

**GOVERNMENT OF INDIA**  
**MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE**  
**(IMPACT ASSESSMENT DIVISION)**  
**NON-COAL MINING SECTOR**

\*\*\*\*\*

**SUMMARY RECORD OF SPECIAL MEETING OF THE RECONSTITUTED COMMITTEE OF THE EXPERT APPRAISAL COMMITTEE FOR ENVIRONMENTAL APPRAISAL OF NON-COAL MINING PROJECTS CONSTITUTED UNDER EIA NOTIFICATION, 2006.**

The Special meeting of the Reconstituted Expert Appraisal Committee for Environmental Appraisal of Mining Projects (Non-Coal) of the Ministry of Environment, Forest and Climate Change was held on **January 08, 2018** for consideration of Nineteen (19) proposals of River Sand/ Bajri Mining in the State of Rajasthan in pursuance of Hon'ble Supreme Court Judgment dated 16.11.2017. The list of participants is annexed. After welcoming the Committee Members, discussion on the proposals were taken up.

**Date: 08<sup>th</sup> January, 2018 (Monday)**

- (1) Consideration of Nineteen (19) Environmental Clearance Proposals of River Sand/ Bajri Mining in the State of Rajasthan pursuant to the judgment of Hon'ble Supreme Court dated 16.11.2017 as per appraisal of Scientific Replenishment Study submitted by Project Proponents (PPs) - regarding**

A total of nineteen (19) PPs have submitted Scientific Replenishment Study Report prepared by the Central Mine Planning & Design Institute (CMPDI), a subsidiary of Coal India Limited engaged in providing Consultancy Services in the field of exploration, mining, coal preparation, coal utilisation and management, coal technology, coal / material handling arrangement, engineering, and environmental management. Apart from M/s CMPDI and PPs, the officials of the State Government of Rajasthan namely Shri Deepak Tanwar, Senior Mining Engineer, Bharatpur and Shri D. P. Gaur, Senior Mining Engineer, Jaipur were invited to attend the EAC meeting. The list of PPs is as below:

S. No.	Name of Leaseholder	Lease Area	District	Area (in Ha)	River
1	M/s Shekhawat Associates	Jahajpur	Bhilwara	1299.00	Banas
2	Shri Abhishek Choudhary	Asind	Bhilwara	1207.60a	Nekadi, Khari & Masi
3	Shri Sanjay Kumar Garg	Bhilwara	Bhilwara	1947.12	Banas & Kothari
4	Shri Sanjay Kumar Garg	Bijolia Mandalgarh	Bhilwara	1675.85	Banas, Beerach & Menali
5	Rajasthan FORT & PAL	Kapasan	Chittorgarh	335.03	Beerach
6	Shri Himmat Singh Shekhawat	Nathdwara	Rajsamand	773.28	Banas & Lapli
7	Shri Narottam Singh Jadaun	Rajsamand	Rajsamand	489.40	Banas, Gomti & Taleri
8	Shri Mangal Singh	Chouth ka Barwara	Sawai Madhopur	278.67	Banas
9	Shri Rahul Panwar	Malpura	Tonk	316.58	Masi
10	Shri Mangal Singh Solanki	Niwai	Tonk	104.78	Mansi & Bandi
11	M/s Shekhawat Associates	Peplu Masi	Tonk	889.93	Mansi
12	Shri Som Prakash	Peplu Banas	Tonk	3342.10	Banas
13	Shri Pradeep Kumar Sethi	Tonk	Tonk	2389.36	Banas
14	Shri Jaswant Singh	Raipur (Pali)	Pali	1677.00	Raipur, Luni, Sukri
15	M/s S.R. Associates	Deoli	Tonk	1667.78	Banas
16	Shri Mahendra Singh	Kotri	Bhilwara	1191.37	Banas & Kothari
17	Shri Vikramaditya Rathore	Hurda & Masuda	Bhilwara	544.03	Khari & Mansi
18	Shri Rajendra Singh	Deogarh	Rajsamand	339.62	Khari
19	Shri Mahender Singh Ratnawat	Udaipurvati	Jhunjhunu	2932.92	Kantli & Lohagarh

2. The Member Secretary apprised the Committee that the Hon'ble Supreme Court vide its judgment dated 16.11.2017 in the matter of SLP(C) No.34134 of 2013 (State of Rajasthan Vs Nature Club of Rajasthan) has restrained river sand/ bajri mining in the

State of Rajasthan in respect of 82 Letter of Intent (LoI) holders who had submitted their applications to the MoEFCC for grant of EC. The above 19 PPs are covered under 82 LoI holders who have been restrained from carrying out river sand/ bajri mining.

3. The Consultant, M/s CMPDI, on behalf of PPs submitted that it has carried out three-stage study to estimate the replenishment of sand in the State of Rajasthan, as mentioned below:

- In the first stage, preliminary study with field data collection was done. During the field visit, the installation of marked observation rods was undertaken in every leasehold area in the pre-monsoon period. The rise of river bed level in the post monsoon season was then ascertained. While installing the marked observation rods, it was also kept in mind that depending upon the rainfall intensity and duration, there may not be actual discharge in this particular year of 2017 and therefore, data from secondary sources might be required. In view of this, CMPDI has approached Central Water Commission (CWC), Ministry of Water Resources, Government of India, for getting the hydrological data from the observation stations CWC has in the study area of the State of Rajasthan. In addition to this CMPDI has also approached state agencies in Jaipur for getting the hydrological data for those rivers that are not covered by CWC.
- In the second stage, use of remote sensing technology for identification of watershed area relevant to each mine lease was done. In addition to this, the grain size analysis i.e.  $d_{10}$ ,  $d_{30}$ ,  $d_{50}$  and  $d_{60}$ , uniformity coefficient and coefficient of curvature was also determined as an input for estimation of bajri/sand replenishment of rivers under study. Use of Universal Soil Erosion Equation was also done to have an idea of the soil erosion from the river catchment area.
- In the third/ final stage of this study, analytical model study of bed load transport from the non-perennial rivers flowing through the mining lease areas was adopted. The data for this study was taken from field survey, Central Water Commission and approved mine plans of leases. The real time data of major rivers flowing in the state of Rajasthan is collected by CWC periodically through its well established hydrological network stations at critical observation points. This data along with field data was used in the Meyer-Peter's equation for calculation of bed load transport.

4. Based on the above study, M/s CMPDI estimated the annual replenishment of sand as below:

<b>S. No.</b>	<b>Name of Lease holder</b>	<b>Lease Area (in Ha)</b>	<b>Estimated Bed Load (Tonnes /day)</b>	<b>Estimated Deposition/ Replenishment (Tonnes / day)</b>	<b>Sediment Load Deposition per month (in Tonnes)</b>	<b>Annual Replenishment (in Tonnes)</b>	<b>Estimated Annual Replenishment (in Million m<sup>3</sup>)*</b>
1	M/s Shekhawat Associates	1299.00	38977.73	31182.19	935465.70	2806397.10	<b>2.00</b>
2	Shri Abhishek Choudhary	1207.00	2933.97	263443.18	703295.33	2109886.00	<b>1.51</b>
3	Shri Sanjay Kumar Garg	1947.00	33757.01	27005.61	810168.39	2430505.20	<b>1.74</b>
4	Shri Sanjay Kumar Garg	1675.85	61169.15	48935.32	1468059.73	4404179.20	<b>3.15</b>
5	Rajasthan FORT & PAL	335.03	3320.55	2656.44	79693.33	239079.99	<b>0.17</b>
6	Shri Himmat Singh Shekhawat	773.28	72036.46	57629.17	1728875.06	5186625.19	<b>3.70</b>
7	Shri Narottam Singh Jadaun	489.40	50698.48	40558.78	1216763.51	3650290.52	<b>2.61</b>
8	Shri Mangal Singh	278.67	15826.57	12661.26	379837.72	1139513.17	<b>0.81</b>
9	Shri Rahul Panwar	316.58	5414.59	4331.68	129950.38	389851.15	<b>0.28</b>
10	Shri Mangal Singh Solanki	104.78	1484.14	1187.31	35619.36	106858.10	<b>0.08</b>
11	M/s Shekhawat Associates	889.93	5841.78	4673.42	140202.72	420608.18	<b>0.30</b>
12	Shri Som Prakash	3342.10	25754.12	20603.30	618099.09	1854297.28	<b>1.32</b>
13	Shri Pradeep Kumar Sethi	2389.36	31296.24	25037.00	751109.93	2253329.80	<b>1.61</b>
14	Shri Jaswant Singh	1677.00	12799.92	10239.94	307198.22	921594.67	<b>0.66</b>
15	M/s S.R. Associates	1667.78	23590.13	18872.11	566163.28	1698489.86	<b>1.21</b>
16	Shri Mahendra Singh	1191.37	58574.41	46859.52	1405785.80	4217357.39	<b>3.01</b>

S. No.	Name of Lease holder	Lease Area (in Ha)	Estimated Bed Load (Tonnes /day)	Estimated Deposition/ Replenishment (Tonnes / day)	Sediment Load Deposition per month (in Tonnes)	Annual Replenishment (in Tonnes)	Estimated Annual Replenishment (in Million m <sup>3</sup> )*
17	Shri Vikramaditya Rathore	544.03	1953.11	1562.49	46874.72	140624.17	0.10
18	Shri Rajendra Singh	396.20	8198.25	6558.60	196758.03	590274.11	0.42
19	Shri Mahender Singh Ratnawat	2392.00	5543.10	4434.48	133034.45	399103.36	0.29

5. Based on the above replenishment estimations, M/s CMPDI has indicated the following status *vis-a-vis* annual planned production:

S. No.	Name of the Lessees	*Estimates Reserve (in Million m <sup>3</sup> )	*Annual Production Capacity envisaged (as per mining plan in Million m <sup>3</sup> )	Estimated Annual Replenishment (in Million m <sup>3</sup> )	Replenishment Status vis-à-vis planned production
1	M/s Shekhawat Associates	42.54	3.00	2.00	Replenishment less than planned annual production
2	Shri Abhishek Choudhary	31.92	2.00	1.51	
3	Shri Sanjay Kumar Garg	28.23	1.60	1.74	Replenishment more than planned annual production
4	Shri Sanjay Kumar Garg	40.12	2.00	3.15	
5	Rajasthan FORT & PAL	7.81	0.10	0.17	
6	Shri Himmat Singh Shekhawat	30.87	0.20	3.70	
7	Shri Narottam Singh Jadaun	12.30	0.20	2.61	
8	Shri Mangal Singh	8.03	0.80	0.81	

S. No.	Name of the Lessee	*Estimates Reserve (in Million m <sup>3</sup> )	*Annual Production Capacity envisaged (as per mining plan in Million m <sup>3</sup> )	Estimated Annual Replenishment (in Million m <sup>3</sup> )	Replenishment Status vis-à-vis planned production
9	Shri Rahul Panwar	5.72	0.80	0.28	Replenishment less than planned annual production
10	Shri Mangal Singh Solanki	2.46	0.36	0.08	
11	M/s Shekhawat Associates	27.51	2.80	0.30	
12	Shri Som Prakash	24.63	4.00	1.32	
13	Shri Pradeep Kumar Sethi	23.03	4.00	1.61	
14	Shri Jaswant Singh	13.58	0.85	0.66	
15	M/s S.R. Associates	23.65	4.73	1.21	
16	Shri Mahendra Singh	63.56	2.43	3.01	Replenishment more than planned annual production
17	Shri Vikramaditya Rathore	31.34	---	0.10	Variable production capacity
18	Shri Rajendra Singh	6.39	0.11	0.42	Replenishment more than planned annual production
19	Shri Mahender Singh Ratnawat	58.45	5.42	0.29	Replenishment less than planned annual production

6. The Committee noted that apart from the above estimations, M/s CMPDI has made certain conclusions and recommendations, the salient features of which are as below:-

- i. The rivers of Rajasthan are ephemeral in nature and not replenished annually as compared to perennial rivers and therefore, the concept of annual replenishment is not applicable. There is a need to consider appropriate change in the policy applicable for annual replenishment of rivers vis-à-vis mine capacity permits in case of Rajasthan.
- ii. Due to erratic and uncertain occurrence of rainfall in the State, there exists

appreciable variation in the amount of replenishment of the rivers. The replenishment achieved at one point of time may be utilized over more than a year depending upon requirement which needs to be considered while linking annual production with annual replenishment of the rivers in the State of Rajasthan.

- iii. As per their considered opinion, M/s CMPDI mentioned that there is a need to consider the concept of resource accounting of bajri/ sand in the rivers of Rajasthan and take the replenishment as a measure for resource augmentation. The permissible level of bajri/sand in each stretch need to be identified and each year, the resource augmentation based on the replenishment of the river need to be added onto it for updating the bajri/sand. Based on such estimation, quantum of further permits may be decided by State Government.
- iv. Apart from the above, system of Environment Accounting has also been propagated by United Nations (UN) with System of Environment – Economic Accounting 2012-Central Framework (SEEA-Central Framework) which is a statistical framework consisting of a comparable statistics and indicators for policy making etc. It is a tool that helps in tackling natural resource depletion and environmental degradation. For sand mining projects of Rajasthan, Physical Supply Use Tables (PSUT), as provided in SEEA-Central Framework of UN, may be utilized for sustainable use of sand mining and grant of mining permits. The mining lease in Rajasthan occurs in paleo sand deposits and use if PSUT will be appropriate in this case.
- v. The installation of observation points may be appropriately considered for determination of replenishment level in each tract of river under consideration. The observation points may be installed at strategic locations and rise in the level of Bajri/sand may be monitored.

7. The Committee noted the submissions of the Consultant and observed that the present exercise is essentially an empirical attempt of estimating sand replenishment from Meyer's Peter equation. The Committee also enquired about the extent of over-estimation already included in the formula vis-a-vis the actual figures. M/s CMPDI submitted that Meyer Peter's equation takes into account an overestimation of 25-30% on conservative basis. The Committee thus observed that the estimations arrived at by M/s CMPDI in Para 4 are already overstated in comparison to actual figures. However, the Committee also noted the submissions of M/s CMPDI that the sand/ bajri existing in the river beds in State of Rajasthan are paleo sand deposits rather than annually replenished sand as the rainfall

pattern is not regular in the state and therefore, does not lead to annual replenishment.

8. The Committee also interacted with the representatives of the State Government of Rajasthan and noted their submissions. The officials of State Government submitted that due to stoppage of river sand/ bajri mining in the State, many infrastructure projects (covering Government as well as Private) have come to a halt. Additionally, the State Government is also loosing revenue (royalty, license fee etc.). Further, being a mineral rich State, the said order has adversely affected the socio-economic situation w.r.t. loss of jobs/ livelihood etc.

9. After taking note of the submissions of M/s CMPDI, PPs and officials of the State Government of Rajasthan, the Committee observed that unregulated and unscientific river sand/ bajri/ gravel mining causes degradation of rivers, bank erosion, depletion of sand in the streambed, enlargement of river mouths & coastal inlets, threat to infrastructures like bridges, dams, guide banks etc. It adversely affects the fertility of adjoining agricultural land, groundwater profile & recharging, alters soil & moisture conditions, biodiversity, minimise sub-surface flow and causes channel instability. As these sand deposits are surrounded by agricultural fields, agricultural activity would be adversely affected. The Member Secretary informed that the Ministry had published Sustainable Sand Mining Guidelines in 2016 with an objective of sustainable sand extraction and its overall management including transportation. The guidelines had also emphasised on promotion of manufactured sand, artificial sand and alternative technologies in construction materials and processes through development of slag sand, sand from stone chips and its certification under BIS, so as to reduce the dependence on naturally occurring sand and gravel.

10. The Committee made detailed deliberations and observed that the river sand mining proposals for the State of Rajasthan cannot be governed by annual river replenishment studies alone and there is a need for caution in sand/ bajri mining of these paleo deposits. **The Committee also observed that M/s CMPDI has not presented its data in the Scientific Replenishment Study report as the same was accepted to be rough estimate and non-representative of the actual replenishment status.** Considering the irregular nature of the rainfall and resultant non-uniformity in arriving at the sand replenishment status, the following is noted:

- i. The DMG, Govt. of Rajasthan is required to demarcate the stretch of land (lease) in



consultation with State Irrigation Department on which it wants to permit river/ sand mining as the current practice of granting whole Tehsil as a lease is not viable from environmental point of view as it could impact the agricultural and groundwater profile over a large area;

- ii. Based on such area identification, DMG, PPs and M/s CMPDI are required to identify the cross section on which the replenishment study shall be undertaken for calculation of replenishment amount/ rate, as the case may be;
- iii. The areas for 'carrying out mining' and cross-sections for 'monitoring replenishment' are required to be demarcated through latitudes and longitudes along with the Original Ground Level (OGL) of the cross-section and shall be duly authenticated by DMG, Govt. of Rajasthan and State Irrigation Department respectively. The future replenishment assessment may be undertaken based on OGL duly authenticated by State Irrigation Department. No mining shall be carried outside the demarcated area;
- iv. The maximum depth of mining shall be restricted to **1.0 meters** from the OGL;
- v. PPs shall use only Scrapers for mining to ensure that the mining depth be maintained as **1.0 meters**. No other heavy machinery like bucket excavators, JCB machines etc. shall not be used for excavation/digging which may adversely impact the aquatic biota. The PP shall have to ensure that during the course of mining, a levelled cross section is made (to the extent possible) so that replenishment studies in future are carried out with ease and transparency and depth of deposited material is measured. The DMG, Rajasthan shall ensure that levelled cross section is made by PPs before the onset of next rainfall season and the same be communicated to MoEFCC.

11. The Committee made detailed deliberations on the issues mentioned in preceding paragraphs and noted that there is a requirement of identification of active mining area within leased river stretches and subsequent identification and preparation of cross-section for assessing replenishment of sand in coming years. Hence, mining permission is technically required to be granted so as to conduct replenishment studies in future and demonstrate the same to State Govt. to regulate mining of paleo deposits in future. Accordingly, EAC recommended mining of river sand/ bajri to up to **25%** capacity of the annual proposed production capacity subject to submission of information and undertaking as below:

- DMG, State Government to submit demarcated river stretch through latitudes and

longitudes (out of the total lease) where river sand/ bajri mining can be permitted based on available reserves and Original Ground Level (OGL) at each cross section in consultation with State Irrigation Department;

- PPs and M/s CMPDI to submit latitudes and longitudes of the identified cross section, duly authenticated by State Government, which shall be used for replenishment study in future for calculation of replenishment amount/ rate;
- PP to give undertaking that only Scrapers shall be used for mining to ensure that the mining depth be maintained as 1.0 meters (max.) from Original Ground Level and No other heavy machinery like bucket excavators, JCB machines etc. shall be used which may adversely impact the aquatic biota
- State Government of Rajasthan shall regulate the mining operations by PPs and submit report to MoEFCC on quarterly basis. It shall also be ensured that levelled cross section is made before the onset of next rainfall season.
- State Deptt. Of Mines & Geology and PPs are required to submit District Survey Report (DSR) in line with provisions made in Ministry's notification dated 15.01.2016.

The meeting ended with thanks to the Chair.

\*\*\*\*\*

**LIST OF EXPERT APPRAISAL COMMITTEE (MINING - Non Coal Mining Sector)**

Sl. No.	Name and address	Designation	Date: 08/11/18
1.	<b>Dr. Ajai Kumar</b> B-1302, Bestech Park View Spa, Sector-47, Gurgaon, Haryana	Chairman	<i>Ajai Kumar</i>
2.	<b>Shri B Ramesh Kumar</b> H-No. 6-1-134/6, Balram Compound, Padmarao Nagar, Secunderabad- 500025, Andhra Pradesh	Member	
3.	<b>Prof. Dr. K.S. Rana</b> Maharana Manzil, 18, Dholpur House, (D.M. Compound), M.G. Road, Agra-1, Uttar Pradesh - 282001	Member	
4.	<b>Prof. A. K. Bhatnagar,</b> JA/4B, Ashok Vihar-I, Delhi - 110052	Member	<i>A. K. Bhatnagar</i> 2-1-12
5.	<b>Dr. N. C. Karmakar</b> Department of Mining Engineering, Indian Institute of Technology (BHU), Varanasi - 221 005, Uttar Pradesh	Member	
6.	<b>Dr. Hemant S. Sahasrabudhe</b> "Utkarsha", LB-53, Housing Board Colony, Laxminagar, Nagpur-440022	Member	
7.	<b>Prof. S. Ramakrishna Rao</b> 50-120-9/1, Tulasi Mani Regency North Extension, Seethammadhara, Visakhapatnam - 530013 Andhra Pradesh.	Member	
8.	<b>Dr. Himanshu Pathak,</b> Professor, Center for Environment Science and Climate Resilient Agriculture, Indian Agricultural Research Institute, New Delhi 110 012	Member	
9.	<b>Dr. AL. Ramanathan</b> Professor, School of Environmental Sciences, Jawaharlal Nehru University, New Mehrauli Road, New Delhi- 110067	Member	
10.	<b>Dr. Tushar Kant Joshi,</b> Laxmikant Niwas, Salan Gaon, Bhagwantpur, Dehradun- 248009, Uttarakhand.	Member	<i>Tushar Joshi</i>
11.	<b>Shri Santosh Gupta,</b> Flat No. 405, Block -B, Gaur Green Vista, Nyaykhand -1, Indrapuram, Ghaziabad-201014	Member	<i>S. Gupta</i>
12.	<b>Representative of Ministry of Mines</b> <b>Shri. Pushpender Gaur,</b> Dy. Controller of Mines, Ministry of Mines, Shastri Bhawan New Delhi-110001.	Member	<i>Pushpender Gaur</i> 08/11/18
13.	<b>Representative of Indian Meteorological</b> <b>Mr. V.K. Soni,</b> Scientist "E", (Meteorology/Air Pollution), 609, SatMet Building, Mausam Bhawan, Indian Meteorological Department, Lodhi Road, New Delhi-110003	Member	
14.	<b>Representative of Wildlife Institute of India,</b> <b>Dr. (Ms.) Asha Rajwansi,</b> Wildlife Institute of India, Chandrabani, Dehradun-248001	Member	
15.	<b>Director</b> LA-Division (Non Coal Mining) Vayu-305, Indira Paryavaran Bhawan, Ministry of Environment, Forest & CC, Jorbagh Road, Lodhi Road, New Delhi-110003	Member Secretary	<i>Director</i> 8/11/18