



ANNUAL REPORT

River Sand Mining in Kerala: 2021-2022

(As per the Judgment of Hon'ble National Green Tribunal, Principal Bench, ND in OA No.360/2015, 456, 726/2018 and others Case dated 26.02.2021)



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EXECUTIVE SUMMARY

Hon'ble National Green Tribunal, Principal Bench, ND in the Judgment dated 26.02.2021 vide OA No.360/2015, 456, 726/2018 and others, ordered to take strict action against illegal, unscientific mining of sand in the country. The Hon'ble NGT has directed all States/UTs to publish their Annual Reports covering actions taken against illegal sand mining and such annual reports need to be furnished to MoEF&CC by 30th April every year giving status till 31st March. In this context, the meeting held by the Chief Secretary, Government of Kerala on 20.04.2021 decided to entrust Institute of Land and Disaster Management (ILDm), Thiruvananthapuram with the task of preparing the Annual Report in consultation with the Commissioner of Land Revenue and the Department of Environment. Therefore, ILDM has prepared a detailed questionnaire and collected relevant data from all districts, and prepared the Annual Report for the year 2021-2022.

Sand Mining in Kerala is controlled and regulated by the provisions of Kerala Protection of River Banks and Regulations on Removal of Sand Act-2001. River sand mining is completely handled by State Government since 2001 and no portion of the river in the State is leased out to any private parties for sand mining. A three-tier decentralized system functions in the State to protect river banks and regulate river sand mining. The State High-Level Committee (SHLC) at the State level chaired by Revenue Minister, District Expert Committee (DEC) at the District level chaired by District Collector, and Kadavu Committee at the Panchayat/Municipality/ Corporation level are the statutory monitoring systems functions in the State. Sand Mining is done by Kadavu Committees with statutory powers under the supervision of the District Expert Committee (DEC) headed by the District Collector. Apart from this, Taluk Level Special Squads are formed and they monitor illegal sand mining 24x7 at the taluk level. Similarly, there is Sub Division Level Squad also engaged in-anti sand mining and anti-illegal mining activities. Station House Officers (SHOs) of Police are vigilant against illegal sand mining activities in their jurisdiction.

River Sand Mining is not being done in Kerala since 2016 for the want of Environmental Clearance. The government of Kerala has entrusted CSIR-National Institute of Interdisciplinary Sciences and Technology (NIIST), the only NABET accredited agency from Kerala in mining sector, with the task of preparing District Survey Report (DSR) for 10 districts in the State as part of obtaining Environmental Clearance. Officers of Revenue Department not below the rank of Village Officer and Police Officers not below the rank of Station House Officer are empowered to seize vehicles, tools, and implements used in illegal mining and transportation of sand, including sand. Steps are being taken to enhance the penalty of illegal sand mining to 2 years of imprisonment or a fine of 5 lakh rupees or both for continuous violation and a fine of fifty thousand rupees each charged per day. There were 672 vehicles and four equipments seized against illegal transporting from Kerala from 1.04.2021 to 31.03.2022. There were 676 vehicles released including those seized in the previous year after levying a fine. An amount of Rs. 2.06 Crore was remitted to River Management Fund as a penalty amount levied against vehicles and equipments used in illegal sand mining. Against illegal sand mining, 683 cases were registered and an amount of Rs. 24.79 Lakh was remitted to River Management Fund from the sale of illegally mined sand after seizure and confiscation. The total penalty and fine amount remitted to River Management Fund during 2021-2022 was Rs 2.57 Crore. The existing enforcement and monitoring mechanisms were reviewed by Chief Secretary in the high-level meetings held on 20.04.2021 and 18.02.2022.

1.2 River Sand Mining in Kerala

River sand mining in Kerala is controlled, monitored, and carried out solely by the State Government. No portion of the river in the State is given on lease for sand mining by private persons. River sand mining is regulated through the provisions of the Kerala Protection of River Banks and Regulation of Removal of Sand Act 2001 (amended in 2013) and Rules 2002, the binding guidelines of MoEF&CC, and the directives of the Hon'ble NGT and the Hon'ble Supreme Court. The Hon'ble Supreme Court's judgment in Deepak Kumar Vs State of Haryana in 2012 and the provisions of EIA Notification 2006 and Amended Notification 2016 are strictly followed in the State. Guidelines were also issued by the State Government for obtaining environmental clearance for river sand mining as per circular No. P3/248/18/RD dated 15.11.2018 in the context of the EIA notification 2006 and sustainable sand mining management guidelines of MoEFCC-2016.

River bed sand mining from rivers is not being done in the State of Kerala since 2016 for want of Environmental Clearance. Sand mining was done till 2015 based on the Sand Audit reports prepared based on Section 9b & 29 of the Kerala Protection of River Banks and Regulation of Removal of Sand Act 2001 (KPRBRRSA-2001) and subsequent Environmental Clearance (EC) from the State Environment Impact Assessment Authority (SEIAA) vide EC No.571/ SEIAA/ K1/ 4230/ 2014 Dated. 20.04.2015 &17.12.2015.

1.3 Sand Mining Monitoring and Management

Kerala Protection of River Banks and Regulations on Removal of Sand Act-2001 envisages a three-tier decentralized system to protect river banks and regulate river sand mining in the State. The State High-Level Committee (SHLC) at the State level chaired by Revenue Minister, District Expert Committee (DEC) at the District level chaired by District Collector, and Kadavu Committee at the Panchayat/Municipality/Corporation level are the statutory monitoring systems function in the State.

1.3.1 State High-Level Committee (SHLC)

The State High-Level Committee is the apex committee constituted as per Section 2A of Kerala Protection of River Banks and Regulations on Removal of Sand Act-2001 (KPRBRRSA-

2001). This is a multi-departmental committee headed by Revenue Minister with the following members.

- i) The secretary to Government in charge of the Revenue Department: Convener
- ii) Law Secretary: Member
- iii) The Commissioner of Land Revenue: Member
- iv) Director of the National Centre for Earth Science Studies: Member
- v) One Additional Director General of Police to be nominated by the Government: Member
- vi) Chief Engineer of the Irrigation Department to be nominated by the Government: Member
- vii) Two Environmental Scientists to be nominated by the Government: Members
- viii) Two Environmentalists to be nominated by the Government: Members

The present State High-Level Committee (SHLC) is re-constituted as per G.O (P) 14/2017/RD dated 23.12.2017.

1.3.2 District Expert Committee (DEC)

The District Expert Committee (DEC) is the district-level committee that functions as per Section 3 of Kerala Protection of River Banks and Regulations on Removal of Sand Act-2001. DEC comprises the following members.

- The District Collector -Ex-officio;
- A representative nominated by the Government from among the members of the District Panchayat representing any area abutting any river of the district;
- The District Labour Officer-Ex-officio;
- The Superintendent of Police in charge of Law and Order in the district - Ex-officio;
- The Deputy Director of Panchayat-Ex-officio;
- A Municipal Chairman/Chairperson from among the Chairman/ Chairpersons or the Municipal Councils abutting any river in the district-to be nominated by the Government;
- Two persons from among the Presidents of the Grama Panchayath abutting any river in the district-to be nominated by the Government;
- One President from among the Presidents of the Block Panchayats abutting any river in the district-to be nominated by the Government;
- A Hydrologist-to be nominated by the Government;
- One Executive Engineer of the Irrigation Department working in this district;

- An engineer not below the rank of an Executive Engineer of the Kerala Water Authority working in the district -to be nominated by the Government:
- Three environmentalists associated with river protection activities- to be nominated by the Government;
- An Engineer (Roads and Bridges) of the Public Works Department, not below the rank of an Executive Engineer and working in the district to be nominated by the Government
- The Geologist/District Officer, Department of Mining and Geology-Ex-officio;
- One Divisional Forest Officer-to be nominated by the Government.
- Revenue Divisional Officer or Revenue Divisional Officers having jurisdiction in the district.
- Three persons to be nominated by the Government from among the registered organisation of sand removing workers of the district;
- Tahasildars of all the Taluks in the district and the Additional Tahasildars having jurisdiction in relation to the regulation of sand removal in the district.

District Collector is the chairman of DEC and the Revenue Divisional Officer (RDO) in charge of the headquarters is the convenor of DEC. The DEC shall be met at least once in three months.

1.3.2.1 Powers and Functions of the District Expert Committee (DEC)

The District Expert Committee (DEC) has the following statutory powers and functions as per Section 9 of Kerala Protection of River Banks and Regulations on Removal of Sand Act-2001.

- (a) To identify the Kadavu or riverbank in a district in which; sand removal may be permitted;
- (b) To fix the total quantity of sand that can be removed from a Kadavu or river bank giving due regard to the guidelines of expert agencies like the National Centre for Earth Science Studies and Centre for Water Resources Development and Management or other agencies in the sector, as may be specified by the Government from time to time;
- (c) To control the transportation of sand from a Kadavu or river bank to another area;
- (d) To close a Kadavu or river bank opened for sand removal;
- (e) To ensure the protection of river banks and keep them free from encroachment
- (f) To consider the opinion of the Kadavu Committee and take suitable measures to achieve the objectives of KPRBRRSA-2001.

- (g) To ensure that the Kadavu Committees of the District are performing their powers and functions conferred on them by this Act;
- (h) To advise the Government on the measures to protect the biophysical environmental system of the river banks;
- (i) To recommend to the Government the necessity to ban sand removal from any river or Kadavu during any season of the year;
- (j) To carry out the Directions given by the Government, from time to time;
- (k) To exercise such other powers and perform such other duties as are conferred on it by this Act and rules made thereunder;
- (l) To advise on any other matter to carry out the provisions of KPRBRRSA-2001.

1.3.3 Kadavu Committee (KC)

The Kadavu Committees are the panchayat level statutory committees to control and monitor sand mining, functions as per Section 4 of Kerala Protection of River Banks and Regulations on Removal of Sand Act-2001 with the following members.

- (a) The President of the Grama Panchayat or the Chairman/Chairperson of the Municipality of the concerned Kadavu-Ex-officio;
- (b) The Secretary of the Grama Panchayat or the Secretary of the Municipality of the area- Ex-officio,
- (c) The Assistant Labour Officer of the area-Ex-officio;
- (d) The Grama Panchayat Member or the Municipal Councillor of the area-Ex-officio;
- (e) The Assistant Engineer of Irrigation Department having jurisdiction in the area-Ex-officio;
- (f) The Assistant Engineer, (Roads and Bridges) of the Public Works Department having jurisdiction in the area-Ex-officio;
- (g) The Assistant Engineer of the Kerala Water Authority having jurisdiction in the area- Ex-officio;
- (h) The Village Officer having jurisdiction in the area-Ex-officio;
- (i) Three Environmentalists to be nominated by the District Collector.
- (j) Three persons to be nominated by the District Collector from among the registered organizations of sand removing workers of the said area.

The President of the concerned Grama Panchayat or the Chairman/Chairperson of the Municipality is the Chairman of the Kadavu Committee and the Secretary of the Grama Panchayat or Municipality shall be the Convenor of the Kadavu Committee.

1.3.3.1 Powers and functions of the Kadavu Committee (KC)

The Kadavu Committees have the following powers and functions as per Section 11 of Kerala Protection of River Banks and Regulations on Removal of Sand Act-2001

- (a) The suitability of the Kadavu or river bank for sand removal;
- (b) The quantity of sand that may be removed from a particular Kadavu;
- (c) The additional measures to be taken for protection of the Kadavu or river bank;
- (d) The necessity to ban sand removal during any season of the year;
- (e) To recommend to the Grama Panchayats and the Municipalities for publication of list of country boats used for and labourers engaged in sand removal operations;
- (f) To carry out the instructions issued by the Government and the District Expert Committees, from time to time;
- (g) Advise on any other matter to carry out the provisions of KPRBRRSA -2001

1.3.4 Land Revenue Commissioner (LRC)

Land Revenue Commissioner (LRC) is the Authorized Officer to exercise overall supervision of the implementation of the provisions of Kerala Protection of River Banks and Regulations on Removal of Sand Act-2001 and Rules 2002. LRC is assisted by an officer, not below the rank of Joint Land Revenue Commissioner entrusted by the Government for the purpose.

1.4 General conditions for the sand removal operations in a Kadavu

Following general conditions are stipulated for removal of sand from a Kadavu in Section 12 of Kerala Protection of River Banks and Regulations on Removal of Sand Act-2001

- (1) The Grama Panchayat or the Municipality concerned shall, before carrying out the sand removal operation obtain passes from the Geology Department which shall issue them on the recommendation of the District Expert Committee for a period of one month in advance, on payment of royalty as provided for in the law applicable for the payment of royalty.
- (2) No sand removal operation shall be carried out in a Kadavu before 7 a.m. and after 4 p.m.

- (3)The Grama Panchayat or Municipality concerned shall subject to the other provisions of this Act and the rules made thereunder, make necessary arrangements to carry out the sand removal operations.
- (4)Removal of sand shall be permitted only from the riverbed and no sand removal operation shall be done within 15 metres of the river bank.
- (5)No sand removal operation shall be carried out within a distance of 500 metres from any bridge or any irrigation project or pumping station of water supply projects or check dams or from their retaining wall or the venue of any religious or cultural activities conducted on river bank or the sand bank in river or in part of the river.
- (6)The vehicle for loading sand shall be parked at a distance of at least 25 metres from the river bank, and no vehicle shall be brought to the river bank for loading,
- (7) No sand removal shall be done in a Kadavu or riverbank in excess of the quantity fixed by the District Expert Committee.
- (8)No 'Kollivala' pole scooping or any mechanized method shall be carried out in the sand removal operation.
- (9)No sand removal shall be done where there is likelihood of saline water mixing with river water
- (10)No sand removal shall be done in a river or in any river bank where Government have expressly prohibited the same by general or special order.
- (11)The sand removal operations in a Kadavu and transportation of such sand shall be carried out, only subject to such conditions and restrictions, as may be prescribed.

1.5 Squad Activity to Prevent Illegal Sand Mining

Taluk Level Special Squads function in all taluks of Kerala and they monitor illegal sand mining 24x7 at the taluk level. There is Sub Division Level Squad also engaged in-anti sand mining and anti-illegal mining activities. Station House Officers (SHOs) of Police are vigilant against illegal sand mining activities in their jurisdiction. Vehicles used for illegal transportation of sand are being taken into custody by the squad concerned. Seized river sand is shifted to Kalavara.

Chapter 2

Sand Auditing

The procedure to evaluate the process of sand mining in a river or part of the river after a specific period of mining to maintain the overall environmental quality of the river is Sand Auditing. The objectives of the work are: (a) To minimize the negative impacts of sand mining, (b) To maximize the health and functions of the river. Sand Auditing is a mandatory scientific exercise to be conducted in rivers once in three years as per Section 29 of Kerala Protection of River Banks and Regulations on Removal of Sand Act-2001 and Rule 30 of KPRBRRS Rules-2002. This chapter covers the methodology adopted for conducting Sand Auditing and its current status.

2.1 Selection of river stretch for Sand Auditing

- i) MoEFCC Sustainable Sand Mining Management Guideline 2016 restricting the river width leaving a distance of 3 m from the river bank or 10% width of the river whichever is less for mining (p.15) shall not bode well for the Kerala rivers, as most of the rivers in Kerala have steep to vertical river banks which are unstable.
- ii) Water spread area in the river is also varying in the summer and rainy seasons.
- iii) Kerala Protection of River Banks and Regulation of Removal of Sand Act, 2001 states that sand deposits within 15 m from the riverbank should not be mined (Section 12(4))
- iv) In order to maintain the river bank stability of the reasonable slope, 8-10 m distance, concomitant to the river bank height, toward the river from either bank has to be left untouched without mining. Hence, a minimum river width of 40 m is suggested as suitable for sand mining stretches.
- v) River stretch falling within the cadastral limit with a minimum width of 40 m (bank to bank) and exhibiting a depositional morphology but excluding forest lands and Coastal Regulation Zone (CRZ) has been identified suitable for sand auditing.

2.2 Three Phases in Sand Auditing

Phase I - Resource estimation - A realistic estimation of the sand resource in a given stretch

Phase II- Resource allocation - Sustainable level of sand mining Phase

III- Performance evaluation - Evaluation of the performance of mining activities during the period of auditing

2.2.1 Phase I - Resource estimation

- 1) Mapping of the river channel and associated natural/physical features (riparian vegetation, sand bars, pools, eroded banks) and manmade structures (bridges, protective embankments, dams) on a suitable scale. This aspect is already covered during the river bank mapping.
- 2) Division of the river channel into segments based on natural and administrative considerations. Natural consideration means the identification of the segment of the river channel where sand deposits are likely to be seen. It should exclude the swift-flowing mountainous segments and segments with continuous rocky bottom. The segments of the stream with significant tidal influence should also be avoided to prevent saline water ingress.
- 3) Estimation of the sand resource in the river channel using suitable methods –pitting, coring, and spiking (shallow seismic surveys in river stretch with sufficient depth and width to run the equipment, resistivity surveys in dry river beds, etc. are not suggested as it needs a higher level of technical input)
- 4) Field surveys for sand auditing should be carried out during the dry season (February - May).
- 5) Take a cross-section across the river at an interval of two times the width of the river or 100 m, whichever is less using a leveling equipment (Dumpy level, Auto Level, Theodolite, Total station, etc.) from a permanent Bench Mark (BM).
- 6) Every cross-section must be surveyed between two documented endpoints from the permanent Bench Mark (BM). GPS reading of both endpoints must be recorded. Set back a distance of 3m or 10% of the width of the river whichever is more on either bank will be left intact. All the elevations of the cross-section including the setback points should be referenced to Bench Mark (BM).
- 7) The interval between adjacent sand depth probing points within a cross-section should be 10 m or less depending on the size and morphology of sand accumulation in the river segment under investigation. A minimum of five intersection points has to be ensured in each cross-section.
- 8) Cross-sections should also be taken at the boundary of local bodies and Kadavus.
- 9) BenchMark (BM) of every cross-section should be permanent structures/permanently documented sites and it should not be any temporary objects like trees, rocks, etc. In the absence of permanent structures, new stones may be erected at least every 200m on one of the

banks and GPS reading of the point should be given. BM location should be documented with Latitude and Longitude, position on the river bank, BM number, survey number, village name, and panchayat, photograph of both the BMs and cross-section site should also be attached. Elevation of the point/structure used for BM with respect to the ground level should also be clearly indicated. The top of survey stones in adjacent survey plots can be used as BM for taking cross-sections. BM level should be linked to MSL. A connection between BMs should be established through fly levels in the field.

- 10) The deepest point in every cross-section (Thalweg) should be measured and indicated in the illustration. A longitudinal profile connecting the Thalweg of entire cross-sections needs to be attached with the sand audit report.
- 11) Ascertain the summer water level in the river for each cross-section after linking (the water level of the river in the cross-section) with the groundwater level in the nearby/surrounding well/wells as far as possible. The depth/redline of sand extraction is fixed as follows: (a) If the lean summer water table in the nearby wells is at par or below the lean season water level in the river channel, then the water level in the river is deemed as the redline., (b) If the lean summer water table in the nearby wells is above the lean season water level in the river channel, the water level in the wells is deemed as the redline. In areas where canal water recharges the wells, these criteria need to be applied with appropriate modification. Latitude and longitude of the wells along with photograph and survey number/house number must be documented.
- 12) Note the thickness of the sand bed at each point by pitting, coring or spiking. The thickness of the sand bed up to 2 m depth from the summer level is to be obtained for computational purposes. However, actual river bed character and composition need to be recorded for every cross-section without fail. Depth up to 2 m has been fixed for computational purposes in view of the very precarious sand availability in Kerala Rivers.
- 13) Estimation of the mineable quantity of sand in the river channel. The mineable quantity of sand means the resource up to the redline (Point 11).
- 14) The length of the zone of influence of each cross-section is the sum of half the distance between the previous cross-section and the subsequent cross-section. eg zone of influence of cross-section no 31 is the sum of half the distance between 31 & 30 and 31& 32.

- 15) Estimate the volume of sand up to 2 m from the water level in the river during lean flow for each segment (multiply the cross-sectional area of sand in each cross-section with the length of influence). Adding up the segment-wise volumes gives the resource for the entire river/Panchayat.
- 16) If the variation in the volume of sand between adjacent cross-sections is more than 50 %, cross-sections have to be taken in between. An in-between cross-section is justified due to the greater variation in the sand between adjacent cross-sections.
- 17) The volume of sand available at each cross-section from above summer water level, up to 1m depth, up to 2 m depth from summer water needs to be computed separately.
- 18) Deduct the sand deposit available in prohibited areas mentioned in Box-1.
- 19) Cadastral map showing the river channel and adjacent plots, roads, village boundary, panchayat boundary, cross-section location, BM location, significant landmarks, existing sand mining kadavus, bathing ghats, bridges, check dams, regulators, pumping stations, water intake points, sand deposits, ecologically sensitive areas, sites of cultural/religious significance and sand mining proposed sites should be prepared and attached with the sand audit report.

Box-1 Prohibited areas as per the Kerala Protection of River Banks and Regulation of Removal of Sand Act, 2001 & MoEFCC Guidelines on Sustainable Sand Mining, 2016

1. No sand removal operation shall be done within 15 m of the river bank
2. No sand removal operation shall be done within a distance of 500 m from any bridges or any irrigation project or pumping station of water supply projects or check dams or from their retaining wall or the venue of any religious or cultural activities conducted on the river bank or the sand bank in river or in part of the river.
3. No sand removal shall be done where there is likelihood of saline water mixing with river water.
4. No sand removal shall be done in a river or in any river bank where Government have expressly prohibited the same by general or special order.
5. Notified biological hot spots and sensitive areas
6. Reaches with placers and other economic minerals
7. River reaches critically affected by bank sliding/slumping/bank erosion
8. Any other reach that need protection as decided by experts

2.2.2 Phase 2 - Resources Allocation

Allocating river sand for mining is based on the ‘Sustainable Sand Mining Management Guidelines 2016’ notified by the Ministry of Environment, Forest and Climate Change, Government of India in 2016.

2.2.3 Phase 3 - Performance evaluation of sand resource accounting

- Evaluation of the performance of sand mining activities during the period of Sand Auditing for the entire river or part.
- It is based on actual lowering (La) of the river bed with regard to expected lowering (Le) of river bed.
- Ideally, La and Le values must be the same
- When there is un-authorized mining $La > Le$
- Actual lowering is obtained from cross-section measurements across the river over a period of sand auditing
- The expected river bed lowering is the permitted quantity of sand to be mined divided by the area of the segment.
- Quantity of sand mined without permit = Area x La- permitted quantity y Efforts to restore the balance of the river system

2.3 Present Status of Sand Auditing

Sand Audit of 31 rivers has been completed from 2012 to 2022. Details of rivers and government orders approving the Sand Audit are given in Table 1.

Table 1 List of Rivers in which Sand Audit Completed

Sl No	River	District	Government Order Approving Sand Audit Report
1	Neyyar	Thiruvananthapuram	G O (MS) No. 235/15/RD 06.06.2015
2	Karamana	Thiruvananthapuram	G O (MS) No. 317/16/RD 24.05.2016
3	Vamanapuram	Thiruvananthapuram	G O (MS) No. 234/15/RD 06.06.2015
4	Ithikkara	Kollam	G O (MS) No. 233/15/RD 06.06.2015
5	Kallada	Kollam	G O (MS) No. 230/15/RD 06.06.2015
5A	Kulathupuzha	Kollam	G.O. (MS) No. 67/2017/RD 04/03/2017
6	Achankovil	Pathanamthitta	G.O (Ms) No. 350/2017/RD 21.10.2017
7	Pamba	Pathanamthitta	G O (MS) No. 231/15/RD 06.06.2015
8	Manimala	Pathanamthitta & Kottayam	G.O (Rt) No.3749/2020/RD 30.11.2020

9	Meenachil	Kottayam	G O (MS) No. 316/16/RD 24.05.2016
10	Muvattupuzha	Ernakulam	G O (MS) No. 490/15/RD 23.09.2015
11	Periyar	Idukki & Ernakulam	G O (MS) No. 232/15/RD 06.06.2015
12	Chalakydy	Thrissur	G.O (Ms) No. 111/17/RD 10.04.2017
13	Karuvannur	Thrissur	G O (MS) No. 488/15/RD 23.09.2015
14	Kechery	Thrissur	G O (Rt) No. 1471/2022/RD 31.03.2022
15A	Bharatapuzha Stretch-I	Palakkad & Thrissur	G.O (Rt) No.1906/2020/RD 25.05.2020
15B	Bharatapuzha Stretch-II	Palakkad & Thrissur	G.O (Rt) No.2882/2020/RD 16.09.2020
15C	Bharatapuzha Stretch-III	Palakkad & Malappuram	G.O (Rt) No.874/2020/RD 28.02.2020
16	Gayathripuzha	Palakkad	G.O (Rt) No.2978/2020/RD 30.09.2020
17	Kadalundi	Malappuram	G O (MS) No. 226/15/RD 06.06.2015
18	Chaliyar	Malappuram & Kozhikode	G O (MS) No. 114/16/RD 12.02.2016
19	Kuttiyadi	Kozhikode	G O (MS) No. 227/15/RD 06.06.2015
20	Kabani	Wayanad	G O (MS) No. 236/15/RD 06.06.2015
21	Anjarakandy	Kannur	G O (MS) No. 489/15/RD 23.09.2015
22	Perumba	Kannur	G.O (Rt) No.1905/2020/RD 25.05.2020
23	Valapatanam	Kannur	G.O (Ms) No.431/18/RD 15.11.2018
24	Mahe	Kannur	G.O (MS) No.384/2019/RD 24.12.2019
25	Sreekandapuram	Kannur	G.O (Rt) No.2222/2020/RD 18.06.2020
26	Vallithod	Kannur	G.O (Rt) No.3647/2021/RD 01.11.2021
27	Chandragiri (Part-1)	Kasargod	G O (MS) No. 228/15/RD 06.06.2015
28	Chandragiri (Part-2)	Kasargod	G.O (Rt) No.2223/2020/RD 18.06.2020
29	Uppala	Kasargod	G.O (Rt) No.1183/2020/RD 19.03.2020
30	Mogral	Kasargod	G.O (Rt) No.2851/2020/RD 11.09.2020
31	Shiriya and Yalkana	Kasargod	G.O (Ms) No.2364/19/RD 24.08.2019

2.3.1 Post-Flood Sand Auditing

In the context of the massive flood that happened in Kerala in 2018, the Government decided to Sand Audit a repeat of six flood-affected rivers as per G.O (MS) No. 254/2019/RD dated 24.01.2019. Post-flood Sand Audit of 5 flood-affected rivers was completed during 2019-2020 (Table 2).

Table 2 List of Post-flood Sand Audit Reports Approved by Government

Sl No	River	District	Government Order Approving Sand Audit Report
1	Pamba	Pathanamthitta	G O (Rt) No. 1858/2020/RD 25.05.2020
2	Muvattupuzha	Ernakulam & Kottayam	G O (Rt) No. 945/2020/RD 05.03.2020
3	Periyar	Ernakulam & Idukki	G O (Rt) No. 1685/2020/RD 04.05.2020
4	Kadalundi	Malappuram	G O (Rt) No. 2246/2020/RD 22.06.2020
5	Chaliyar	Malappuram & Kozhikode	G O (Rt) No. 794/2020/RD 25.02.2020

2.1.4 Key Recommendations of Sand Audit Reports

Restricted Sand Mining Permitted subject to Environmental Clearance is recommended for the 16 Rivers by Sand Auditing (Table 3). As the mineable sand deposits are not available, sand mining is banned for three rivers in 15 rivers (Table 4)

Table 3 List of rivers with sand mining potential stretches

Sl No	River	District
1	Achankovil	Pathanamthitta
2	Pamba	Pathanamthitta
3	Manimala	Pathanamthitt & Kottayam
4	Periyar	Idukki & Ernakulam
5	Muvattupuzha	Ernakulam & Kottayam
6A	Bharatapuzha Stretch-I	Palakkad & Thrissur
6B	Bharatapuzha Stretch-II	Palakkad & Thrissur
6C	Bharatapuzha Stretch-III	Palakkad & Malappuram
7	Kadalundi	Malappuram
8	Chaliyar	Malappuram & Kozhikode
9	Perumba	Kannur
10	Valapatanam	Kannur
11	Sreekandapuram	Kannur
12	Mahe	Kannur
13	Uppala	Kasargod
14	Mogral	Kasargod
15	Shiriya-Yalkana	Kasargod
16	Chandragiri (Part-II)	Kasargod

Table 5 List of rivers in which Sand Mining Banned for Three Years

SI No	River	District
1	Neyyar	Thiruvananthapuram
2	Karamana	Thiruvananthapuram
3	Vamanapuram	Thiruvananthapuram
4	Ithikkara	Kollam
5	Kallada	Kollam
6	Meenachil	Kottayam
7	Karuvannur	Thrissur
8	Chalakudy	Thrissur
9	Kechery	Thrissur
10	Gayathripuzha	Palakkad & Thrissur
11	Kabani	Wayanad
12	Kuttiyadi	Kozhikode
13	Vallithode	Kannur
14	Anjarakandy	Kannur
15	Chandragiri (Part-I)	Kasargod

The data generated through Sand Auditing is crucial in the preparation of District Survey Reports (DSR). Ministry of Environment Forest and Climate Change (MoEF&CC), Government of India has recommended Auditing of Rivers for DSR preparation as per Enforcement and Monitoring Guidelines on Sand Mining (2020) citing the example of Sand Audit of Rivers conducted in Kerala.

Chapter 3

Actions to Control Illegal Sand Mining (2021-2022)

Hon'ble National Green Tribunal, Principal Bench, ND in the Judgment dated 26.02.2021 vide OA No.360/2015, 456, 726/2018 and others, ordered to take strict action against illegal, and unscientific mining of sand in the country. The Tribunal has directed all States/UTs to evolve appropriate comprehensive monitoring mechanisms with designated accountable officers, grievances redressal mechanism, envisaging strict action against violators, including assessment and recovery of compensation for the violators, seizure of vehicles, and review at high levels in the State. Sand Mining in the State is controlled and regulated by the provisions of Kerala Protection of River Banks and Regulations on Removal of Sand Act-2001. River sand mining is completely handled by State Government since 2001 and no portion of the river in the State is leased out to any private parties for sand mining. Sand Mining is done by Kadavu Committees with statutory powers under the supervision of the District Expert Committee (DEC) headed by the District Collector. In this context, the meeting held by Chief Secretary on 20.04.2021 reviewed the compliance status of the Judgment of Hon'ble NGT on the illegal and unscientific mining of sand from the rivers in OA No.360/2015, 456, 726/2018, and other cases. The meeting decided to strengthen the existing system based on the directions of Hon'ble NGT and accordingly, the following steps are taken from 1st April 2021 to 31st March 2022.

3.1 Preparation of District Survey Report (DSR):

As per Order of Hon'ble NGT dated 26.02.2021 in OA 360/2015 and connected cases, the District Survey Report (DSR) is to be prepared by the experts accredited by the National Accreditation Board of Education and Training/ Quality Control Council of India (NABET/QCI) in terms of O.M. of MoEF & CC dated 16.03.2010. Verification of DSR by the District Magistrate and evaluation by the SEAC and approval of SEIAA are also necessary.

The government of Kerala has approved the proposal of CSIR- National Institute of Interdisciplinary Sciences and Technology (CSIR-NIIST), Thiruvananthapuram, the only NABET accredited institute in Kerala on the mining sector for the preparation of District Survey Report (DSR) as per G.O (Rt) No.694/2022/RD dated 14.02.2022.

DSR will be prepared for 10 districts (Pathanamthitta, Kottayam, Idukki, Ernakulam, Thrissur, Palakkad, Malappuram, Kozhikode, Kannur, and Kasargod) where mineable sand deposits are identified through Sand Auditing. CSIR-NIIST proposed 18 months and 1.89 Crores + 18% GST for the preparation of DSR for 10 districts.

3.2 Designate Officers for the Seizure of Sand, Vehicles, tools, and implements used for illegal sand mining and Penalty Provisions:

Section 23 of Kerala Protection of River Banks and Regulations on Removal of Sand Act-2001 (KPRBRRSA-2001) designated **an officer from the Revenue Department not below the rank of Village Officer or a Police Officer not below the rank of a Station House Officer** to seize tools, implements, loading equipment's, vehicles, and other articles used or intended to be used for illegal sand mining, including sand. Based on the direction of Hon'ble NGT, the meeting held by Chief Secretary on 18.02.2022 decided to explore the steps to amend Section 23 of KPRBRRSA-2001 by additionally designating Secretaries of Local Self Governments (LSGs) and Officers of Mining and Geology Department.

As per Section 20 of KPRBRRSA-2001, whoever contravenes any of the provisions of this Act or Rules made thereunder shall, on conviction be punished with **imprisonment for a term of which may extend to two years or with fine which may extend to twenty-five thousand rupees or with both and in case of continuing contravention with an additional fine which may extend to one thousand rupees for every day during which such contravention continues**. The Revenue Department proposed to amend the Section 20 of KPRBRRSA-2001 and to enhance the penalties as prescribed in Section 21(2) of Mines and Minerals (Development and Regulation) Act, Rule 29 of Kerala Minerals (Prevention of illegal Mining Storage and Transportation) Rules 2015 and Rule 108 (1) of KMMC Rules states that for any such violation, involves 2 years of imprisonment or a fine of five lakh rupees or both, for continuous violation, a fine of fifty thousand rupees each may be charged per day.

3.3 Procedures for Seizure and Release of Vehicles Involved in Illegal Mining

As per Rule 27 of Kerala Protection of River Banks and Regulations on Removal of Sand Rules 2002, the Procedure for confiscation of vehicle used for illegal mining and transporting of sand is as follows:

(1) The Police or Revenue officials shall seize the vehicle used for transporting sand in violation of the provisions of the KPRBRRSA-2001 and the Rules 2002.

(2) In the case of seizure of vehicle under sub-section (1), a mahazar shall be prepared in the presence of two witnesses regarding the vehicle and one copy of the same shall be given to the person possessing the vehicle at the time of seizure and on copy to the District Collector.

(3) *The vehicle may be returned if the owner of the vehicle or the possessor remits an amount towards River Management Fund equal to the price fixed by the District Collector with fine within seven days of seizure.*

As per Rule 28 of Kerala Protection of River Banks and Regulations on Removal of Sand Rules 2002, the procedure for the Sale of the vehicle seized is as follows:

(1) The District Collector shall consider every objection submitted within seven days of seizure of any vehicle under Rule 27 and the decision of the District Collector thereon shall be final.

(2) In the case of sale of the vehicle under sub-section (1), if the fine and amount under subsection (3) of Section 27 of these rules has not been remitted, the District Collector shall sell the vehicle by auction.

(3) The amount received from the auction under sub-section (2) shall be credited to the River Management Fund after deducting the expenditure of the auction.

As per Order of NGT dated 26.02.2021 in OA 360/2015 and connected cases, the vehicles, equipment, excavators seized against illegal sand mining based on clause 1 will be fined as provided below:

1. Vehicles/Equipments/Excavators with showroom value more than ₹25 lacs and less than 5 years old. – Penalty: ₹4 Lacs.

2. Vehicles/Equipments/Excavators with showroom value more than ₹25 lacs and more than 5 years but less than 10 years old. – Penalty: ₹3 Lacs

3. For the remaining Vehicles older than 10 years/Equipments/ Excavators which are otherwise legally permissible to be operated and not covered by Serial No. 1 and 2. Penalty: ₹2 Lacs

On repetition of the offense by the same vehicle/ equipment, Order dated 05.04.2019 will be applicable (such vehicle or equipment will be released only on the payment of 50% of the showroom value). The option of release may be available for one month from the date of seizure and thereafter, the vehicles may be confiscated and auctioned. The government of Kerala proposes to enhance the penalty provisions in KPRBRRSA-20021 to 2 years of imprisonment or a fine of five lakh rupees or both, for continuous violation, a fine of fifty thousand rupees each may be charged per day.

The penalty amount collected is remitted to the River Management Fund maintained by District Collectors in Treasury Accounts for being utilized for the restoration of the river environment as per the provisions of KPRBRRSA-2001 and Rules 2002 and the direction of Honb'le NGT.

3.3.1 Number of Vehicles Seized (1.04.2021 to 31.03.2022):

As part of the enforcement and prevention of illegal sand mining, 672 vehicles were seized from different districts of Kerala from 1.04.2021 to 31.03.2022 (Table 6). The maximum number of vehicles were seized from Malappuram (418) followed by Kannur (87) and Kasargod districts (86).

Table 6 Number of vehicles seized against illegal transport of Sand (1.04.2021 to 31.03.2022)

Sl Name	Name of District	Number of Vehicles Seized from 1.04.2021 to 31.03.2022
1	Thiruvananthapuram	Nil
2	Kollam	16
3	Pathanamthitta	Nil
4	Alappuzha	Nil
5	Kottayam	Nil
6	Idukki	22

7	Ernakulam	Nil
8	Thrissur	8
9	Palakkad	24
10	Malappuram	418
11	Kozhikode	5
12	Wayanad	6
13	Kannur	87
14	Kasargod	86
Total		672

3.3.2 Number of Equipments Seized (1.04.2021 to 31.03.2022):

Equipments used for illegal sand mining were seized from Kollam, Malappuram, and Kasargod Districts. Four equipments were seized from 1.04.2021 to 31.03.2022 (Table 7). They include a Concrete Mixing Unit and three ferries.

Table 7 Number of Equipment seized against illegal transport of Sand (1.04.2021 to 31.03.2022)

Sl Name	Name of District	Number of Equipment Seized from 1.04.2021 to 31.03.2022
1	Thiruvananthapuram	Nil
2	Kollam	1 (Concrete Mixing Unit)
3	Pathanamthitta	Nil
4	Alappuzha	Nil
5	Kottayam	Nil
6	Idukki	Nil
7	Ernakulam	Nil
8	Thrissur	Nil
9	Palakkad	Nil
10	Malappuram	Nil
11	Kozhikode	1 (Ferry)
12	Wayanad	Nil
13	Kannur	Nil
14	Kasargod	2 (Ferry)
Total		4

3.3.3 Number of Cases Registered against Illegal Sand Mining:

As part of preventing illegal mining and transport of sand, 683 cases were registered in various districts of Kerala from 1.04.2021 to 31.03.2022. The maximum number of cases were

registered in Malappuram (418) followed by Kasargod (103), and Kannur (83) districts. There were 36 and 22 cases registered in Kozhikode and Idukki districts respectively during this period (Table 8).

Table 8 Number of Cases Registered against illegal Sand Mining (1.04.2021 to 31.03.2022)

Sl Name	Name of District	Number of Cases Registered against Illegal Sand Mining from 1.04.2021 to 31.03.2022
1	Thiruvananthapuram	Nil
2	Kollam	1
3	Pathanamthitta	Nil
4	Alappuzha	1
5	Kottayam	Nil
6	Idukki	22
7	Ernakulam	Nil
8	Thrissur	12
9	Palakkad	1
10	Malappuram	418
11	Kozhikode	36
12	Wayanad	6
13	Kannur	83
14	Kasargod	103
Total		683

3.3.4 Number of Vehicles Released:

Of the vehicles seized against illegal transport of sand over the years, 676 vehicles were released in Kerala after levying a fine amount as per Section 27 of Kerala Protection of River Banks and Regulations on Removal of Sand Act-2001 during 2021-22. The maximum number of vehicles were released from Malappuram (406) followed by Thrissur (154), Kozhikode (60), and Kannur (34) districts (Table 9).

Table 9 Number of vehicles released after levying penalty (1.04.2021 to 31.03.2022)

Sl Name	Name of District	Number of vehicles released from 1.04.2021 to 31.03.2022
1	Thiruvananthapuram	Nil

2	Kollam	Nil
3	Pathanamthitta	Nil
4	Alappuzha	1
5	Kottayam	Nil
6	Idukki	Nil
7	Ernakulam	Nil
8	Thrissur	154
9	Palakkad	3
10	Malappuram	406
11	Kozhikode	60
12	Wayanad	1
13	Kannur	34
14	Kasargod	17
Total		676

3.3.5 Amount of Fine Levied Against vehicles used in Illegal Sand Mining:

The amount of fine levied against vehicles used in illegal transport of sand in Kerala during 2021 to 2022 was Rs. 2.06 Crores. The fine amount collected is remitted to River Management Fund maintained by District Collector and the same will be utilized for river restoration and riverbank protection activities. The highest amount was collected from Malappuram (Rs. 1.07 Crore) followed by Kozhikode (53.64 Lakh), Idukki (15.98 Lakh), Kannur (12.91 Lakh), and Kasargod (11.13 Lakhs) districts (Table 10).

Table 10 Amount of fine levied against vehicles used in illegal sand mining (1.04.2021 to 31.03.2022)

Sl Name	Name of District	The amount of fine levied against vehicles seized against illegal sand mining from 1.04.2021 to 31.03.2022
1	Thiruvananthapuram	Nil
2	Kollam	186000/-
3	Pathanamthitta	Nil

4	Alappuzha	Nil
5	Kottayam	Nil
6	Idukki	1,598,000/-
7	Ernakulam	35000/-
8	Thrissur	50000/-
9	Palakkad	235000/-
10	Malappuram	10743660/-
11	Kozhikode	5364133/-
12	Wayanad	18330/-
13	Kannur	1291400/-
14	Kasargod	1113000/-
Total		20634523/-

3.3.6 Total Penalty Amount Remitted to River Management Fund (RMF)

An amount of Rs 2.57 Crore was remitted to River Management Fund as the total penalty amount against illegal sand mining including the fine against vehicles and equipments seized (Section 27 of KPRBRRSA-2001) and also fine amount as per Section 20 of KPRBRRSA-2001 during 2021-2022. The maximum penalty amount was received from Kasargod (19.38 Lakh) followed by Malappuram (17.76 Lakh), Kozhikode (17.54), Kannur (16.51 Lakh), Idukki (12.38 Lakh) and Thrissur (11.80 Lakh).

Table 11 Total penalty amount remitted to River Management Fund (1.04.2021 to 31.03.2022)

Sl Name	Name of District	Total Penalty Amount received as income to River Management Fund for the period from 1.04.2021 to 31.03.2022
1	Thiruvananthapuram	Nil
2	Kollam	Nil
3	Pathanamthitta	Nil
4	Alappuzha	Nil
5	Kottayam	Nil
6	Idukki	12,38000/-
7	Ernakulam	649/-
8	Thrissur	11,80,000/-
9	Palakkad	2,35000/-
10	Malappuram	17,763144/-

11	Kozhikode	17,54,944/-
12	Wayanad	18330/-
13	Kannur	16,51422/-
14	Kasargod	19,38,850/-
Total		2,57,80,339/-

3.4 Scale of compensation for violations of the polluter pays principle

As per Section 23A of KPRBRRSA-2001, the sand seized shall not, for any reason, be released to any person and the same shall be subjected to confiscation under sub-section (4). The sand confiscated under Sub-Section (4) shall be sold to Nirmithi Kendra or to 'Kalavara' at such rate, as may be fixed by the Public Works Department from time to time and such amount shall be remitted to the River Management Fund.

As per Order of NGT dated 26.02.2021 in OA 360/2015 and connected cases, **the Scale of compensation for violations is to be calculated based on the polluter pays principle and not a mere loss of royalty.** This requires taking into account the **value of the illegally mined material and the cost of restoration of the environment.** Computing a Simplified NPV (Net Present Value) for ecological damages approach is recommended by Hon'ble NGT. NPV is the total benefits from the activity of sand mining (as represented by the market value of the extracted amount) that are deducted from the total ecological costs.

No portion of the river is leased out in Kerala and the sand mining is completely handled by Government. Illegal sand mining reported from the rivers is not from any designated and demarcated Kadavus or sand mining sites. Thus the new norm will be implemented with wider deliberations.

3.4.1 Amount of Fine Collected by the Sale/Auction of Sand Seized

The Sand seized against illegal sand mining will not be released in any case as per Section 23A of Kerala Protection of River Banks and Regulations on Removal of Sand Act-2001. It is confiscated and sold to Nirmithi Kendra or 'Kalavara' at the rate fixed by the Public Works Department. An amount of Rs. 24.79 Lakhs were collected through the sale of confiscated sand

in Kerala from 2021 to 2022. This amount is remitted to River Management Fund utilized for river restoration and conservation programmes. The maximum fine amount was collected from Thrissur (11.40 Lakhs), followed by Kasargod (8.25 Lakh), Kannur (3.47 Lakh), and Kozhikode (1.36 Lakh) districts (Table 11).

Table 11 Amount of fine collected by the sale/ auction of sand seized

Sl Name	Name of District	Amount of fine collected by the sale/ auction of sand that seized against illegal sand mining from 1.04.2021 to 31.03.2022
1	Thiruvananthapuram	Nil
2	Kollam	Nil
3	Pathanamthitta	Nil
4	Alappuzha	Nil
5	Kottayam	Nil
6	Idukki	3550/-
7	Ernakulam	7965/-
8	Thrissur	11,40,000/-
9	Palakkad	Nil
10	Malappuram	Nil
11	Kozhikode	1,36,230/-
12	Wayanad	18330/-
13	Kannur	347822/-
14	Kasargod	825850/-
Total		2479747/-

3.5 Formation of District Level Task Force (DLTF)

AS per Section 9(c, d) of KPRBRRSA-2001 District Expert Committee (DEC) comprising of officers of Revenue, Police, Water Resource, Hydrology, Mining and Geology, Local Self Government, Labour departments, and nominated environmentalists chaired by District Collector controls the mining and transportation of sand from a Kadavu or river bank to another area in the district. As per Section 11 of KPRBRRS Act-2001 Kadavu Committees shall supervise and monitor all activities of sand removal at the panchayat level.

As per Order of NGT dated 26.02.2021 in OA 360/2015 and connected cases, State Government shall constitute a District Level Task Force (DLTF) under the Chairmanship of Deputy Commissioner/District Magistrate/Collector with Superintendents of Police and other related senior functionaries (District Forest Officer, District transport officer, Regional officer-

SPCBs, Senior Officer of Irrigation Department, District Mining Officer) with one/two independent member nominated by the Commissioner concerned. The independent member shall be retired government officials/teacher or ex-serviceman or ex-judiciary member.

District Expert Committee constituted as per Section 3 of KPRBRRSA-2001 functions in all the districts with the following members:

- The District Collector -Ex-officio;
- A representative nominated by the Government from among the members of the District Panchayat representing any area abutting any river of the district;
- The District Labour Officer-Ex-officio;
- The Superintendent of Police in charge of Law and Order in the district - Ex-officio;
- The Deputy Director of Panchayat-Ex-officio;
- A Municipal Chairman/Chairperson from among the Chairman/ Chairpersons or the Municipal-Councils abutting any river in the district-to be nominated by the Government;
- Two persons from among the Presidents of the Grama Panchayath abutting any river in the district-to be nominated by the Government;
- One President from among the Presidents of the Block Panchayats abutting any river in the district-to be nominated by the Government;
- A Hydrologist-to be nominated by the Government;
- One Executive Engineer of the Irrigation Department working in this district;
- An Engineer not below the rank of an Executive Engineer of the Kerala Water Authority working in the district -to be nominated by the Government:
- Three environmentalists] associated with river protection activities- to be nominated by the Government;
- An Engineer (Roads and Bridges) of the Public Works Department, not below the rank of an Executive Engineer and working in the district to be nominated by the Government
- The Geologist/District Officer, Department of Mining and Geology-Ex-officio;
- One Divisional Forest Officer-to be nominated by the Government.
- Revenue Divisional Officer or Revenue Divisional Officers having jurisdiction in the district.

- Three persons to be nominated by the Government from among the registered organization of sand removing workers of the district;
- Tahsildars of all the Taluks in the district and the Additional Tahasildars having jurisdiction in relation to regulation of sand removal in the district.

The government decided to re-constitute the District Expert Committee based on the direction of Hon'ble NGT order in the pattern of the District Level Task Force and the steps are being under progress.

3.5 Enforcement of Monitoring Mechanism and review by the Chief Secretary:

The existing system of sand mining monitoring and enforcement was reviewed by Chief Secretary in the high-level meetings held on 20.04.2021 and 18.02.2022. Additional Chief Secretaries from Revenue, Environment, Water Resources, and Industries Departments, Land Revenue Commissioner, Director of Institute of Land and Disaster Management (ILDM), Member Secretary, Kerala State Pollution Control Board, and director- CSIR- National Institute of Interdisciplinary Sciences and Technology were attended in these review meetings.
