructions activities across ESSE Asia may further reduce the annual sediment fluxes.

Ramkumar, M., Kumaraswamy, K., James, R.A., Suresh, M., Sugantha, T., Jayaraj, L., Mathiyalagan, A., Saraswathi, M. and Shyamala, J., 2015. Sand mining, channel bar dynamics and sediment textural properties of the Kaveri River, South India: Implications on flooding hazard and sustainability of the natural fluvial system. In *Environmental management of river basin ecosystems* (pp. 283-318). Springer, Cham.

The Kaveri River, the fourth largest river in India, undergoes the onslaught of urbanization and extensive construction activities within, along and adjoining its channel. In addition to its dwindling natural flow due to the failing monsoonal supply, and constructions of major, medium and minor dams, the extensive mining of sand from its channel bed causes severe stress on its natural fluvial processes. Reduction of carrying capacity of the channel, extensive vertical accretion of sediments within the channel, development of channel-in-channel physiography, and alteration of stream configuration and textural parameters of the stream bed sediments have contributed towards deterioration of the environmental integrity of this important river and exacerbated the flood hazard in the adjoining regions. This paper is an attempt to document the deterioration of natural fluvial dynamics due to the anthropogenic intervention and lack of required data for proper understanding for environmental management and sustenance of the fluvial system. The textural and geomorphic characteristics and the mechanism of mid-channel bar formation and stabilization documented through this study suggest that the whole of the river channel of the Kaveri River behaves like a braided bar/flood plain, which means the prevalence of slow abandonment of the fluvial processes, that could only be observed in the flood plain region of mature and or old stage of a river and/or in the event of shifting of channel course. Occurrence of such characteristics at the upper deltaic region and the observation that the channel area gets converted into mid-channel bars (in terms of textural-geomorphic traits), at a rate of 1.08 km<sup>2</sup>/year warrant immediate measures for the restoration of natural fluvial processes.

Sreebha, S. and Padmalal, D., 2011. Environmental impact assessment of sand mining from the small catchment rivers in the southwestern coast of India: a case study. *Environmental management*, 47(1), pp.130-140.

In the past few decades, the demand for construction grade sand is increasing in many parts of the world due to rapid economic development and subsequent growth of building activities. This, in many of the occasions, has resulted in indiscriminate mining of sand from instream and floodplain areas leading to severe damages to the river basin environment. The case is rather alarming in the small catchment rivers like those draining the southwestern coast of India due to limited sand resources in their alluvial reaches. Moreover, lack of adequate information on the environmental impact of river sand mining is a major lacuna challenging regulatory efforts in many developing countries. Therefore, a scientific assessment is a pre-requisite in formulating management strategies in the sand mining-hit areas. In this context, a study has been made as a case to address the environmental impact of sand mining from the instream and floodplain areas of three important rivers in the southwestern coast of India namely the Chalakudy, Periyar and Muvattupuzha rivers, whose

lowlands host one of the fast developing urban-cum-industrial centre, the Kochi city. The study reveals that an amount of 11.527 million  $\text{ty}^{-1}$  of sand (8.764 million  $\text{ty}^{-1}$  of instream sand and 2.763 million  $\text{ty}^{-1}$  of floodplain sand) is being mined from the midland and lowland reaches of these rivers for construction of buildings and other infrastructural facilities in Kochi city and its satellite townships.

Environmental Impact Assessment (EIA) carried out as a part of this investigation shows that the activities associated with mining and processing of sands have not only affected the health of the river ecosystems but also degraded its overbank areas to a large extent. Considering the degree of degradation caused by sand mining from these rivers, no mining scenario may be opted in the deeper zones of the river channels. Also, a set of suggestions are made for the overall improvement of the rivers and its biophysical environment.

Panda, D.K., Kumar, A. and Mohanty, S., 2011. Recent trends in sediment load of the tropical (Peninsular) river basins of India. *Global and Planetary Change*, 75(3-4), pp.108-118.

The tropical river basins of India are important because of the coastal ecosystem that they sustain and the densely populated economic zones that they serve. This study examines the recent trends in sediment load and also explores the influence of the climatic and human forcing mechanisms on the land–ocean fluvial systems. A large dataset comprised of the sediment time series of different timescale during the period 1986–87 to 2005–06 from 133 gauging stations spreading across tropical river basins of India was analyzed. Results indicate dramatic reductions in sediment load in the tropical river basins, which is beyond the fold of assignable natural variability. Around 88% (62%) of the total 133 gauging stations showed decline in sediment loads in the monsoon (non-monsoon) season. The significant downward trends outnumbered the corresponding upward trends in high proportions for both the seasons. Striking spatial coherence was observed among the significant trends, suggesting the presence of the cross-correlation among the sediment records. The regional trends, which account the spatial correlation, also indicated the widespread nature of the sediment declines. The rainfall, which is characterized by the non-significant decreasing trends and also frequent drought years, is the primary controller of the sediment loads for most of the river basins. It may be inferred that a little change in rainfall towards the deficit side leads to a significant reduction in sediment load. This is due to the diversion and storage of runoff to meet the manifold increases in water requirements for the agriculture and industry. Among the tropical rivers, the maximum reduction in sediment flux has taken place for the Narmada River ( $-2.07 \times 10^6 \text{ t/yr}$ ) due to the construction of dam. Although the sea level is rising, we speculate that the significant reduction in sediment loads may also have influenced the coastal erosion in recent years. The results of this study can be utilized for the

sustainable management of the tropical river basins in the backdrop of a predicted erratic monsoon rainfall and the growing anthropogenic stresses.

Kondolf, G.M., Gao, Y., Annandale, G.W., Morris, G.L., Jiang, E., Zhang, J., Cao, Y., Carling, P., Fu, K., Guo, Q. and Hotchkiss, R., 2014. Sustainable sediment management in reservoirs and regulated rivers: Experiences from five continents. *Earth's Future*, 2(5), pp.256-280.

By trapping sediment in reservoirs, dams interrupt the continuity of sediment transport through rivers, resulting in loss of reservoir storage and reduced usable life, and depriving downstream reaches of sediments essential for channel form and aquatic habitats. With the acceleration of new dam construction globally, these impacts are increasingly widespread. There are proven techniques to pass sediment through or around reservoirs, to preserve reservoir capacity and to minimize downstream impacts, but they are not applied in many situations where they would be effective. This paper summarizes collective experience from five continents in managing reservoir sediments and mitigating downstream sediment starvation. Where geometry is favorable it is often possible to bypass sediment around the reservoir, which avoids reservoir sedimentation and supplies sediment to downstream reaches with rates and timing similar to pre-dam conditions. Sluicing (or drawdown routing) permits sediment to be transported through the reservoir rapidly to avoid sedimentation during high flows; it requires relatively large capacity outlets. Drawdown flushing involves scouring and re-suspending sediment deposited in the reservoir and transporting it downstream through low-level gates in the dam; it works best in narrow reservoirs with steep longitudinal gradients and with flow velocities maintained above the threshold to transport sediment. Turbidity currents can often be vented through the dam, with the advantage that the reservoir need not be drawn down to pass sediment. In planning dams, we recommend that these sediment management approaches be utilized where possible to sustain reservoir capacity and minimize environmental impacts of dams.

Hemalatha, A.C., Chandrakanth, M.G. and Nagaraj, N., 2005. Effect of sand mining on groundwater depletion in Karnataka, Vol. No. 1524-2016-131818, pp. 1-15, [10.22004/ag.econ.43619](#)

Rapid urbanization, the major cause for sand demand is responsible for unsustainable extraction of sand from dried river paths. The layers of sand deposits are exploited almost up to the bottom. This in turn, has increased initial and premature failure of irrigation wells in riparian areas. This study is a modest attempt to estimate the negative externalities due to sand mining along Uttara Pinakini river in Gauribidanur, Karnataka, India using field data from Sand mining area (SMA) and Non-sand mining area (NSMA). In SMA (NSMA) proportion of well failure is 0.46 (0.3), groundwater extracted per well 20.67 (32.12) acre inches, negative externality per well Rs. 4189 (Rs. 1328), net return per rupee of groundwater Rs.4.32 (Rs.11.88). In SMA (NSMA), as location of well from sand mining area increased from 30 to 1500 feet negative externality per well reduced from Rs.7080 to Rs.1585 (Rs.1394 to 1462). In Bangalore city, price of sand was Rs. 4200 per truckload of 350 cubic feet; with inelastic demand ( $\eta = -0.88$ ) and transporters earn net return of Rs. 835 per load. It is suggested to impose a Pigouvian tax of Rs. 540 on each sand truck load in order to compensate the farmers for loss incurred due to sand mining at the rate of Rs. 4813 per irrigation well.



Gopinath, G., Ashitha, M.K. & Jayakumar, K.V. Sedimentation assessment in a multipurpose reservoir in Central Kerala, India. *Environ Earth Sci* 72, 4441–4449 (2014). <https://doi.org/10.1007/s12665-014-3344-0>

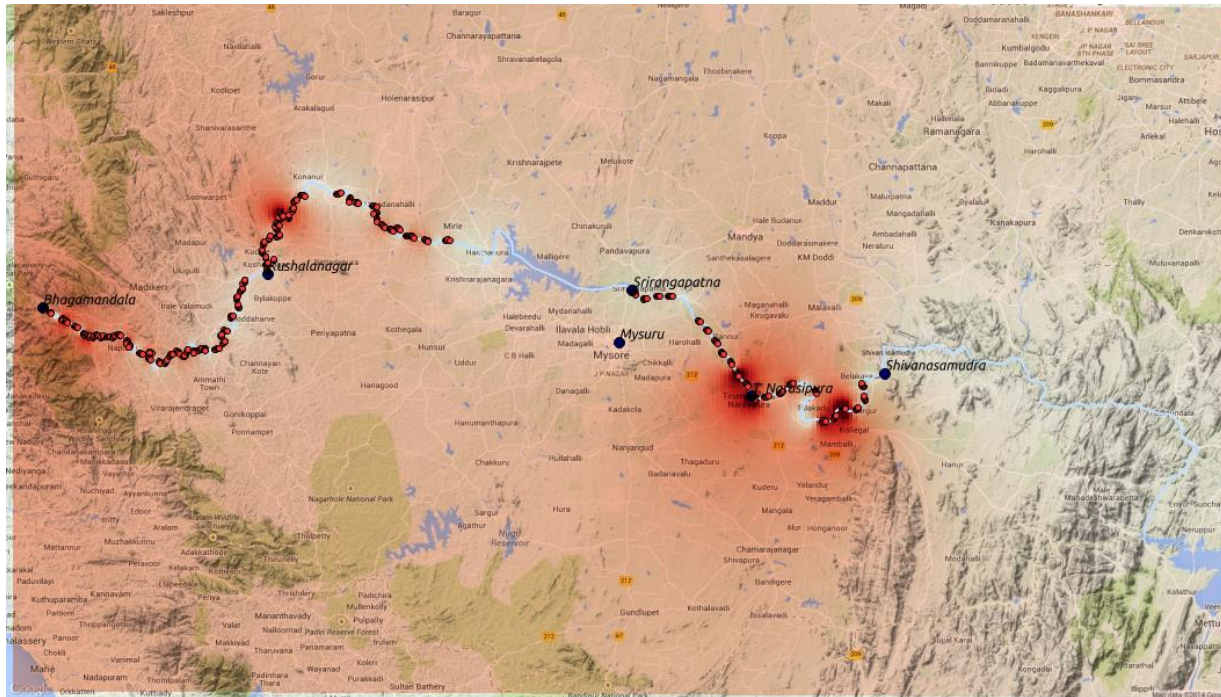
Dams and their reservoirs, constructed to manage the water scarcity problems of a region, sometimes lose whole or part of their functionality due to sedimentation. This issue, seen as a negative impact as far as reservoir life and its purpose is concerned, can be a boon to the construction industry, by providing a highly demanding construction material in the form of sand dredged from the reservoirs. Malampuzha reservoir, a multipurpose reservoir in the South Indian state of Kerala, is also losing considerable part of its storage due to siltation. This paper assesses the rate of sedimentation in Malampuzha reservoir, through bathymetric survey and suggests measures for utilization of the removable sediment. Our analysis has shown that the reservoir capacity is reduced from 226 to 205.19 Mm<sup>3</sup>; a reduction in capacity of 20.81 Mm<sup>3</sup> in 55 years. The rate of sedimentation of the reservoir is estimated as 16.95 mm/year. The dead storage capacity of the reservoir has reduced to 47.5 % from the original at present. The composition of deposited sediments is also identified, based on which its productive use is recommended.

Koehnken, L., Rintoul, M.S., Goichot, M., Tickner, D., Loftus, A.C. and Acreman, M.C., 2020. Impacts of riverine sand mining on freshwater ecosystems: A review of the scientific evidence and guidance for future research. *River Research and Applications*, 36(3), pp.362-370.

Sand mining (used here as a generic term that includes mining of any riverine aggregates regardless of particle size) is a global activity that is receiving increasing media attention due to perceived negative environmental and social impacts. As calls grow for stronger regulation of mining, there is a need to understand the scientific evidence to support effective management. This paper summarizes the results of a structured literature review addressing the question, “What evidence is there of impacts of sand mining on ecosystem structure, process, and biodiversity in rivers, floodplains, and estuaries?” The review found that most investigations have focused on temperate rivers where sand mining occurred historically but has now ceased. Channel incision was the most common physical impact identified; other physical responses, including habitat disturbance, alteration of riparian zones, and changes to downstream sediment transport were highly variable and dependant on river characteristics. Ecosystem attributes affected included macroinvertebrate drift, fish movements, species abundance and community structures, and food web dynamics. Studies often inferred impacts on populations, but supporting data were scarce. Limited evidence suggests that rivers can sustain extraction if volumes are within the natural sediment load variability. Significantly, the countries and rivers for which there is science-based evidence related to sand mining are not those where extensive sand mining is currently reported. The lack of scientific and systematic studies of sand mining in these countries prevents accurate quantification of mined volumes or the type, extent, and magnitude of any impacts. Additional research into how sand mining is affecting ecosystem services, impacting biodiversity and particularly threatened species, and how mining impacts interact with other activities or threats is urgently required.

### Box Item 1: Cauvery Sand Mining and Otters - Nisarg Prakash

From 2012-2014, we surveyed a 300 km stretch of the Cauvery river in the state of Karnataka to record the impact of disturbances like sand mining on riverine fauna such as the small-clawed and smooth-coated otters. We started near the source in Bhagamandala in Coorg district and concluded the survey at the Karnataka - Tamil Nadu border at the Mettur reservoir. Of the 300 km of river surveyed, the last 100 km is part of the Cauvery Wildlife Sanctuary where no extractive activities like sand mining and fishing are permitted.



*Figure B1: Sand mining along the Cauvery is rampant and mostly illegal. The red dots indicate location of sand mining operations and the red shaded gradient indicates intensity of sand mining and hotspots.*

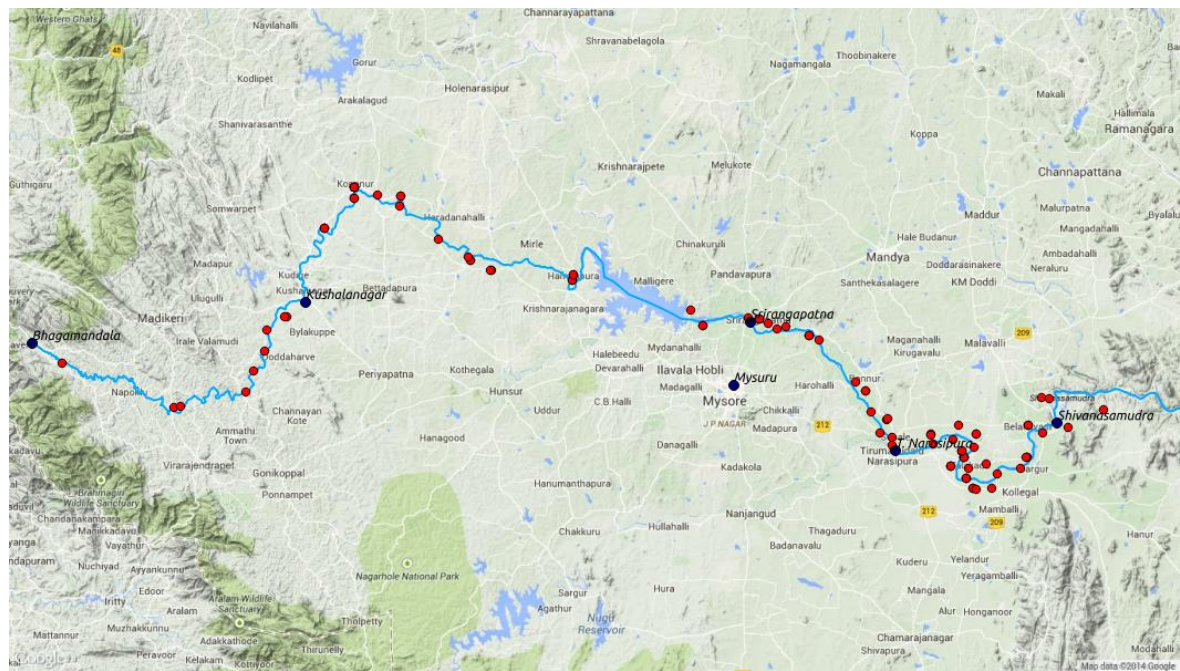
For the study, we sampled 1 km stretches of river and recorded incidents of sand mining along with intensity (visually graded into 3 categories), habitat parameters, and signs of otters. All locations were geo-tagged using a GPS. Our data showed sand mining to be extensive across the river, starting from near the source and well into the plains. The only sizable stretch where sand mining is completely absent is from the river flowing through the Cauvery Wildlife Sanctuary, which is the only large, protected area along the entire course.

The Cauvery river is under enormous extractive pressure in the form of diversion of water, sand mining, intensive fishing and agriculture. Its proximity to large urban centres further takes a heavy toll on the riverine ecosystem. Sand mining though mostly illegal is the scourge of the river, operating from simple hand drawn metal pans to large-scale operations involving migrant labour camps, earth movers and large boats.

The proliferation of sand mining along the river especially in the last two decades has led to many unintended and detrimental effects on the biodiversity of the river, particularly for otters and fishes. Smooth-coated otters are mostly an otter species of the plains and is the top predator in most peninsular Indian rivers. They are almost completely piscivorous and hunt medium to large-sized fish - the same size-class preferred by humans and are hence seen as competitors by fishermen along the river. Small-clawed otters are among the smallest species of otters and prefer crustaceans to fish. Both species of otters are social animals and are highly dependent on sand banks for play, grooming and communication.

Both species are highly endangered across much of their range, and the Cauvery could be one of their best strongholds.

Otters and fishermen have coexisted for a long period and despite the occasional loss of fish to otters and damage to nets. The reason I mention about the interactions between otters and fishermen is because sand mining, and the demand for sand from large cities like Bangalore could very well be seriously affecting how fishermen perceive (strongly negative and bordering on aggressive) and relate to otters. Proliferation of sand mining, especially in the last two decades has encroached on the territories of both otters and fishermen and have pushed them into smaller fishing stretches, and more frequent interactions resulting in increasing levels of conflict. Apart from having an impact on fish populations because of the drastic modification of habitat (and due to dams and other factors), sand mining has effectively reduced the area available for both otters and fishermen. It's a link most consumers of sand would not be able to understand - how a demand in a far-away urban center can fundamentally alter how fishermen relate to otters, and change the very dynamic of river systems with regard to fishes, water retention, erosion, etc.



*Figure B2: The red dot indicates locations of conflict zones with more frequent interaction between fishermen and otters.*

Extract from

**Material Consumption Patterns in India - A Baseline Study of the Automotive and Construction Sectors**

**EXECUTIVE SUMMARY**

March 2016

Sand is a resource in high demand from the construction sector; an estimated 1.4 billion tonnes of sand will be required by 2020, compared to 630 million tonnes in 2010<sup>41</sup>. The sources of sand extraction are clearly defined by the MoEF&CC in its recent Draft Sustainable Sand Mining Management Guideline; these include: Rivers (flood plain and riverbed), Lakes and Reservoirs, Agricultural fields (Haryana), Coastal and Marine Sand, and Paleo Channels (Rajasthan). River sand is the most preferred choice in the construction and brick sectors due to the presence of silica, which is inert, hard and durable. This type of sand does not require much processing. Thus its mining is an easy and attractive business to small players. This fuels rampant extraction of river sand by the unorganized sector, which leads to the destruction of rivers and river systems. This also makes it difficult for the State to police the activities of the sand mining industry, which proliferates owing to low investments and high returns. Some reports have indicated an amount of INR 10 billion (USD 150 million) being generated from illegal extraction of sand in India in 2011<sup>43</sup>. Due to the unregulated nature of this business, market prices of sand can vary widely from region to region; for example, a truck load of sand (600 ft<sup>3</sup>/17 m<sup>3</sup>) was available for INR 1,600-2,000 (USD 24–30) in West Bengal, but could go as high as INR 40,000 (USD 598) in Bangalore. River sand has already started to show signs of scarcity in some of the south Indian states while rivers such as Yamuna in north India have already started to degrade due to rampant mining. This has led the central and some state governments to impose temporary or blanket bans on sand mining. However, manufactured sand (m-sand) is emerging as a promising alternative. But preparation of m-sand also uses natural material such as granite. Another potential material that can be used to make m-sand is construction and demolition (C&D) waste. India generated 716 million tonnes of C&D waste per year in 2015. Most of this waste ends up in landfills or is illegally dumped in river beds or road sides. To close the loop, C&D waste should be explored as a source material for m-sand. In addition, to manage sand mining in India, tracking its extraction becomes very important. Steps taken by Andhra Pradesh and Telangana for online tracking and tendering of sand are a way forward in sustainable management of sand. The Government of Maharashtra is also using a Sand Mining Approval and Tracking System (SMATS) which enables contractors to order sand through their mobile phone and the orders can be tracked online. Such systems lead to transparency in the sand mining business and helps in tracking illegal extraction of sand. They should be promoted in other states as well. The Draft Sustainable Sand Mining Management Guidelines recently issued by MoEF&CC is a positive move to protect rivers and implement sustainable sand mining practices in states. It is imperative that state governments quickly implement these guidelines and promote alternatives to natural sand.

[https://www.international-climate-initiative.com/fileadmin/Dokumente/2016/GIZBaselineReportSummary\\_SinglePages.pdf](https://www.international-climate-initiative.com/fileadmin/Dokumente/2016/GIZBaselineReportSummary_SinglePages.pdf)



Extract from  
**India Can Rely on Sand Imports till The Time It Is Viable**

By Ishan Kukreti

Down to Earth, 30 June 2018

Sand is crucial in the production of cement as well as for making concrete. But not all kinds of sands are suitable for construction. In deserts, where wind has a free play, sand grains are too round to stick together. Sea sand is better, but its salt content does not work well with steel in reinforced concrete. This makes river sand a prized as well as endangered mineral.

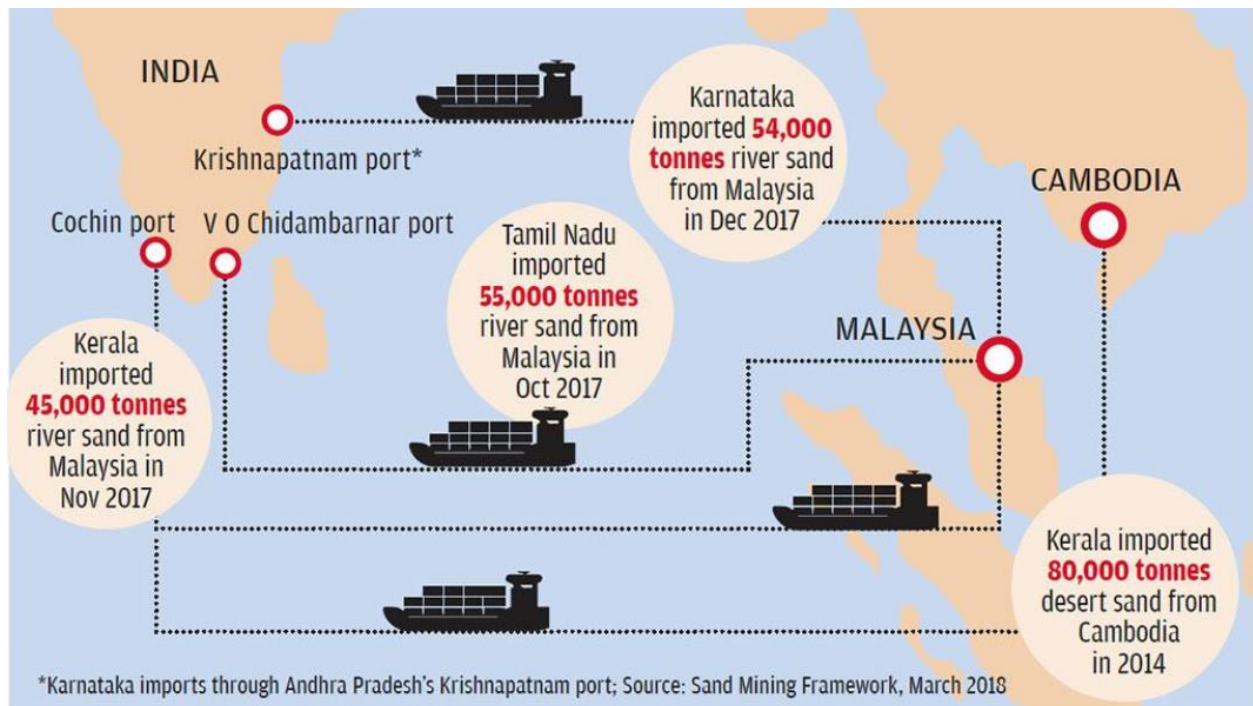


Figure 12: Down to Earth

In 2003, when Tamil Nadu Public Works Department (PWD) was made incharge of sand quarrying and trade under Tamil Nadu Minor Mineral Concessions Rules, 1959 (TNMMCR), the aim was to curb illegal mining and check inflation of sand price. But the department has miserably failed in these objectives. "The government has fixed the sand price at Rs 1,050 per tonne. But while procuring one has to shell out anything upwards of Rs 4,000 a tonne," says L Venkatesan, a Chennai-based developer who is a member of the Builders Association of India.

The influence of the sand mafia in the state can be gauged from the fact that in early May a special branch constable, Jagadish Durai, was murdered by the sand mafia near Nanguneri in Tirunelveli district after he tried to arrest them when they were illegally lifting sand from the Nambiyar riverbed. A report on illegal sand mining in the Cauvery and Coleroon rivers in Tamil Nadu by a committee appointed by the Madras High Court in an illegal sand mining public interest litigation, found rampant illegal mining in all the 24 allotted sand quarries along the rivers. "The report found that in legally allocated mines, lease holders had extracted more sand than the permissible limit. In many areas, mining was being done without any permission," says Teumalai Raja, counsel for the petitioner in the case.





Figure 13: Over 50,000 tonnes of Malaysian sand imported by MRM Ramaiya lies unused at V O Chidambarnar port even as Tamil Nadu struggles to supply sand to its construction sector (Photographs: Srikant Chaudhary, Down to Earth)



Figure 14: A sand depot of the Public Works Department that is responsible for quarrying and trade of the mineral in the TN state

Whether under mafia pressure or to assert its monopoly, Tamil Nadu is reluctant to loosen its grip over the golden granules. But it has realized the potential of imported sand to fight the dual menace of sand shortage and illegal quarrying. In March, the state's PWD issued a

tender notice to import 3 million tonnes of river sand from various countries at a whopping Rs 548.73 crore over the next two years.

Other states, however, are trying to make the most of every opportunity to ensure that they are sand surplus. The construction sector's enthusiastic response to the imported sand has now encouraged companies from other states to import sand. "Three to four companies are importing sand from Malaysia to Cochin port. Around 100,000 tonnes of sand are now stockpiled at the port," says K W Deshkar, plant protection officer at Cochin port.

In Karnataka, Mysore Sales International imported 54,000 tonnes of sand from Malaysia in December 2017 and is selling it at Rs 3,900 a tonne; the market price in the state varies between Rs 5,000 and Rs 6,000. Andhra Pradesh is also planning to import sand from the Philippines. To encourage sand importers, particularly in the aftermath of Tamil Nadu incident, Karnataka and Kerala have amended their mineral concession rules, laying down the procedure for sand imports.

The reason for their desperation is clear. All these states are witnessing a construction boom. Going by Census 2011, all states except Andhra Pradesh have more than 35 per cent of their population in urban centres.

In 2017-18, the Ministry of Mines (MoM) conducted a survey of 14 major sand producing states. Its estimates show that the demand of sand far outstrips supply in all the states, except Haryana, Uttarakhand and Madhya Pradesh. Tamil Nadu, which experiences the maximum deficit of 65 per cent, has the highest demand for sand. But it produces only 18 million tonnes per annum (MTPA). Its neighbour on the eastern coast, Andhra Pradesh experiences a 50 per cent deficit of its total demand. Karnataka experiences a deficit of 20 per cent. Rajendra Kumar Kataria, secretary of Karnataka's State Department of Commerce and Industries, says the state is now left with just 26 million tonnes of river sand reserves.

## WHY ARE WE FAILING?

To help states deal with the demand-supply deficit and illegal extraction, the government in March launched the Sand Mining Framework on the basis of MoM's survey. The Framework also identifies the reasons states have so far failed to tackle illegal sand mining. Moreover, each state has a different process of identifying sand mines, issuing environmental clearances, and operating and monitoring the mines. Pricing mechanisms also differ from state to state. State rules also differ on who operates the mine. In states, "where the control of operations is with the lessee, the main motive from the business is to make as much money as possible," reads the document. So even if the government lays down regulations, in absence of robust monitoring mechanisms, the lease holder can evade the regulations. And this is the primary reason NGT and courts have imposed bans on sand mining at various places.

The mining framework says there is an urgent need to implement the sustainable sand mining guidelines issued by MoEFCC in 2016. The guidelines say, among other things, the creation of District Survey Reports (DSR) to estimate sand availability in the mining districts. While most states have formulated DSR, according to MoM data, no state has carried out a replenishment study, a crucial piece of information when it comes to sustainable mining, says Kumar.

## THE ALTERNATIVES

India is also looking at several alternatives to sand, but their use remains limited despite the potential. One of the alternatives is recycled Construction and Demolition waste (C&D waste). India generates 25-30 million tonnes every year, but currently processes just 5 per cent of it, as per the Guidelines on Environmental Management of Construction & Demolition Wastes released by the Central Pollution Control Board in March 2017.



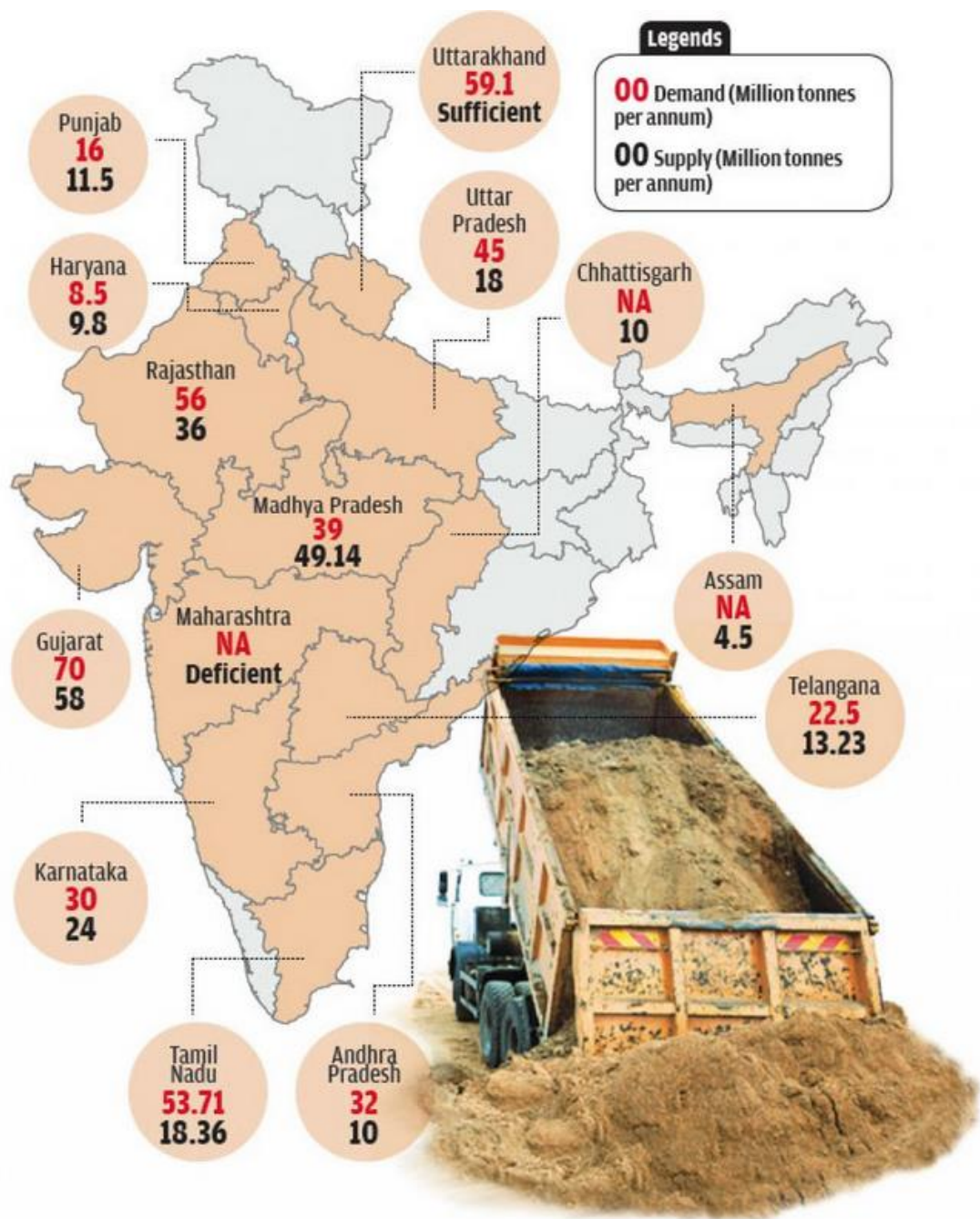


Figure 15: The construction industry in almost every state is facing an acute shortage of sand. Source: Sand Mining Framework, March 2018

Another option, which is already being used extensively in Karnataka, is manufactured sand (m-sand). It is produced by the crushing of rocks and quarry stones to a required size of 150 microns. India has 178 m-sand units—of which 164 are in Karnataka alone—that produce 32 million tonnes a year, as per the Sand Mining Framework released by the Ministry of Mines in March 2018. It adds that m-sand is economically feasible, cheaper and is superior as compared to river sand in many of the urban centres in India such as Bengaluru. While m-sand has advantages, experts question its long-term practicality. “It is made from crushing stones. So as its demand increases, its environmental impact too will increase,” says Chennai-based builder L Venkatesan.

<https://www.downtoearth.org.in/coverage/environment/india-can-rely-on-sand-imports-till-the-time-it-is-viable-60892>

# A View from Real Estate Industry in South India

## Dealing with sand shortage in South India

*With the growing scarcity, rising costs, illegal mining, and steep royalty costs, many developers and construction companies are switching over to an alternative source*

Ashish R. Puravankara Managing Director, Puravankara Limited

Jul 17, 2018

Sand constitutes nearly 40% of raw material used for any of the construction projects - residential, commercial or infrastructure. Loose and granular in nature, it is omnipresent which made it an indispensable element of our living structures. From building infrastructure to making glass, silicon chips or even toothpaste it has something to contribute. A sudden surge in the infrastructure developments and demand for homes over the last couple of decades or so, has increased its usage and just proportionally – demand. In fact this incessant demand has made it one of the most consumed raw materials in the world, after water (of course).

When the Indian economy opened up in the mid-90s, India witnessed a real estate and allied sector boom, owing to huge influx of people to cities in search of jobs, better opportunities and enhanced lifestyles. Also the emergence of IT & ITes sector has increased the migration manifold. The IT sector is primarily concentrated in Southern India, the region has thus seen a boom in construction work. Today South India constitutes over 30% of the Indian real estate market. A constantly growing real estate sector in cities such as Bengaluru, Hyderabad, Chennai and Kochi have seen an upward trend in development of housing, retail and commercial structures in the last 20 years.

The constant surge in sand usage in the construction industry has led to rapid depletion, making it a scarce commodity. There have been instances when the construction industry has almost come to a standstill due to acute shortage of sand, affecting the construction quality, timely completion of projects, and above all, affecting the livelihood of hundreds of people across related sectors. This led to a temporary disruption in the realty market which impacted the overall ecosystem in terms of cost of construction and meeting timeline. With the growing scarcity, rising costs, illegal mining, and steep royalty costs, many developers and construction companies are switching over to an alternative source. Today almost all A grade developers have cut down the dependency on the natural sand to large extent and started using alternative raw materials.

### Solutions:

**M-sand:** Manufactured sand (M-sand) has emerged as an alternative to sand in last few years. It is manufactured by crushing of rocks, making it into a fine powder which is used as sand plastering. M-sand has less wastage in comparison to river sand which used to have a minimum of 20 – 30% wastage. Pilferages are very minimal in the M-sand process in comparison to the conventional process.

**Gypsum plaster:** Replaces sand cement plaster with gypsum plaster for internal plastering. If gypsum plaster is used right from the initial phase of the project, it can reduce the overall usage of sand in the project substantially.

**Constech:** Constech (construction technology) like advanced pre-cast and Mivan has played a pivotal role in reducing usage of raw materials, particularly sand while constructing a project.

The above alternatives to natural sand along with latest construction technology have been instrumental in addressing the scarcity of sand. With the growing acceptance of the sand alternatives and adoption of Constech by numerous builders, the usage of sand in construction will gradually be negligible. Even from a cost factor these alternatives are almost at par with sand.

#### **Other approaches:**

##### **Environment friendly:**

It is the responsibility of every developer to comply and adopt green sustainable practices to –ensure judicious usage of sand and other natural resources.

##### **Spreading awareness:**

As a fraternity we should work closely with government and other NGO's to conserve the natural resources and reduce the misuse of sand. Industry bodies like CREDAI can initiate awareness drives and educate the sector on methods to use alternatives, to conserve and eventually protect.

With RERA and GST in the picture now, the market is witnessing a consolidation of sorts. In a couple of years from only serious and responsible builders will operate in the market. We will witness this phenomenon particularly in Southern Indian, where retail, commercial and residential property growth is growing at an accelerated pace. As the market gets further regulated and all players settle within the regulatory framework, ethical sourcing of raw materials and natural resources will become second nature to the industry.

<https://realty.economictimes.indiatimes.com/realty-check/dealing-with-sand-shortage-in-south-india/3139>

## Legal and Regulatory Aspects

Judicial interventions and regulations against sand mining in South India: Case studies from States

- KERALA

As stated above, The Mines and Mineral (Regulation) Act, 1957, regulates the extraction of all mineral deposits in the country. The state government had also framed the Kerala Minor Mineral Concession Rules, 1967, in exercise of powers conferred under Section 15 (i) of the Central Act so as to regulate the extraction of all minor minerals such as the river sand in the state. Under this Act, permits were issued to quarry 100 tonnes at a time from a particular point. But, this stipulation was often not enforced for want of manpower.

The Kerala Protection Act of River Banks and Regulation of Removal of Sand Act, 2001 (Act 18 of 2001, published in the *Kerala Gazette* [Extra] No. 285, dated 20 March 2002), is an Act to protect river banks and river beds from largescale dredging of river sand. This Act is also meant to protect their biophysical environment system and regulate the removal of river sand and matter connected therewith or incidental thereto. Indiscriminate and uncontrolled removal of sand from the rivers causes large-scale river bank sliding and loss of property.<sup>5</sup>

Source: Sonak, S., Pangam, P., Sonak, M. and Mayekar, D., 2006. Impact of sand mining on local ecology. Multiple dimensions of global environmental change. Teri Press, New Delhi, pp.101-121.

- TAMIL NADU

In Tamil Nadu, in a matter related to sand mining on the banks of Kusasthalai river, it was noticed that the river bridges and railway tracks were severely damaged by sand mining in violation of rules and lease deeds. Flooding of agricultural lands due to break in linkage between discharge/channels and river basins was noticed. There was destruction of agriculture/mangrove ecosystem. Houses and buildings collapsed due to erosion. The groundwater table went down in all the river basins, affecting agriculture severely. The sand mining permitted in private lands adjacent to riverbeds enabled private owners to encroach the riverbed illegally. Public roads were also seriously damaged. Direct irrigation to about 22,000 acres of lands was affected in Vaigai and Cauvery basins. Drinking water had turned saline. Accidents occurred due to heavy lorry traffic. The noise and the dust thrown up by the lorries carrying quarried sand started affecting people's health. Court directed that there should be a special river protection force mobilized for patrolling and policing the river areas and apprehending the culprits indulging in illicit quarrying. Such a force should be composed of high calibre personnel and should not fall a prey to enticements.<sup>7</sup>

The quantity of sand mining is several folds higher than the natural replenishments and hence imposes severe environmental problems in the river basin environment. On the other hand, the sand mining provides employment opportunities to a considerable section of the labour force of the Palakkad district. Further, there is no viable alternative available to this crucial construction material for immediate use. The Tamil Nadu state government cancelled all leases through an executive order. Reports suggest that unauthorized sand mining has been going on in several places in the state for many years. The money power and the political influence of the lessees often helped them violate all norms. From their studies in different regions of the state, social action groups in Tamil Nadu inferred that the rapacious practices adopted by the leaseholders have led to ecological damage and environmental degradation, groundwater depletion, and have resulted in water scarcity as well as loss of agricultural production. Widespread unsustainable quarrying of sand has also affected the flow of water in the river systems to downstream areas and has also jeopardized the

safety of structures such as bridges, dams, river embankments, power line towers, and power line poles (*Frontline*, 24 May 2002). The sand mining resulted in irreversible damage to river systems. The Madras High Court expressed 'great concern' over the 'serious adverse consequences of the illegal quarrying. The High Court dealing with the PIL (public interest litigation) petitions and complaints from affected persons advised that the government constitute a high-level committee to go into this matter. Accordingly, the government appointed a committee headed by Dr C Mohanadoss, Head of the Department of Geology and Director, Centre for Geo Science and Engineering, Anna University, Chennai. The committee submitted its report. The Madras High Court directed the state government on 26 July 2002 to initiate steps to put an end to the illegal sand mining on river beds, particularly in areas close to rail and road bridges.

**Source:** Sonak, S., Pangam, P., Sonak, M. and Mayekar, D., 2006. Impact of sand mining on local ecology. *Multiple dimensions of global environmental change*. Teri Press, New Delhi, pp.101-121.

## Reports from panelists

### ❖ Tamil Nadu

By Sibi Arasu

#### **A short note on illegal sand mining in Tamil Nadu**

With political connections that run deep, regardless of which party is in power and a seemingly infinite requirement for sand, illegal sand mining has been a plague on the state of Tamil Nadu's ecological balance.

There are 95 rivers that cut across the state and there are at least 17 major river basins in Tamil Nadu. The state also has the second longest coastline in India, stretching out over 1,076 kilometres. Domestic and international requirement for sand has witnessed the state emerging as one of the primary suppliers of the valuable resource. While sand mining has reduced after laws passed on use of M-Sand for construction and stricter regulations on exporting beach sand, until recently, it was estimated that at least 6,000 truckloads of 200 cubic feet of sand was mined every day in the state. Unofficial estimates put this number much higher, closer to 90,000 truckloads on any given day.

State law prohibits mining of more than five vertical feet of sand, but miners regularly dig much deeper. And the Ministry of Environment, Forest and Climate Change stipulates that mining in quarries with lease areas of between five and 25 hectares can only be done manually. Many of Tamil Nadu's sand mines fall within this size but the use of heavy equipment, such as sand mining dredges, is common. Unfortunately, it is only when the sand is exhausted that mining stops.

As the environmental activist, S Mugilan, had told me earlier, "The sad reality is that the mining stops only when the sand's been completely extracted. When the monsoons come along, there is no sand to retain water in the rivers and they flow straight to the sea, as if through a water hose. The groundwater levels keep constantly dropping and the once glorious river systems, which were the lifeline for the state's agriculture industry, are now in pathetic conditions."

The situation, if anything, is worse in the case of beach sand. Tamil Nadu's beach sand is rich in minerals such as Garnet, Ilmenite, Rutile and monazite, especially in the southernmost districts of Tirunelveli, Thoothukudi and Kanyakumari. A government-report released in 2017, estimated that over one crore ton of beach sand was illicitly mined in the state, this despite a ban on the practise issued in 2013. In February 2019, a Supreme Court judgement issued a blanket ban on mining for rare earth materials found in beach sand across India. Companies such as VV Minerals (who also own a Tamil TV news channel) now owe the state of Tamil Nadu Rs 5,800 crores in royalties and costs of minerals that were illegally mined after the 2013 ban. These companies are also now looking at overseas ventures, especially in countries such as Kenya in Africa.

Reference:

1. <https://www.thelede.in/governance/2020/10/14/rs-5800-crore-loss-to-tn-exchequer-from-unpaid-royalties-cost-of-illegally-mined-minerals>
2. <https://sandrp.in/2019/02/17/tamil-nadu-sand-mining-2018-story-of-nexus-exposed-by-a-brave-journalists/>
3. <https://economictimes.indiatimes.com/industry/indl-goods/svs/metals-mining/over-1-crore-tonnes-of-beach-sand-illicitly-mined-in-tamil-nadu-probe-report/articleshow/65120174.cms?from=mdr>

## ❖ Andhra Pradesh

By Bollishetty Satyanarayana

### **Anti sand mining activities with Dr. Rajendra Singh in Andhra Pradesh**

I was working with Bhai Sab (I mean our Waterman of India Dr. Rajendra Singh ji) as I believed he is sincerely working for the revival and rejuvenation of rivers in India and across the globe. In fact, I am just a follower and he made me the National Convenor of Jalbiradari (though I am unable to spare enough time to do the job across the nation on all rivers, I am trying my level best to work with him to understand what needs to be done).

As part of my travel with him, I had asked him a question “where can I get the knowledge about the river system and its protection? Is there any course in any university where I can get educate myself so that I am better equipped to do the job. He simply told me “Satya, nature will teach you everything, all you need to do is to travel with a river from its origin to its immersion into the sea, that all”. I did not understand that he answered my question, just to adjourn the response he gave me one assignment. Though I was not very happy, as a sincere follower, I decided to travel the length of Krishna River from its origin at Mahabaleshwar (Jor) to its immersions at Hamsaladeevi. I did it along with my guide Prof Vikram Soni and friend Mr. Anumolu Gandhi, Mr. Francis, Mr. Nouroji, Mr. Gopi and a team of 15 others. This journey gave me complete idea about the river and how it is connected with life (including our lives) on earth and assess the damage to the river and its flow and its purity by human intervention and also the solutions.

I consider Krishna and Godavari are not only the source of life to the people of my State, Andhra Pradesh but also consider them as my real mothers. With, has opened my eyes and made me to understand what is happening to my mother Krishna. Dr. Rajendra Singh's advice indeed is the real answer to my question! I realised it at only the end of our “Krishna Nadi Parirakshan Yatra”. What he said right, it gave me complete understanding rivers (my mothers) are sick and what needs to be done to make them healthy.

Broadly, I consider four major issues to be resolved and we need to educate our people about these four issues to restore the rivers to its condition when we got Independence.

1. Blocking the sources of water into river,
2. Pollution (Chemical fertilisers, Chemical effluents, City sewer etc.
3. Encroachments into the river catchment areas and flowing areas
4. Eating up its essential organ floodplains (sand deposits)

I have started working on all four issues, however the topic given to me is what we did to prevent illegal sand mining in Andhra Pradesh.

Though its out of context, I wish to mention one thing here, that is our (mine and Dr. Rajendra Singh) with the famous program called “Rally for Rivers” it happened in Vijayawada on 15th July 2017 where Dr. Rajendra Singh was the Chief Guest but they made him to speak first! I will give you the reason why? Why because there was a discussion on the previous evening in a press meet where a journalist from Eenadu (Telugu daily) had asked Sadguru, you have initiated this program to save rivers and rampant sand mining is happening just behind the house of our Hon'ble Chief Minister, why can't we stop it to save Krishna? Mr. Jaggi Vasudev's answer was “Dont you want me to take this rally any further? They will finish me if I go there”. Neither the Chief Minister of AP nor Mr. Jaggi Vasudev could conduct this function near the beautiful river Krishna and they confined themselves in a ground of a college, where all four corners were covered tall concrete buildings of the



college. Why they have chosen a place which is congested and left out a beautiful place which is Chief Minister's camp Office and Pushkar Ghats where even a lakh people can be accommodated. Because they are scared with Sand Mafia.

Our strategy is to approach to all the stake holders and educate them and make them involve in protecting the river. In this process we have conducted several meetings with teachers, students, villagers, government officers, politicians and this is going on and will go on forever. Our experiences, I am really happy to place it on record that Bhai Sab (Dr Rajendra Singh ji) has always made himself available for any program, yatra, dharna and whatever to prevent illegal sand mining in Krishna & Godavari rivers and also helped restoring reservoirs in Andhra Pradesh.



Figure 16: Inauguration of Godavari yatra in Andhra Pradesh



Figure 17: With the stakeholders during River Conservation Tour in Andhra Pradesh

### **With such rear view, what can we look forward to?**

The South Zone sand mining report makes rather grim reading. With such rear view, what can we look forward to?

**Key Conclusions, Recommendations** Here while some questions are raised and recommendations given in the context of specific states, they are applicable to all the states.

**Central, All States** The auctioning processes, EIAs, appraisals & public consultation processes, monitoring & compliance are plagued by major problems. How these can be improved?

What could be feasible, viable and sustainable alternatives to reduce dependence on river sand? What steps are necessary to achieve optimum use of such alternatives?

Will creation of fish sanctuaries, No Mining Zones help address the challenges? How can the otters, gharial, dolphins, turtles can be saved from illegal mining activities? What is NMCG doing to ensure that illegal and unsustainable sand mining is stopped, and it does not adversely affect Ganga and its tributaries?

There is very little research about river sand mining that has such far reaching impacts. Some of the research may also not be known and accessible to wider stakeholders. We certainly need more research, and all research findings must be in proactively in public domain.

As far as sand miners, EIA consultants, Expert Appraisal Committees at central, state and district level (where existing), geo-morphologists, geologists and geo hydrologists are concerned, there is not too much known about them, we possibly need more research & analysis about role of these various key persons and organizations and who governs them. Similarly, about the real estate companies and business and how they can be partners in curbing illegal and unsustainable sand mining.

## Other Resources from Wikipedia & SANDRP

### ❖ KERALA

#### Sand mining in Kerala

Sand mining is a serious issue of environmental concern in the Kerala province of India. Even though sand mining is banned in most parts of Kerala, it is going on secretly because of the big demand of sand in the booming construction of the state.

#### Periyar River

Sand mining is a serious threat to most of the rivers in Kerala, but the case is more visible in Periyar river. The indiscriminate mining has even affected the stability of Sree Sankara Bridge at Kaladay.

According to D. Padmalal, head of the Environmental Sciences Division, National Center for Earth Science Studies, this kind of mindless mining has created big problems to the rivers of the state. Some areas of the river are turned into mud filled pits about ten meters deep and one person has recently died of falling into it.[1]

#### Legislation and banning

The high court of Kerala has banned mining within one km radius of bridges, but the state government is permitting mining even within 500 meters of the bridge. Illegal sand mining has created about 800 pits on the Periyar river. In June 2015, the government of Kerala banned mining in six rivers of Kerala for a period of three years.[2]

#### Jazeera's fight

Jazeera V., a female environmentalist,[3] from Madayi village in Kannur District, Kerala has recently staged a sit-in strike against sand mining before the Kerala House in New Delhi. She was accompanied by her three children. Her fight was not successful except for making the central government send a letter on the issue to the provincial government of Kerala. Jazeera also got wide coverage for the issue on various Indian and foreign media including the BBC.[4] According to one study by the Government Brennen College, Thalassery, Jaseera was isolated in the Kerala society because of its strong patriarchal nature.[5]

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## ❖ TAMIL NADU

### Sand mining in Tamil Nadu

Sand mining, especially illegal sand mining in Tamil Nadu state is done on river beds, basins and beaches, It has been on an increase, since the beginning of the 1990s following a boom in the construction industry. Palar River basin, Vaigai River basin and Thamirabarani River basin are the major victims. Illegal quarrying is happening in these areas in broad daylight.[1]

Though as per Tamil Nadu Public Works Department, 5,500-6,000 truck loads of 200 cubic ft. of sand is mined each day, in reality the figure are estimated around 55,000 truckloads of 400 cubic ft. of sand per day.[2]

In 2013, illegal sand mining in the state was estimated to be worth ₹15,000 crore (US\$2.1 billion).[3] This also results in the state exchequer losing over ₹19,800 crore (US\$2.8 billion) in revenue.[2]

### Environmental impact

Since river sand is a natural aquifer, its depletion also means recharging of groundwater, especially wells, fall. In January 2014, Union minister of state for Commerce and Industry, stated that due to sand mining in river beds, groundwater level or water table has dropped at an alarming rate, as a result some 18 lakh wells in the southern region have gone dry and water for agriculture purposes has become scarce. In Madurai, as per S Rethinavelu, senior president of CII, "Water table, which was at 50 ft or so, fell to 600 ft." [4]

### Response

To curtail the rampant mining, in November 2013, Government of Tamil Nadu banned mining in 71 of the 90 sand quarries.[2] Then in January 2014, the Union Ministry of Environment and Forests issued guidelines, according to which quarries with lease area of five to 25 hectares can only allow manual mining. However illegal sand mining is rampant according to newspaper reports and observation.[5]

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1. [^ "Illegal sand mining rampant in Palar basin". The Hindu. 10 October 2013. Retrieved 4 February 2014.](#)
2. [^ Jump up to:<sup>a</sup> <sup>b</sup> <sup>c</sup> "Illegal sand mining: Tough battle for Tamil Nadu". Moneycontrol. 22 January 2014. Retrieved 4 February 2014.](#)
3. [^ "Illegal sand mining in Tamil Nadu worth Rs 15,000 crore?". The Times of India. 21 August 2013. Retrieved 4 February 2014.](#)
4. [^ "Promote manufactured sand to save rivers: Natchiappan". The Times of India. 21 January 2014. Retrieved 4 February 2014.](#)
5. [^ Ganesan, S. \(29 January 2014\). "Sand mining regulations offer a ray of hope". The Hindu. Retrieved 4 February 2014.](#)

## ❖ ANDHRA PRADESH

*Andhra Pradesh Riverbed Mining 2020: Quicksand of mismanagement*

*June 19, 2020 SANDRP*

**2019 Andhra Pradesh sand mining overview** showed the state experiencing all the key problems associated with sand mining; growing demand and prices, inadequate supply, illegal excavation affecting rivers and villagers and inactive govt bodies. Reports revealed Krishna and Vamasdhara rivers facing large scale mechanized mining while indiscriminate mining in Nagavali river affecting drinking water schemes in Regidi mandal. Srikakulam district and beaches particularly suffered.

There were reports showing political parties involved or facilitating illegal mining. Like other states, the Andhra govt was seen rallying on technological solutions to manage the mining. <https://sandrp.in/2019/02/26/sand-mining-2018-telangana-and-andhra-pradesh/>

### **Important Developments of 2019-20**

**Illegal sand mining rampant: CPCB** The irregularities in sand mining in Krishna & Guntur districts came to the fore in joint inspections by Central & State pollution control boards. As per the directions of the NGT in response to the petition by Anumolu Gandhi and others regarding illegal sand mining near the CM's residence in Undavalli, the AP Pollution Control Board (APPCB) and CPCB carried out inspections on Jan 17-18, 2019 & submitted a report to NGT. The inspections were carried out at Penumaka, Venkatapalem, Uddandarayunipalem, Lingayapalem and Rayapudi of Guntur district, and Surayapalem, Guntupalli and Ibrahimpatnam in Krishna. All these places are within 15 km distance of the CM's residence.

In accordance with the free sand policy of the State govt, collectors of Krishna and Guntur districts had permitted desiltation for extraction of river sand; permission for extraction of 24.55 lakh T in Guntur and 9 lakh T in Krishna districts were granted. It was found that sand was being dug from a depth of 25 feet; 34,650 T per day was being mechanically extracted and transported in 2,500 trucks and tractors throughout the year. During the inspection, the officials discovered that the excavation at the river bank in Lingayapalem was being done without permission; unpaved ramps and narrow roads resulted in dust emissions during movement of vehicles.

<http://www.newindianexpress.com/cities/vijayawada/2019/apr/06/illegal-sand-mining-rampant-in-district-pcb-1960885.html> (6 April 2019)

**NGT not responsible for dearth** Blaming NGT for creating sand scarcity, a report in *The Hindu* wrote that the order had severely impacted the construction industry & development projects. As per the report, Vijaywada required 750-1,000 lorries of sand every day. The Dept of Mines and Geology Joint Director V. Koteswara Raju said that about 70 sand reaches that have environmental clearances across the state were running. The NGT order was "primarily about desiltation" caused by sand reaches. After the order, 3 reaches in Vijayawada & 5 in Guntur were closed.

<https://www.thehindu.com/news/national/andhra-pradesh/green-tribunal-order-hits-sand-availability-in-the-state/article26926524.ece> (24 April 2019)



**NGT censures govt** The NGT asked the govt to penalise violators & 'impose exemplary costs on environment damage'.

<https://timesofindia.indiatimes.com/city/vijayawada/ngt-censures-ap-govt-over-water-pollution-sand-mining/articleshow/69064224.cms> (27 April 2019)

Media should not look at the issue this way. It was failure of govt which failed to control illegal sand mining. Nexus between govt officials, politicians and sand mafia isn't a new thing. Judicial interventions become imperative when situation become out of control.



Figure 18: Sand mining from the Krishna near Vundavalli in Guntur district. Photo V. RAJU/The Hin

### Summary

The available media reports highlight that Andhra Pradesh is experiencing all the common issues associated with sand mining. The demand is growing. Prices are looking up. Supply is inadequate. Illegal sand mining is affecting rivers and villagers. The reports also show that the government has failed in checking the illegal sand mining. Large scale illegal mining is also reported in Krishna river, while Vamsadhara river saw mechanized extraction of minor minerals even during monsoon. Similarly the indiscriminate sand mining was reported as posing a threat to drinking water schemes based on Nagavali river in Regidi mandal. Srikakulam district and beaches in the state were particularly at the receiving end of unsustainable mining.

As usual, there were reports showing political parties either involved or facilitating illegal mining. On solution part, Andhra government, like other Indian states, is seen rallying behind technologies in form of drones, GPS etc. to stop the menace of illegal mining. It seems that the investigation of Income Tax department regarding illegal beach mining has reached no conclusion. Likewise there were no significant legal interventions or judicial orders bringing any significant changes in prevalent scenario.

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## ❖ TELANGANA

*Telangana Riverbed Mining 2020: Tribals, Godavari robbed*

*June 21, 2020 SANDRP*

In 2019 at least three people had died in Telangana due to illegal sand mining related incidents amid growing number of cases of illicit excavation of riverbeds. The state govt was seen laying stress on technological solutions to curb illegal sand mining and even reportedly had taken significant steps towards manufacturing and use of M-sand as a viable alternative, while its viability and impacts on environment during production remain to be fully studied and understood.

<https://sandrp.in/2019/02/26/sand-mining-2018-telangana-and-andhra-pradesh/>

### Important Developments of 2019-20

**Sand mining policy unscientific** In Sept 2019, the inspection report by Central and State Pollution Control Boards on desiltation conducted by the govt in sand reaches along the Godavari River, highlighted the lack of scientific validity and ecological sustainability.

During inspection, it was found that although the thickness of sand in the Godavari River was between 1.5-3 metres, sand was being extraced till a depth of 3 m everywhere, with no scientific basis. This is harmful to the river's ecology. The inspection report emphasises the need for the govt to review its sand mining policy and align it on par with the Sustainable Sand Mining Guidelines of Ministry of Environment, Forest (MoEF).

The inspection was conducted along the 39 km stretch of the Godavari, where the State govt had been excavating sand as part of the 'desiltation' process, over an area of 1,400 hectares in 28 sand reaches under the submergence areas of Annaram and Medigadda barrages. As of June 2019, 3.35 crore cubic metres of sand had been excavated from there.

This was also a violation of State govt's own law, the WALTA Act, which restricts extraction of sand beyond 2 metres' depth. The Centre's sand mining guidelines restricts extraction of sand to a depth of 3 metres or up until the thickness of the river whichever is less. The report further pointed out how the sand was being sold for a price of ₹600 per cubic metre, which was almost eight times the offset price of ₹83-85, agreed between the State Mineral Development Corp & contractors.

<https://www.newindianexpress.com/states/telangana/2019/sep/09/telanganas-sand-mining-policy-unscientific-says-report-2030936.html> (9 Sept. 2019)

**Govt to identify 33 new reaches to tide over scarcity** To ensure sand availability for 2019-20, TSMDC decided to identify new 33 sand reaches in addition to 27 existing reaches and make efforts to get EC from the State Environment Impact Assessment Authority (SEIAA) for these reaches mostly located in Mulugu and Bhadradi Kothagudem districts.

<https://timesofindia.indiatimes.com/city/hyderabad/state-to-identify-33-new-sand-reaches-to-tide-over-scarcity/articleshow/72116982.cms> (19 Nov. 2019)

**Villagers foil illegal mining** - Villagers foiled the attempt of unknown people, who tried to excavate sand from the local tank in Korviched village under Basheerabad mandal in Vikarabad district. Some people reached the tank with excavator, tippers, tractors and workers and started mining the sand. Villagers opposed their action and demanded proper



permission for the mining. They did not show any credentials but referred some names of the ruling party. But the villagers did not allow them to dig and objected to mining. The miners returned with their vehicle without creating any scene.

<https://www.thehansindia.com/telangana/villagers-foil-illegal-sand-mining-537174> (12 June 2019)

**Illegal mining serious threat to water bodies** - Illegal sand mining was going on unabated in the Medak district. Though the High Court had issued a stay on the transport of sand, miscreants kept indulging in sand mining.

The uncontrolled mining of sand resulted in rivers and water bodies losing their shape. On the other hand, sand was being sold at high price, hitting hard the commoners. <https://www.thehansindia.com/telangana/illegal-mining-a-serious-threat-to-water-bodies-in-medak-537895> (15 June 2019)

**Terror in Narayanpet** - The sand mafia had once again embarked on the path of violence and attacking villagers and farmers if they raised their voice against illegal sand mining in Poosalapadu village under Marikal mandal in Narayanpet district. According to a villager from Poosalapadu village, the illegal sand mining was being carried out from a rivulet passing by the village. The sand mining had led to groundwater level in the village fall drastically and the bore wells and open wells drying up. An acute shortage of drinking water and water for irrigation had arisen.

<https://www.thehansindia.com/telangana/sand-mining-mafia-unleashes-terror-in-narayanpet-540039> (22 June 2019)

**Illegal mining unabated in Bomraspet** Even while the govt brought in new system to supply sand through online booking, in Bomraspet mandal of Kodangal constituency in Vikarabad, the sand miner was carrying out its business giving scant regard to govt's sand regulation system and openly violating WALTA Act and going ahead with sand mining from Seema Vaagu flowing through Burri Thanda, Botloni Thanda and Manddimadugu Thanda in the mandal.

Usually, the Seema Vaagu is a dry rivulet however, in the past few days heavy rains lashing the region, had deposited large dunes of sand on its bed. As the region was not under the scanner of the revenue officials, there was no supervision of this area. Taking this as an opportunity, the sand miner with the support of local leaders and a few people in the Tahsildar's office, was openly digging the sand from the rivulet during day and transporting it using tractors and dumping the same in the secluded places away from the eyes of general public. In the nights, the sand smugglers were filling truckloads of sand and transporting the same to Hyderabad and making quick bucks by causing huge loss to the exchequer. <https://www.thehansindia.com/telangana/illegal-sand-mining-goes-unabated-in-bomraspet-565755> (21 Sept. 2019)

**Illegal mining in Asifabad** Illegal sand mining was rampant in Kumram Bheem Asifabad district, causing huge loss of revenues. The smugglers, mostly belonging to political parties were excavating sand from streams and rivers without permission and earning a quick buck. The excavation and transportation of sand crept into the district, which did not see such practices earlier. The offenders were also reportedly bribing police and other officials. They were able to do so in broad daylight due poor vigilance by the Mines and Geology Dept.

The sand was being mined from streams in Asifabad, Bejjur, Dahegaon, Kagaznagar, Sirpur (T), Rebbena, Chintalamanepalli and Penchikalpet mandal centres. It was also being extracted in large quantities from Peddavagu, a tributary of the Pranahita river near Kagaznagar town. The menace was rampant in other major gram panchayats, abutting streams.

The smugglers were reportedly threatening authorities, citing their proximity to certain public representatives. They were cashing in on the absence of reaches, which was not identified by authorities concerned so far. A royalty inspector said they were unable to curb the menace mainly due elected representatives backing the smugglers. <https://telanganatoday.com/illegal-sand-mining-goes-unchecked-in-asifabad> (23 Oct. 2019)

**Farmers against mining** - Over 300 farmers in Mahbubnagar protested against the govt's decision to mine sand from the Dundubhi river for construction of 2BHKs. With no perennial rivers or any lift irrigation project in the region, the farmers of Byrampally in Midjil mandal, Ammapalli in Jadcherla mandal and Nekkonda depend on the river & groundwater for irrigation. Illegal sand mining was rampant.



Figure 19: Farmers and villagers protest against govt's decision to transport sand from the Dundubhi river for the construction of 2BHKs, in Mahbubnagar. (Photo: EPS)

Now, with the govt deciding to transport sand, the farmers feared that it would dry up around 300 borewells & affect farming. They said the govt, instead, should construct check dams & warned of leaving their villages if mining commenced.

<https://www.newindianexpress.com/states/tehangana/2020/may/06/farmers-in-tehanganas-mahbubnagar-up-in-arms-against-states-sand-mining-decision-2139714.html> (6 May 2020)

## ❖ KARNATAKA

### *Karnataka Sand Mining 2020: Active Collector, Destruction of fish sanctuary & clam collection*

June 11, 2020 SANDRP

**2019 Karnataka sand mining overview** showed that the incidents of illegal sand mining were on the rise, state was reportedly consuming around 70 MT (Million Tons) sand annually while the govt was able to produce 30 MT. The govt was losing about Rs 200 crore to illegal sand mining, while about 29,000 cases of illegal stone quarrying and sand mining were detected in past 3 years. Towards the end of 2018, the govt was seen working on 4 separate mining policies for sand, granite, building material and stone crushers to stop the revenue losses.

There were discussions in govt circle promoting M-Sand and importing sand from Malaysia. M-Sand was being produced in 18 districts of state. However, there was no clarity on its quality and usage. MSIL had imported 8000 T of sand and sold half of it. Despite facing sand dearth, the govt in Sept. 2018 decided to send imported sand to Kerala. About 0.15 MT Malaysian sand was stuck at two ports.

Amid stories of nexus, violence, and raids most of the rivers in the state have been bearing the brunt of unsustainable mining. The districts of Dakshina Kannada and Udupi were apparently most affected. Illegal mining activities also led to collapse of first ever bridge in coastal area on Phalguni river. In spite of Coastal Regulations Zone (CRZ) rules, 75% of sand mining in the coastal districts was illegal.

<https://sandrp.in/2019/02/13/karnataka-sand-mining-2018-hopeless-but-action-packed/>

### **Important Developments of 2019-20**

#### **Impact on River eco-system, groundwater**

**Illegal extraction affects clam collection** The illegal sand extraction in River Nethravathi, including at 'Kudru' areas in Ullal, have taken a toll on traditional fishing carried out by many families. The families were eking out a livelihood by catching clam (locally called maruvai). Illegal sand extraction has severely affected livelihood of families as clams and fish are not available in the river for a year now.

The reduction in catch had led to livelihood crisis and uncertainty. "We go for fishing before dawn and it has become painstaking nowadays. The clam deposits have dwindled drastically as a result of illegal sand extraction. We need to protect our resources to ensure our livelihood," a resident emphasized.

Despite our complaints to the authorities, illegal sand mining continues unchecked, another resident Naveen D'Souza rued. "We were catching fish and clams using small crafts. The illegal sand extraction has destroyed the fish and clams. Now, we are not able to collect clams in large quantities," he said.

<https://www.deccanherald.com/illegal-sand-extraction-affects-clam-collection-723916.html> (18 March 2019)



Figure 20: Collection of clams is a source of livelihood for Kudru residents in Ullal. (DH)

Illegal mining deepens water pain Several villages and towns situated near major rivers faced acute water shortages. Experts and officials blamed the powerful sand mafia for the problem, saying excessive dredging in and around rivers had contributed to the problem. Illegal dredgers were scooping up huge quantities of sand from riverbeds to satisfy the construction industry's ravenous hunger for the humble commodity.

"This [water scarcity around rivers] is unheard-of. It's happening largely because of the indiscriminate sand mining," said a senior official of the state ecology & environment dept.

Stringent rules and restrictions, including orders by the SC, HC and NGT against excessive sand mining, have failed to curb the incidents. Activists say poor enforcement, thanks to a nexus between the sand mafia, police and local politicians, has resulted in a thriving illegal trade of river sand. The state government's decision to import the material from other countries and promote manufactured sand, or M-Sand, have failed to reduce the demand.

As per an official at the Centre for Water Resources Development and Management, sand in the riverbed acts as an aquifer, storing a portion of the river water, which can be used in summer through infiltration wells. "When this sand is removed or reduced through mining, summer flows in rivers decrease, affecting groundwater levels in borewells and wells on the banks," he said.

According to a former police officer, who had a brush with the sand mafia, every illegal operator was paying Rs 10,000 per lorry load to local officials, and quarrying limits were routinely flouted. "If 25 lorry loads is the permitted limit at a place, over 100 are carried out. This cannot happen without the tacit support of local legislators and officials," he said.



<https://timesofindia.indiatimes.com/city/bengaluru/illegal-sand-mining-deepens-parched-states-water-pain/articleshow/69763906.cms> (13 June 2019)

**Resurgent mafia, ever-changing rules** Sand mining rules have undergone a number of changes. The state made major amendments to the Karnataka Minor Mineral Concession (Amendment) Rules, 1994, in 2016 and added a separate chapter detailing the permission for quarrying ordinary sand in riverbed, patta land, removal of sand bars in CRZ areas of coastal districts, and special provisions for production of M-sand as well as for transportation of sand and M-sand.

Previous govt had unveiled a new sand mining policy in 2014 which gave more power to district-level officials to curb illegal activities, legal miners remain on tenterhooks while illegal ones gained the upper hand courtesy 'protection' from political bosses.



Figure 21: Sand on the banks of Gurupur river. Image courtesy: M Raghuram/ First Post

In March 2018, the joint secretary, Centre, Niranjana Kumar Singh, had released the draft sand mining recommendations. Since then, the tender-cum-forward auction method has been used in Karnataka. But the political system interfered with that too. The NECF had estimated that Dakshina Kannada exported sand valued at Rs 800 crore, Udupi at Rs 620 crore, & Uttara Kannada Rs 570 crore.

<https://www.firstpost.com/india/illegal-sand-mining-part-4-karnataka-continues-to-bear-brunt-of-resurgent-mafia-ever-changing-government-rules-6015541.html> (2 Feb 2019)

**Illegal mining operations ravaged environment** Even in Karnataka, the sand mafia's operation continues without much intervention by law enforcement personnel or the excise

department. Reports have hinted that every single local official in the state is paid anywhere around ₹10,000 per lorry load of sand. The flow of these payments is maintained across districts and allows the sand mafia to flout quarrying limits without as much breaking into a sweat.

Concerned officers are even made to allow more lorry loads than required to take sand out of a particular quarry. Estimates suggest that Karnataka's demand for sand comes out to be about 65 million metric tonnes each year whereas the state-sponsored supply is only able to provide 45 MT of this demand. The highest number of illegal mining operations have been reported from areas near major rivers such as Cauvery, Krishna, Nehravati, Kabini, Tungabhadra, Ghataprabha, Malaprabha and Hemavathi.

<https://www.timesnownews.com/mirror-now/in-focus/article/repercussions-of-illegal-sand-mining-on-environment-in-tamil-nadu-and-karnataka/480230> (31 Aug. 2019)

**Illegal mining wreaks havoc in Bengaluru suburbs, coastal districts** Karnataka is one of the leading states, after Maharashtra, Madhya Pradesh and Andhra to witness illegal mining.

Between 2014 and 2019, the Department of Mines and Geology (DM&G) registered 2,030 cases of illegal sand mining, 34,786 cases of illegal sand transportation and about 1,049 case of illegal sand storage across the state. A total of 14,786 cases were lodged in these five years. A total of ₹77 crore fine was collected. Contractors use heavy metal objects to dig 15-25 feet trench to mine sand violating CRZ rules in the coastal districts.

<https://thefederal.com/analysis/2019/10/08/illegal-sand-mining-wreak-havoc-in-bangalore-suburbs-coastal-districts/> (8 Oct. 2019)

**Illegal sand mining dominates poll campaign** In the Ranebennur constituency in Haveri district, drama appeared to be centred on illegal sand mining, with opposing candidates alleging the involvement of each other in the activity. The River Tungabhadra scythes through the taluk and the banks of the river for roughly 25km, from Kuppelur to Choudayyanapur has huge deposits of quality soil. Residents alleged that officials of the district administration and local officials were hand in glove with those involved in the illegal extraction of sand.

Contractor Malatesh Veerapur pointed to the noticeable absence of the word 'development' in most election speeches. "It is not the dominating theme in the campaign here. The contestants are telling the people that they will put a stop to illegal sand mining if they win the election," Veerapur said.

Hanumanthappa Kabbar, chief of the Ranebennur unit of the Karnataka Rajya Raitha Sangha also alleged that illegal sand mining was rampant in Mankanur, Mudnur, Kuppelur, Mustur, Haranagiri and Anveri villages in Ranebennur taluk. "It is the people in these villages who are bearing the cost of this illegal activity going on unchecked," said Kabbar. State president of Karnataka Rajya Raitha Sangha and chief of the Akhandanand wing of Hasiru Sene Shivaputra Malladad said that the miscreants were emboldened by the failure of the law enforcement authorities to initiate legal action.

<https://timesofindia.indiatimes.com/city/hubballi/illegal-sand-mining-dominates-poll-campaign-in-ranebennur/articleshow/72099137.cms> (18 Nov. 2019)

## Illegal sand mining activity in Karnataka

		2014-15	2015-16	2016-17	2017-18	2018-19	Total
Illegal sand mining	No of cases booked	330	619	660	286	135	2,030
	Fines collected (Rs in lakhs)	52	66	47	191	55	411
	FIRs registered	39	233	539	159	62	1,032
Illegal sand transportation	No of cases booked	12,431	8,409	7,035	3,600	3,293	34,768
	Fines collected (Rs in lakhs)	1,712	1,161	688	667	376	4,604
	FIRs lodged	1,594	3,473	2,794	2,427	2,516	12,804
Illegal sand storage	No of cases booked	365	163	152	85	284	1,049
	Fines collected (Rs in lakhs)	558	36	456	1,211	479	2,741
	FIRs registered	68	49	109	77	176	479
Filter sand	No of cases booked	239	152	121	36	32	580
	Fines collected (Rs in lakhs)	2	3	22	4	0	32
	FIRs registered	171	133	111	29	27	471

Source: Department of Mines and Geology, Karnataka • [Get the data](#)

Figure 22: Illegal sand mining activities in Karnataka (2014-2019), Dept. of Mines and Geology



## Citizens Efforts

**Sand extraction poses threat to fish sanctuary** Extraction of sand from the banks of the Tunga near Chibbalagudde in Tirthahalli taluk is posing a threat to the fish sanctuary that hosts 27 species of fish. The pools in the river, the perennial water flow, the sandy banks, and the shade provided by fruit-bearing trees on the river bank have all made this an ideal dwelling place for fish. The 3-km stretch of the river here has been declared a fish sanctuary by the State government.

However, the permission sanctioned by the DM&G for extraction of sand from the Tunga riverbank in Dabbanagadde, nearly 100 metres from Chibbalagudde, led to apprehension that it will disturb the flow of water. Vinayak, a resident of Chibbalagudde, said that more than 50 truckloads of sand have been extracted daily since January. This will loosen the riverbank and alter the course of the river, as a result of which the fish may migrate to other places or even cease to exist. Mr. Vinayak said that though the residents had requested the Tirthahalli Tahshildar and the Shivamogga Deputy Commissioner to stop the extraction, no action has been taken.



Figure 23: Visitors feeding the fishes in Tunga river near Chibbalagudde in Tirthahalli taluk of Shivamogga district. Extraction of sand from the banks of the Tunga near Chibbalagudde in Tirthahalli taluk posing a threat to the fish sanctuary that hosts 27 species of fish. (March 17, 2019, The Hindu, Photo Credit: Vaidya)

Bhaskar, an environmental activist, said the opinion of locals and the gram panchayat was not sought prior to the grant of permission for sand extraction. Of the 98 blocks on riverbanks in the district that have rich deposits of sand, permission for extraction has been given only on 37 blocks, for the remaining blocks fall in Ecologically Sensitive Areas (ESA), as per the recommendations of the Kasturirangan panel on conservation of the Western Ghats. This should apply to Chibbalagudde too, he said.

<https://www.thehindu.com/news/national/karnataka/sand-extraction-poses-threat-to-fish-sanctuary/article26559483.ece> (17 March 2019)

**Sand extraction near fish sanctuary halted tentatively** The DM&G in May 2019 passed an order to tentatively halt sand extraction from the Tunga in the vicinity of the Chibbalagudde fish sanctuary in Tirthahalli taluk. Following this, the Senior Assistant Director of Department of Fisheries had written to the Shivamogga Deputy Commissioner to stop the sand extraction activities in the vicinity of Chibbalagudde. Acting on the letter, the Deputy Commissioner had directed the department to take necessary action in this regard.

<https://www.thehindu.com/news/national/karnataka/sand-extraction-near-fish-sanctuary-halted-tentatively/article27041465.ece> (6 May 2019)

**Call for ban on quarrying around KRS dam** The technical committee of the Institution of Engineers, Mysuru centre, in August 2019 called upon the govt to ban all quarrying activities around the Krishnaraja Sagar (KRS) dam with immediate effect. A release said frequent loud sounds and vibrations being experienced in and around the dam was owing to unregularised quarry blasting, and such uncontrolled use of explosives create lots of vibration up to a radius of 18 to 20 km.

The Institution of Engineers said it was necessary for the Geological Survey of India to inspect the area and the dam and submit its observation as the KRS was 90 years old. "A dam break analysis should be done to assess its structural stability," said the release pointing out that as per Supreme Court order, no quarry blasting activity should be allowed within 20 km of major dams.

It said the district administration of Mandya and the State govt should not yield to political pressure and must ban quarrying around the KRS. The technical team warned that blasting in the surrounding and nearby areas causes vibration to the dam structure and could lead to cracks or widen the existing cracks and thus pose danger.

<https://www.thehindu.com/news/national/karnataka/call-for-ban-on-quarrying-around-krs-dam/article29247361.ece> (24 Aug. 2019)

**Citizens protest against illegal mining at Doddakere lake** In the 1960's, Bengaluru had over 280 lakes and tanks. Almost 60 years of encroachment, illegal construction, mining and neglect has left Bengaluru's lakes in a miserable condition. Doddakere Lake located in greater Bengaluru's Sarjapur area joins the list.

Residents of the area are fighting a battle to save a lake. On Oct 30, 2019 the residents along with citizen activists, under the banner 'Voices Of Sarjapur', organised a protest march against the illegal sand mining in the lake region. The march was to make residents aware of the importance of such water bodies.

<https://thehinduindian.com/news/doddakere-lake/> (30 Oct. 2018)



Figure 24: Image Credit: Save Lakes of Sarjapura/ Facebook/  
<https://thelogicalindian.com/news/doddakere-lake/>

## Legal Interventions

**HC ratifies govt move for only 53 sand permits** - The High Court (HC) in March 2019 upheld the decision of the district administration on limiting the issue of sand extraction permits in sandbars identified in the Nethravathi and Phalguni CRZ areas to protect traditional sand extractors and also preserve the environment. Questioning the district-level sand monitoring committee's decision to restrict the number of permits to 53 based on the permit holders' details of 2011-12, Abdul Majeed and Abdul Gafoor, residents of Kannur on the outskirts of Mangaluru had filed a writ in the HC.

<https://www.deccanherald.com/state/mangaluru/hc-ratifies-govt-move-for-only-53-sand-permits-725382.html> (27 Mar 2019)



## Government Actions

**4 new mining policies to plug revenue leakage** - In Jan 2019, the govt decided to come out with four new mining policies on sand, granite, building material and stone crushers each. The decision to introduce the policies was considered after taking a cue from states like Telangana, Andhra Pradesh, Tamil Nadu, Maharashtra, Rajasthan and Gujarat. A team from the Karnataka mining department had visited these states to conduct a study on the steps taken by them to check overexploitation and illegal transportation of minerals.

Dept sources claimed that in the case of building material, scores of companies were drawing over and above the permissible limits for which licenses were obtained. "For instance, when a contractor supplies building material for a national highway project, the department keeps a record of it as per the mineral dispatch permit (MDP) in the measurement book. So, if the company supplies 10 lakh tonnes for an NH project, it shows that it has an MDP for 2 lakh tonnes, and the rest 80 per cent of the material is not mentioned in the book," said the official. While the government gets a royalty of 20 per cent on the value of building material shown in the book, the royalty on the remaining 80 per cent is lost.

<https://timesofindia.indiatimes.com/city/bengaluru/govt-to-implement-4-new-mining-policies-to-plug-revenue-leakage/articleshow/67647823.cms> (23 Jan. 2019)

**Govt moots selling sand online** - CM BS Yediyurappa in Feb 2020 embarked on preparing a new sand policy that would include modern features such as online procurement and GPS-monitored transportation. The CM convened a secretary-level review meeting where the draft sand policy prepared by a cabinet committee was discussed.

CC Patil, minister for mines and geology hinted at the possibility of Karnataka adopting a major portion of Telangana sand policy, which envisages to govern sand mining at gram panchayat level under the aegis of the dept of mines and geology and online procurement of the mineral. The new sand policy was to be announced in the state budget for 2020-21 to be presented by Yediyurappa on March 5, 2020.

The review meeting assessed that Karnataka consumed around 45 MT sand of which 30 MT comes from M-sand (manufactured sand), a by-product of stone quarrying that is used as a substitute of river sand for concrete construction. A state sand policy formulated in 2017 was in place, but the govt wanted to replace it with more comprehensive one.

According to proposed sand policy, the sand reaches in the gram panchayat purview will be classified in the ranks between first and fifth and license would be issued by the panchayat with conditions based on the ranking. While procurement of the material would be online, its transposition would be done in the govt-empanelled vehicles fitted with GPS system.

<https://timesofindia.indiatimes.com/city/bengaluru/karnataka-government-moots-selling-sand-online/articleshow/74087534.cms> (11 Feb. 2020)

## **New mining policy approved**



Figure 25: Image credit: Anusha Ravi, TNIE

State cabinet on April 29, 2020 approved a new sand policy that will now allow mining in tanks, ponds and even patta lands. It was earlier limited to rivers & deltas.

<https://www.newindianexpress.com/states/karnataka/2020/may/01/cabinet-allows-sand-mining-in-tanks-ponds-patta-lands-2137668.html> (01 May 2020)

**New sand mining policy slammed** While the state govt reasoned that the move would allow for cheap sand for construction purposes for the people, environmental activists said that it would have dangerous results that will impact people's lives which outweigh the Rs 70 crore revenue that will be added to the govt's kitty. Flash floods, shortage of drinking water and the death of aquatic animals are some of the immediate impacts environmentalists warned of.

Former IFS officer and noted environmentalist AN Yellappa Reddy said, "This move is highly detrimental to the environment. The sand bed provides an excellent living media for aquatic plants and animals. Most aquatic animals — frogs, crabs, fish — won't survive otherwise. This will completely kill the biodiversity of these water bodies and without these plants and animals, the water won't remain clean. They are also important for keeping the dissolved oxygen levels and also without them the organic material that is released into the water won't be converted into biomass."

He added that another important aspect was that during heavy rains or when there is a high inflow of water, the speed of runoff is reduced due to the sand. "The sand bed can also trap the organic matter & allow water to infiltrate the earth and recharge groundwater. If we scrape off every grain of sand, then the lake beds will be sterile. When there is heavy rainfall, this can cause flash floods," he added.

<https://www.thenewsminute.com/article/highly-detrimental-environment-activists-slam-karnataka-s-new-sand-mining-policy-124305> (10 May 2020)

**Dakshina Kannada goes online to rein in illegal mining** The Dakshina Kannada authorities in May 2019 set up an online sand booking and monitoring system for delivering sand. The website, Sand Bazaar ([www.dksandbazaar.com](http://www.dksandbazaar.com)), launched about a month ago and has listed over 100 licensed sand miners alongside the tariff chart and their modes of operation.

With the message, 'From shore to every door', buyers could book, track and get the sand delivered. The portal, which can also be accessed through an app, is operated by the District Sand Monitoring Committee (DSMC) and the sand is transported either from Mangaluru or Bantwal. To get sand delivered, buyers have to visit the website, secure the login credentials with Aadhaar, which in turn will generate a six-digit OTP. Subsequently, the buyer has to specify the quantity, quality and the address where the sand has to be delivered.

While at present Google play store hosts PermitHolder-SandBazaar and VehicleOwner-SandBazaar, two separate platforms for stakeholders, officials say there is a plan to integrate the two on the same platform, along with a separate panel for 'buyers'. At its pilot stage, this was implemented in the Mangaluru CRZ limits. The service were to be expanded across the district soon.

<https://www.thenewsminute.com/article/dakshina-kannada-goes-online-rein-illegal-sand-mining-and-transportation-102626> (29 May 2019)

**Task force recommends Article 371(J)-like special status for 11 Western Ghats districts** The the Western Ghats Task Force in its final report submitted to the State government recommended 33 points of action for the conservation of the Western Ghats, suggested that the State government pursue with the Centre for special status to these districts that have eco-sensitive forests.

Among the recommendations is to prohibit new projects in the Western Ghats. Currently, the State and Centre are planning a slew of road, railway, power, and river-diversion projects in the forests of the Ghats. "After the completion of the Yettinahole River Diversion project, there should be no more projects. Projects like the diversion of Sharavathi waters to Bengaluru should not be allowed," said Mr. Chandrashekar, chairman of the task force.

The report recommended the regulation of heavy earth movers and machinery through permits and mandatory installation of GPS, revision of the sand mining policy to exclude areas in the Western Ghats, conservation of sacred groves, development of an eco-tourism policy, establishment of elephant corridors, among others.

<https://www.thehindu.com/news/national/karnataka/task-force-recommends-article-371j-like-special-status-for-11-western-ghats-districts/article28276226.ece> (3 July 2019)

**S Sasikanth Senthil put squeeze on sand mining mafia** S Sasikanth Senthil won plaudits as a proactive administrator during his tenure as Dakshina Kannada deputy commissioner, but he will be best remembered for his crackdown on the sand mafia that once thrived in the coastal district. In a district that has witnessed the devastating effects of illegal sand mining, Senthil and Dakshina Kannada police busted the sand mafia's operations in the district's river valleys, particularly along the banks of the Nethravathi, seizing lakhs of rupees in assets from the perpetrators and severely crippling their operations.



Figure 26: S Sasikanth Senthil, Deputy Commissioner of Dakshin Kannada (Google Image)

The DC also worked with district-level task force committees to decide on permits for traditional and sustainable sand extraction in blocks identified in CRZs in the district. In May 2019, Senthil launched a portal ([www.dksandbazaar.com](http://www.dksandbazaar.com)) and an app to promote transparency in sand extraction while curbing illegal extraction. The administration made it mandatory for all sand extracted from CRZs to be sold only through the portal — largely eliminating the illegal transportation of sand to other states. The portal was such a success that it inspired neighbouring Udupi to emulate the initiative.

<https://timesofindia.indiatimes.com/city/mangaluru/s-sasikanth-senthil-put-squeeze-on-sand-mining-mafia/articleshow/71018848.cms> (7 Sept. 2019)

**Federation seek probe against IAS officer** The Federation of Dakshina Kannada Lorry Owners' Association, Sand Contractors, Sand Boat Owners, Workers and Construction Material Transport Lorry Owners Association in Sept 2019 sought a detailed probe into the role of former deputy commissioner Sasikanth Senthil in what they termed as serious violations in discharge of his duties as deputy commissioner. The ire of these associations was particularly focussed on his role in regulating sand trade in the district.

Rubbishing these allegations, Senthil said that he does not even want to respond to the charges. "It is a well-known fact that I had chased away the one of the office-bearers of the association when he was involved in illegal act of sand mining and transportation, Senthil said referring to Surendra Kambli, adding the associations were free to go to town with their allegations.

<https://timesofindia.indiatimes.com/city/mangaluru/stakeholders-in-sand-mining-seek-probe-against-senthil/articleshow/71039396.cms> (9 Sept. 2019)

**'Act tough against illegal sand extraction'** Minister for DM&G C.C. Patil in Sept 2019 issued a direction to officials to take all necessary steps to check illegal sand extraction in Gadag district. Chairing a meeting of the Gadag District Mining Task Force at the Deputy Commissioner's office in Gadag, the Minister asked the officials to be extra cautious in



villages around Shirahatti, Mundargi, Laxmeshwar in the Tungabhadra river basin and in villages of Nargund taluk in the Malaprabha river basin. Mr. Patil directed tahsildars of the respective taluks to work in coordination with the officials of the departments of PWD, Forest and DM&G to ensure that there was no illegal sand extraction in the district.

<https://www.thehindu.com/news/national/karnataka/act-tough-against-illegal-sand-extraction/article29395399.ece> (12 Sept. 2019)

**Sand extraction from rivers in CRZ area** Sand extraction from rivers in CRZ) was set to see a break for at least of couple of months as the environment clearance (EC) for the same is expiring on different dates this month and fresh clearance was yet to be obtained by the DSMC.

The EC had expired for 12 sand bars, eight in Netravati and four in Phalguni (Gurupura) recently, as a consequence of which sand extraction activities in these areas have stopped completely. While boats used for extraction are brought on the shore, migrant workers staying in temporary sheds have vacated the same, pursuant to directions from the DM&G. The environment clearance for another 10 sand bars would expire by December 26 thus completely bringing to halt sand extraction in CRZ area.

Though the DSMC had completed all other formalities to obtain fresh EC for sand bars, the crucial bathymetry survey to scientifically identify sand bars for the next season was yet to start. The Committee had deferred the decision to award the survey contract last month citing higher quotes; however, Deputy Commissioner Sindhu B. Rupesh, who is also the chairman of the committee, had said the process would be expedited.

<https://www.thehindu.com/news/cities/Mangalore/sand-extraction-from-rivers-in-crz-area-coming-to-an-end/article30308403.ece> (15 Dec. 2019)

## Violence

**Illegal mining kills 22-year-old** Four persons were booked for the death of a 22-year-old man Ambareesh, a resident of Bhaktharahalli, who was hired to load sand into a tractor trailer from a lake bed around 11 pm on March 18, 2020. The accused had lied to him saying that they have permission from the govt to use sand from the lake bed. After the victim loaded the sand, the tractor driver drove without switching on the headlights of the vehicle on the lake bund, fearing that somebody will notice them. With low visibility, the vehicle toppled and the victim was crushed to death.

<https://bangaloremirror.indiatimes.com/bangalore/crime/illegal-sand-mining-kills-22-yr-old/articleshow/74739312.cms> (21 March 2020)

**Bangalore journalists attacked** Bengaluru authorities considerably ignored illegal mining taking place within an ESZ of 10 km around the Bannerghatta National Park, Bengaluru. On Dec 6, 2019 when Bengaluru-based journalists tried to capture the unlawful activity, they were threatened and attacked by a few people. Three people have been taken into custody.

The crusher had received clearance from the DM&G, still they had to get a go-ahead from other authorities, which they did not have. The incident took place, when the News 9 TV journalists were leaving the mining site. Soon, the journalists were stopped by a few men, who then abused the TV news crew & asked the crew to even delete the footage.

<https://thelogicalindian.com/news/journalist-attacked-bannerghatta/> (9 Dec. 2018)

**Police-politicians accuse each other** Legislators and police in Jan 2019 were at loggerheads over illegal sand mining. While D Shekhar BJP MLA from Goolihatti tried to immolate himself in front of a police station in Hosadurga on Jan 6, 2019 night alleging local police of being involved in illegal sand mining, another BJP MLA M Chandrappa threatened that he and his supporters would picket police stations and “torch” them if the police did not take concrete steps to stop illegal sand mining in Chitradurga district.

Contrary to their version, police say D Shekhar was demanding release of 4 tractors caught for carrying illegally mined sand, but police officials refused to do so.

<https://timesofindia.indiatimes.com/city/bengaluru/bjp-mla-attempts-suicide-over-illegal-sand-mining/articleshow/67431688.cms> (8 Jan. 2019)

Chandrappa alleged that the police were seizing tractors and carts used by poor people to transport sand for the construction of their houses.

<http://www.newindianexpress.com/states/karnataka/2019/jan/08/stop-illegal-sand-mining-or-will-torch-police-station-mla-1922041.html> (8 Jan. 2019)

**Udupi lorry owner plead for mercy killing** Katpady Lorry Owners Association secretary Raghavendra has appealed for euthanasia (mercy killing) for him and his family members, after facing severe problems after District Administration ordered sand ban. “I have struggled a lot and tried to overcome this problem. But day by day the situation is getting worse and I am facing financial issues,” he said. Raghavendra said he had 4 tippers and 12 workers who were dependent on him. Now he has one tipper and is sitting jobless.

<https://www.daijiworld.com/news/newsDisplay.aspx?newsID=573250> (25 March 2019)



Figure 27: With a ban imposed in Bengaluru city, Kolar, Chikkaballapur, Tumakuru, Mysuru, Mandya, Dharwad and Bidar, mining activity has become rampant in surrounding districts. Photo – Prabhu Mallikarjun/The Federal

## Summary

There has been no significant change in terms of reduction in illegal sand mining cases in Karnataka in 2019 and 2020 so far. On the contrary reports have highlighted adverse impacts excessive riverbed mining practices destroying calm collection in Nethravathi river and Chibbalagudde fish sanctuary in Tunga river in turn ruining livelihood options for dependent fisherfolk communities.

Similarly, unsustainable mining practices are seen affecting water resources and water bodies thus leading to water scarcity in adjoining areas. Sadly the new sand mining policy has overlooked the aspect and gone a step further in this direction inviting objections from concerned. The report of mining impact on KRS dam shows why this menace need serious consideration and intervention by citizens as well as elected governments and representatives.

Government has changed the policy and seen promoting online sale and promoting M sand. However, every second report is hinting at political patronage to illegal sand mining business. Some officials have revealed large scale corruption by miners even in auctioned mines where only 20 % of extracted sand is maintained in register causing huge revenue losses to govt.

The official figure continue to account sand consumption around 45 MT while unofficially it was reported to be around 70 MT in 2018. The sand mining policy is being frequently changed apparently with an aim to allow more mining and earn more revenue. While experts recommendation for protection and conservation of ESZ, CRZ and Western Ghats ecology continue to succumb to political indifference.

The raids, attacks and violence involving illegal sand mining seem to have become a routine, ceasing to shake govt, public and judiciary conscience. Death of an innocent labour, attack on reporters and miner seeking mercy petition due to policy failure shows something seriously is wrong the way govt dealing with the issue. The report covering slugfest between higher police officials and MLA from Goolihatti is noteworthy.

The efforts of active collector, activists, citizens, reporters in raising Nethravathi calm collection, Chibbalagudde fish sanctuary, KRS dam, mining around Bengaluru issue and adverse impact of new mining policy are all welcome.

The work by S Sasikanth Senthil IAS officer is appreciable showing that bringing mining activities under rule of law is not a rocket science. Sadly, such officer hurts interest of mining lobby and thus victimized by involved miners and politicians. Senthil too seems have to face all this and is learnt to have quit the service finding it tough to continue work in hostile environment.

Unless govt, administration and citizens wake up to their collective failure and work in unison to evolve an effective riverbed mining governance, there is little hope for river eco-system, fish, clams, dependent people, water security and sustainability.

***Bhim Singh Rawat ([bhim.sandrp@gmail.com](mailto:bhim.sandrp@gmail.com))***

## Postscript

Illegal mining unabated in Kali river Illegal sand mining is going on unabated in Kali river basin in Haliyal and Joida taluks in Uttara Kannada district. The three days of heavy rainfall in the district due to Cyclone 'Nisarga' has led to increase in soil erosion depositing huge quantity of sand in several streams and rivers including Kali River in Haliyal and Joida taluks. This has resulted in illegal sand mining. At some places the illegally extracted sand is stored in temporary stockyards. Interestingly this mining activity came to light a couple of days after the district administration issued an order banning sand mining temporarily so that the aquatic lifelike fish can breed well. When contacted, Priyanga, Assistant Commissioner, Karwar, said that she received complaints regarding illegal sand mining and the task force committees have been constituted to address the issue in four taluks — Karwar, Joida, Dandeli and Haliyal.

"Our task forces were not functioning all these days due to Covid-19. Our CCTV has some technical issues. The Haliyal tahsildar agreed to get the CCTV rectified. We have not issued permission and those indulging in sand mining may have obtained Mineral Transit Permit from the Department of Mines and Geology from Belagavi. But we are checking those permits," she said.

Officials in the DM& in Belagavi said they have not issued any such permits. Officials on conditions of anonymity said that in the wake of the 2019 floods a government order was issued to 17 people to extract sand between October 2019 and June 2020 to extract deposited sand from private land due to erosion. Of them, 9 had violated the order and mined sand outside the district. But it was never meant to stretch beyond the boundaries of the districts, they said.

<https://www.newindianexpress.com/states/karnataka/2020/jun/07/illegal-sand-mining-unabated-in-kali-river-2153352.html> (07 June 2020)

## Box Item 2: Reported cases of violence due to illegal sand mining activities in South India

- **Tamil Nadu**

**Police constable murdered** A Special Branch constable S. Jegadish Durai (33), of Chinthamani was brutally murdered by illicit sand miners near Nanguneri in the Tirunelveli district in the early hours of May 7, 2018 after he tried to arrest them for illegally lifting sand from the **Nambiyar riverbed** near Puducherry.

<https://www.thehindu.com/news/national/tamil-nadu/illicit-sand-miners-brutally-murder-police-constable-near-nanguneri/article23802916.ece> (7 May 2018)

**Illicit mining leads to one more murder near Nanguneri** In July 2018, a youth was hacked to death by two brothers with whom he had enmity over lifting sand illegally from **Nambiyar riverbed** and adjacent areas.

<https://www.thehindu.com/news/cities/Madurai/illicit-sand-mining-leads-to-one-more-murder-near-nanguneri-tirunelveli/article24380942.ece> (10 July 2018)

**Man killed for informing police about sand mining** 50 year old Murugan Marudhavanan of Sathangudi was murdered by three men near Manalmedu in Nagapattinam district on Nov 29 night after they came to know that he had been informing police about their illegal sand mining activities on the **Kollidam riverbanks**.

<https://timesofindia.indiatimes.com/city/trichy/man-killed-for-informing-police-about-sand-mining/articleshow/66889081.cms> (1 Dec. 2018)

**Reporters arrested for exposing illegal sand mining** In Nov. 2018, journalists Arthur Bouvart and Jules Giraudat belonging to a French organisation, Forbidden Stories, arrived in Chennai to complete investigations by local reporters facing 'threats, prison or murder' for investigating illegal sand mining. Ironically, the visit ended with the duo accused of spying – and two reporters from the area, D. Anandhakumar and M. Sriram, held and interrogated by police.

<https://thewire.in/media/french-journalists-spies-tamil-nadu-sand-mining> (3 Dec. 2018)

**Village Administrative Officers assaulted by sand smugglers** - Three VAOs were assaulted and threatened by a gang allegedly involved in sand smuggling on Thursday. S Arul Aravind (25), VAO in charge of Mahathanam near Nagapattinam, and two other VAOs, were assaulted by a group of villagers when they tried to stop sand mining from Kaduvaiyaru river near Velankanni.

<https://www.newindianexpress.com/states/tamil-nadu/2020/aug/22/3-vaos-assaulted-by-sand-smugglers-near-nagapattinam-2186795.html> (22 August 2020)

**Tamil Nadu Illegal Beach Mining Exposed** - After exposé, the reporter complains of harassment, intimidation Chennai-based senior journalist Sandhya Ravishankar, who published a four-part series on Tamil Nadu's sand mafia in The Wire, has alleged that she has been constantly harassed by supporters of S. Vaikundarajan (owner of the largest sand mining conglomerate in the country, who is mentioned extensively in the articles).

<https://thewire.in/116202/sand-mafia-expose-harassment-intimidation/> (March 2013)



- **Andhra Pradesh**

**Reporter trying to expose illegal sand mining beaten with iron rods** Rama Reddy a reporter for a TV channel was assaulted by a mob in Peravali Mandal's Pittala Vemavaram (Godavari) because he was trying to expose illegal sand mining in the state. He was seriously injured and is being treated at a local hospital.

<https://scroll.in/latest/836678/andhra-pradesh-reporter-who-was-trying-to-expose-illegal-sand-mining-beaten-with-iron-rods> (May 2017)

**In Telangana, 2 deaths, 18 injuries in a month due to illegal sand mining** - Residents of several villages in Sircilla, a newly created district in Telangana, are up in arms against police and district administration over sand mining in the area after sand-laden trucks were involved in several accidents in the past one month.

<http://indianexpress.com/article/india/telangana-sircilla-villages-up-in-arms-against-sand-mining-as-trucks-crush-two-4784343/> (August 2017)

- **Kerala**

**Sand mafia kills landowner with earth mover for resisting illegal mining** - A 36-year-old man was brutally murdered allegedly by sand mafia in the wee hours of Friday with the arm of an earthmover for resisting illegal mining from his compound at Ambalathinkala near Kattakada.

<https://www.newindianexpress.com/states/kerala/2020/jan/25/sand-mafia-kills-landowner-with-earth-mover-for-resisting-illegal-mining-2094162.html> (25th January 2020)

**Whistleblower comes under attack for lodging complaint against illegal sand mining** - Mahesh Vijayan, an RTI activist, who fights against illegal soil mining in the district, was attacked by a four member-gang on Tuesday night at his residence at Nattassery near here. Mahesh was earlier attacked on the premises of the Kottayam municipal office on January 22, by some sand mining contractors, injuring him seriously. Later, Mahesh was threatened by another contractor over phone for moving against illegal sand mining in the district.

<https://www.newindianexpress.com/states/kerala/2020/feb/13/whistle-blower-comes-under-attack-for-lodging-complaint-against-illegal-sand-mining-2102745.html> (22 August 2020)

**Woman who opposed sand mining attacked by criminals** - A woman who protested against illegal sand mining in Anchara coast in Manjeshawaram near Kasargod has been attacked by a gang of criminals.

<https://english.mathrubhumi.com/news/crime-beat/woman-who-opposed-sand-mining-attacked-by-criminals-4-teeth-fall-off-1.4051525> (19 August, 2019)

- **Karnataka**

**Udupi DC, team attacked by sand mafia** - Deputy Commissioner Priyanka Mary Francis was chased, abused and manhandled at Kandlur village by illegal sand miners when some officials went on a surprise inspection to a sand extraction site past midnight on Sunday. <https://www.deccanherald.com/content/604569/udupi-dc-team-attacked-sand.html> (4 April, 2017)

## Synthesis & Conclusion

The increased vulnerability of river sand deposits due to low sediment production and mobilization in southern rivers due to both natural and human driver as well as high magnitude of impacts on river ecology, deltas and ground-water makes sand mining a major issue for policy and regulatory interventions. In the solution space the alternative reservoir management to flush sand downstream is yet to be studied for its feasibility.

### End Notes:

#### Other relevant news on sand mining in South India:

**SANDRP blog list** SANDRP has been compiling information about sand mining in various states and zones of India since last five years. These can provide some useful research material, so we are giving full list of it here.

### Resources:

<https://sandrp.in/2020/06/11/karnataka-sand-mining-2020-destruction-of-fish-sanctuary-calm-collection-active-collector/#:~:text=2019%20Karnataka%20sand%20mining%20overview,able%20to%20produce%2030%20MT.&text=M%2DSand%20was%20being%20produced%20in%2018%20districts%20of%20state>

<https://www.thehindu.com/news/national/karnataka/govt-allows-sand-mining-in-patta-lands-tanks-ponds/article31481459.ece>

#### SANDRP Sand Mining Blogs: 2015-2020

Year	Category/ Zones	Blog Title & Links
2015	General	<a href="#">River Sand Mining in India in 2015</a>
	Govts actions	<a href="#">River Sand Mining in India in 2015 – II – Government acts of omissions and commissions</a>
	Judicial Intervention	<a href="#">River Sand Mining in India in 2015–III–Judicial Actions</a>
2016	General	<a href="#">River Sand Mining in India in 2016</a>
	Govts actions	<a href="#">River Sand Mining in India in 2016-II- Governments Show no Will to Regulate</a>

	<b>Judicial Intervention</b>	<a href="#">River Sand Mining in India in 2016–III – Judicial Interventions</a>
<b>2017</b>	<b>General</b>	<a href="#">Illegal Sand Mining 2017: Rivers Continue To Lose Mindless Mining Battle</a>
	<b>Govts actions</b>	<a href="#">Riverbed Mining 2017 -II- States Look To Centre, Centre Dilutes Norms</a>
	<b>Judicial Intervention</b>	<a href="#">Sand Mining Review 2017- 3 – Judicial Interventions Fail To Restore Damage</a>
<b>2018</b>	<b>North</b>	<a href="#">Punjab Sand Mining 2018 Overview: SAD SAGA OF STATE FAILURE</a> <a href="#">Uttar Pradesh Sand Mining 2018: Key NGT orders slap for MoEF</a>
	<b>North East</b>	<a href="#">North East India Sand Mining 2018: Emerging threat to Rivers</a>
	<b>East</b>	<a href="#">East India Sand Mining 2018: Will NGT order help restore Subarnarekha River?</a>
	<b>West</b>	<a href="#">Rajasthan: SC Banned Riverbed Mining through 2018: Centre &amp; State Show No Concern</a> <a href="#">Gujarat Sand Mining 2018: Can Technology alone help Stop Illegal Sand Mining?</a>
	<b>Central</b>	<a href="#">Madhya Pradesh Sand Mining 2018: Unprecedented Violence by Sand Mafia</a> <a href="#">Maharashtra Sand Mining 2018: Panegaon shows Way To stop Illegal Sand Mining</a>
	<b>South</b>	<a href="#">Karnataka Sand Mining 2018: Hopeless, But Action Packed!</a> <a href="#">Tamil Nadu Sand Mining 2018: Story of Nexus exposed by a brave Journalists</a> <a href="#">Kerala Sand Mining 2018: How a 17 year Allapad girl became anti sand mining icon</a> <a href="#">Sand Mining 2018: Telangana and Andhra Pradesh</a>
	<b>Violence</b>	<a href="#">Illegal Sand Mining Violence 2018: at least 28 People died across India</a> <a href="#">Sand Mining 2018: Is Illegal Sand Mining A National Menace?</a>
<b>2019-20</b>	<b>North</b>	<a href="#">J&amp;K Riverbed Mining 2020: Rivers exposed to mechanized mining</a> <a href="#">Himachal Pradesh sand mining 2020: No Replenishment study, district foundation</a> <a href="#">Uttarakhand Riverbed Mining 2020: Rivers, People, Revenue Robbed</a> <a href="#">Punjab Sand Mining Overview 2019: Story of Political Patronage &amp; Goonda Tax</a> <a href="#">Haryana Riverbed Mining 2019: Yamuna Robbed of Minerals, Flows</a> <a href="#">UP riverbed mining overview: NGT, CBI, Govts cannot stop the menace</a>
	<b>West</b>	<a href="#">Rajasthan River Sand Mining Overview 2019: SC Ban Remains, Police-Mafia Gang Rules</a> <a href="#">Gujarat Riverbed Mining Overview 2019: Six People Died Due To Illegal Sand Mining</a> <a href="#">Goa Riverbed Mining Overview 2019: Civil Societies Form Network To Curb Mining Menace</a>
	<b>Central</b>	<a href="#">Madhya Pradesh River Sand Mining 2019: Rivers mined Dry; Govt not bothered</a> <a href="#">Maharashtra Riverbed Mining Overview 2019: Mining Posing Bigger Threats As Government Fails To Act</a>
	<b>South</b>	<a href="#">Kerala 2020 Sand Mining: Don't forget floods, fisherfolks &amp; vanishing villages</a> <a href="#">Karnataka Sand Mining 2020: Active Collector, Destruction of fish sanctuary &amp; calm collection</a> <a href="#">Tamil Nadu Sand Mining 2020: Persistent Court can't shake indifferent govt</a> <a href="#">Andhra Pradesh Riverbed Mining 2020: Quicksand of mismanagement</a> <a href="#">Telangana Riverbed Mining 2020: Tribals, Godavari robbed</a>
	<b>East</b>	<a href="#">Bihar Sand Mining 2020: Ruining rivers; aggravating floods</a>

### Other SANDRP Blogs on RIVER SAND MINING

Month Year	Category/ Region	Link
July 2019	Bundelkhand	<a href="#">Sand Mafia Build Illegal Bunds In Ken River</a>
July 2019	Haryana	<a href="#">3 Kids Drowned to Death in a DAY In Illegal Sand Mining Pits</a>
Nov. 2019	Haryana	<a href="#">Rampant Unsustainable Riverbed Mining in Yamuna Basin</a>
May 2020	Advocacy	<a href="#">Why indiscriminate river bed mining is wrong, dangerous and unethical</a>
May 2020	Uttar Pradesh	<a href="#">Yamuna facing illegal, in-stream mining during lockdown</a>
May 2020	Uttarakhand	<a href="#">Yamuna Riverbed Mining: Miners, Govts throw rule book in river</a>
July 2020	Uttarakhand	<a href="#">Govt must remove illegal bridge on Yamuna to prevent flood disaster</a>
Aug. 2020	Uttarakhand	<a href="#">Uttarakhand: Finally, Yamuna illegal bridge gone. But will govt learn?</a>

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