



MASTER PLAN REPORT

SUBMITTED BY



KERALA STATE MINERAL DEVELOPMENT CORPORATION LTD

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PREFACE

Kerala State Mineral Development Corporation Ltd., (KEMDEL), a public sector undertaking of Kerala Government with registered office at Thiruvananthapuram (registered under companies Act 1956). The main objectives of the Corporation inter-alia cover exploration and exploitation of mineral wealth of the state.

As we aware of the fact that one of the significant policy of government is protection and value addition of mineral resources of Kerala, under public ownership, with well-defined site specific management plan for mining to ensure ecological protection.

KEMDEL works well aligned with the state government policies to protect mineral resources of the state of Kerala, under public ownership and bring about value addition by way of extraction of these resources in a well-defined site specific management plan ensuring ecological protection.

We have been directed from RIAB, Govt. of Kerala, to prepare a brief master plan report envisaging the future growth of the Company in a long term perspective. As per G.O (Rt) No.934/2021/ID dated 31/08/2021, the Industries department of Kerala was constituted a panel of experts for evaluating and finalizing the master plan of PSU's. We submitted a draft report of master to RIAB for evaluation. We revised our master plan report as per opinion received from panel experts. Accordingly, a ten year prospective plan has been prepared by the Company collecting the available data's and with some thumb level costing towards few items.

KERALA STATE MINERAL DEVELOPMENT CORPORATION LIMITED

I. INTRODUCTION

Kerala State Mineral Development Corporation Limited (KEMDEL) was incorporated in June 1992 with the following objectives:

To search for, discover, prospect, explore, quarry, mine raise, exploit, beneficiate, process, manufacture, make merchantable, buy, sell, import, export, stock and deal in all minerals, mineral resources, ores, metals, rocks, fossil fuels, precious, ornamental and dimension stones and other mineral substances and all products obtained there from.

To enquire by lease, grant, assignment, transfer or otherwise any grants or concessions of any mineral field, mines, mineral and mine contracts, works and premises from any person or persons. Corporation, Company, Government or Local body in Kerala or elsewhere and to perform and fulfill the conditions thereof either by itself or in sub-lease or an arrangement with any other person, company, agencies or body corporate.

To undertake studies and research on mineral resources, their exploitation and its impact on environment in the country or elsewhere and act as consultants, collaborators, Technical experts and agents for the projects connected with the minerals, metals, rocks and fossil fuels.

To promote, establish, run, manage, finance, advise, assist, and collaborate with any association firm, company, enterprise, undertaking or institution to plan organize and implement any programme for the exploration and exploitation of mineral resources in the state and development of their down-stream products on a sound techno-economical basis.

As per the Article of Association of this Corporation, the authorized Share Capital of the Company is Rs.5,00,00,000/- (Rupees Five Crores only) divided into 5,00,000 (Five lakhs equity shares of Rs.100/- (Rupees one hundred) each.

KEMDEL works well aligned with the state government policies to protect mineral resources of the state of Kerala, under public ownership and bring about value addition by way of extraction of these resources in a well-defined site specific management plan ensuring ecological protection.

We have been directed from RIAB, Govt. of Kerala, to prepare a brief master plan report envisaging the future growth of the Company in a long term perspective. Accordingly, a ten year prospective plan has been prepared by the Company collecting the available data's and with some thumb level costing towards few items.

II. FINANCIAL PERFORMANCE

The financial performance of KEMDEL for the last five years is as follows (Rs in Lakhs)

Year	Turn Over	PBDT	PBT
2016-17	87.08	(10.68)	(8.74)
2017-18	84.93	(13.54)	(3.09)
2018-19	10.14	(20.90)	(20.90)
2019-20	13.50	(38.46)	(38.46)
2020-21	270.52	4.05	3.36

III. CURRENT SCENARIO

Today, the projects entrusted upon KEMDEL are based on a time frame and not a continuing job. The work is outsourced to third party as per government norms. For better future prospects of the Corporation and timely completion of projects, it is imperative that an investment from the Government in the form of working capital has become a necessity. As a thumb rule the Working Capital is expected to be approximately 20% of the total project cost. Once the project resumes and revenues generated as proceedings from the sale of the products, the working capital allocated can be recouped and repaid within a fair time period. The company expects its due consideration and favorable response from the Government regarding this matter and to take needful steps to make this a reality.

IV. STAFF STRENGTH OF THE CORPORATION

As per GO No.11/2019/Ind, Dated 30/01/2019, 11 posts were sanctioned by the government. Out of these one post is permanent and the remaining 10 posts are on contractual basis. Instead of one General Manager (Permanent), the proposal for 2 posts, Manager- Marketing and Manager – Administration is under consideration of Government. The procedures for the balance eight posts were completed and candidates have been selected on contractual basis. As per the board decision, dated 14/10/2020, 14 more posts need to be created for managing and smooth functioning of the proposed upcoming projects. This is also under consideration of Government.

V. SWOT Analysis

- a) **Strength:** Being a Govt. of Kerala undertaking company, KEMDEL can part take in the infrastructure development projects in the state, as and where raw materials and

minerals are prime part of the project scope. This would also be beneficial for Government and bring in transparency.

- b) Weakness: Extraction of natural resources is an environmentally sensitive subject. Obsolete dredging and quarrying technologies are adding up to the cost of production, apart from posing threat to the environment. Introduction of globally accepted international standards could be of great advantage, both in terms of productivity and its environmental impact. We have lack of sufficient staff strength and working capital.
- c) Opportunity: Kerala State is endowed with a number of occurrences/deposits of minerals such as Heavy Mineral Sands (Ilmenite, Rutile, Zircon, Monazite, Sillimanite), Gold, Iron ore, Bauxite, Graphite, China Clay, Fire Clay, Tile and Brick Clay, Silica Sand, Lignite, Limestone, Lime shell, Dimension Stone (Granite), Gemstones, Magnetite, Steatite etc. However, mining activities on large scale are confined mainly to a few minerals - Heavy Mineral Sands, China Clay and to a lesser extent Limestone/Lime shell, Silica Sand and Granite. In fact, Heavy mineral sand and China Clay contribute more than 90% of the total value of mineral production in the State. KEMDEL could play an active role and be may be entitled to undertake the mining actives in the state. With the ongoing thrust for Infrastructure development in the state, this could have better prospects for the company.
- d) Threats: Environmental issues, Climate change, Labour issues are the main threats. Since mining is a sensitive subject matter, any one of these challenges could threaten the successful completion of projects.
- e) Challenges: Unless KEMDEL focus on its efficiency, competition from private sectors will be a major challenge for the Company. Kerala being a densely populated state, restriction for conducting mining activities, delay in sanction from various departments etc. could affect smooth functioning of projects.

VI.ASSESSMENT

1) Technology: In a very competitive world, access to technology is critical for any Infrastructure Development Projects. Obsolete technology increases the production cost and are not necessary environment friendly. Introduction of new internationally accepted standards for dredging, material washing, surveying equipments, mineral quarrying, will have a positive impact in Companies bottom line. Existing machineries

and technology has been used for more than 15 years, hence it is time for a technological upgrade in machineries aligning with the emerging market opportunities.

2) Marketing: With lot of high value state funded infrastructure projects are happening across the state, raw material demand for these government as well as private projects are on the high. By framing a suitable introduction into market, company can constructively participate in these projects and equipped to compete with private sectors players as well.

3) Cost Reduction: The raw material for the construction industry is in high demand. To stay on top of the competitive market place, raw material rates needs to be attractive. Since the raw material cost varies from time to time, there needs to keep a check on the production costs. Right investments towards a production setup attuned to today's market demand could add lot of value as well as bring down cost drastically.

4) Environment: Existing machineries and technologies adopted has a huge impact on the environment. Kerala being a densely populated state, implementing mining, quarrying or projects of similar nature, could be of major public concern. These concerns could be effectively tackled by envisaging the project benchmarked against international standards. Giving due importance to designing and executing the project, stressed upon its environmental impact would ensure the longevity.

VII. ONGOING PROJECTS

a. Dredging and Beach Sand Mining at Palakkod, Valiyakadappuram

Access to the Fishing harbor at Palakkod, Valiyakadappuram was blocked due to sedimentation of sand and siltation. Dredging of the channel was inevitable to restore for smooth plying of Fishing Boats and other vessels in and out of Palakkod Fishing harbor. The sand patch along the shore that blocked the entry to the Harbor had to be removed. The ongoing dredging project has been stacking dredged material in the Stock yard at Chittady, Palakkod Fish Landing Center, Kannur for sale. The Collected material has been washed to remove the salt, mud and other impurities. Through e-tender a suitable bidder has been selected. The ongoing project has completed 30% of first phase including sale of Purified sand to the highest bidder.

b. De-silting of Meenkara and Walayar Dams, Palakkad

KEMDEL has been entrusted with De-siltation of Meenkara and Walayar Dams on Turnkey basis vide government order No.22/2021/WRD Dated 07/01/2021. KEMDEL has taken preliminary steps to de-siltation of above dams. For these works, tender formalities has been completed and suitable bidder will be selected in short period for the dredging operation.

VIII. PROPOSED SHORT TERM PROJECTS

A. BEACH SAND MINING OF NICHE DEPOSITS

There are small deposits at beach sand minerals at various locations along the coast of Kerala. There is a lateral current along the coast of south Kerala. This current transports the beach sand minerals along the coast. Where ever these currents are retarded or stopped by any obstruction, the beach sand minerals are dropped from the current to local deposits. Such deposit consists of ilmenite, rutile, zircon and silliminate. Continuous wave action removes the lighter minerals and enriches this deposit to high heavy mineral content of 70 to 90%. The major operators in beach sand mining in Kerala are m/s. Indian Rare Earths Ltd and m/s. Kerala Minerals and Metals Ltd. both of them are not operating such small deposits. These deposits are generally temporary in nature and may get washed off on change of ocean currents. If this material is collected and removed, more material will get deposited. If the material is not collected, the entire material may get washed off on any small change in ocean parameters.

There is potential scope of beach sand mining due to the following points as per the finding of the Commission appointed by the Government of Kerala for this purpose.

- Stability of the barrier beaches, as replenishment of high-grade sand annually along the beach has been a regular process. Thus 'harvesting' of minerals in the Karthikappally, Kayamkulam , Arattupuzha and Thrikkunnapuzha small beach areas is not likely to damage the beach leading to sea incursion provided a barrier of 50 metres is left between the high tide line and the backwater.
- Replenishment in the post-monsoon period cannot be quantified, but it is a sure source of valuable minerals.
- Large dredgers would not cause harm as the heavy mineral percentage is low and hence over 80 percent of the volume will be backfilled and so the reclamation would be rather immediate as the dredging progresses.
- Proper planning and negotiations can avert problems related to rehabilitation in the area with a relatively higher population.
- Mining is likely to provide additional employment and wealth to the local fishermen community.
- The government is likely to gain by way of royalty, excise duty, corporate tax and income tax.
- All the safeguards in the MM (D&R) Act, 1957 and the Rules have to be strictly enforced before and after grant, ensuring the safety of the people and mining area.
- A special office under the Directorate of Mining and Geology should be established exclusively to oversee the mining activity in Arattupuzha and Thrikkunnapuzha Panchayat to ensure compliance with the provisions in the Act and Rules and recovery of minerals as per license terms and conditions.
- The commission swept away fears about sealine erosion and environmental disaster by stating that there is regular replenishment of sand by a natural process. Mineral sand is available on the shore, but a larger quantity is available in the sea basin near the shore. Hence dredging will have to be resorted to if mining is to be done. Dredging is the process by which a canal or river or

shallow sea is deepened by clearing or removing mud and sand from the bottom. It is an artificial intervention.

- "The commission's stand is that the sand-losses incurred in the mining activity will be replenished. The fact is only the sand along the beaches is replenish able. The sand 50 meters inward will not be replenished

COMMERCIAL ANALYSIS

One such deposit that is available now is south of the rock groin built into the Arabian Sea for protecting Thottapally Fishing Harbour. This is located in Muthalakulam village in Karthikappally Taluk, Aalapuzha District. The deposit is seen to be very rich, having 60 to 70% heavy minerals. The deposit has a width of about 30 Meter and a length of about 2000 Meter. The reserve has an area of 60,000 Sq. Meter. The area can yield about 60,000 Tons of beach sand minerals per year. Other area where rich sand is available is Kayamkulam pozhi near Kayamkulam. The deposit has a width of about 30 M and a length of about 1800 Meter. The reserve has an area of 54000 Sq. Meter. The area can yield about 54,000 Tons of beach sand minerals per year. Under the present ocean current regime, the deposition of beach sand will continue in this location and the sand can be mined at least for the next 5 to 6 years. Another deposit that is available is to the south of the rock groin that is built into the Arabian Sea for protection of Kayamkulam Pozhi near Kayamkulam Fishing Harbour.

PLANT AND MACHINERY

The plant and machinery required for the project is Excavator, wheel Lodder, and tipper lorries/Torus Lories. In the first year of operation it is proposed that plant and machinery shall be hired and the sufficient quantity of JCB and other machinery and tipper lorries/Torus Lories shall be mobilised in the year 2 and year 3 from the fund generated from operation. Details are tabulated as under.

Plant & Machinery	Number
Excavator with backhoe	1
Hitachi	2
Tipper	5 (Hire)
Toyo pumps	Hire from KMML
Wheel Loader	2
Weigh bridge	1

Total amount required for plant and machinery is **Rs. 130.00 Lakhs and that of the second year ₹ 330 Crores**. There is an option before the company to go in for hiring for the key machinery for the implementation of the project instead of procuring the machinery.

The man power required for the project is 15. The manpower requirement for the project is tabled below. Indirect employment generation is also there with regard to the implementation of the project. However that is not quantified in the project.

MANPOWER REQUIREMENT AT 100% OPERATIONS LEVEL

SL.No.	Department/Designation	Number of Employees
	TECHNICAL	
1	Mines Engineer	1
2	Supervisor	2
3	Quantity Surveyor	2
4	JCB - Driver	3
5	JCB - Assistant	3
6	wheel Lodder - Driver	2
7	wheel Lodder - Assistant	2
	Sub-Total	15

CLEARANCE AND APPROVAL REQUIRED

KEMDEL will have to obtain mining lease for the deposit and obtain clearances from the following agencies.

1. Indian Bureau of Mines, Bangalore
2. Atomic Minerals Directorate for Research and Development, Hyderabad.
3. Atomic Energy Regularity Board, Mumbai.
4. Kerala State Coastal Zone Management Authority, Trivandrum.
5. National Coastal Zone Management Authority, New Delhi.

****The state Government will gave permission for Mining as part of development, the above clearance and licenses are not needed.***

PROJECT COST

The total cost of the Project is estimated to ₹ 384.00 Lakhs. The cost given above is inclusive of working capital margin ₹ 200.00 Lakhs, the net Capital cost of the Project is ₹184.00 Lakhs. The cost components are tabled below.

Sl. No.	Cost Items	Amount (₹)
1	Land Development	-
2	Site office (On Hire Basis)	-
3	Plant & Machinery	1,30,00,000.00
4	Preoperative Expenses	54,00,000.00
5	Working Capital Margin	2,00,00,000.00
	Total	3,84,00,000.00
	Total Cost without Working Capital margin	1,84,00,000.00

REVENUE AND PROFITABILITY OF THE PROJECT

The important source of the revenue is the sales proceeds of Beach Sand. There is very good demand for mineral sand in Kerala from the Government Companies KMML Ltd and IRE Ltd., Chavara. So KEMDEL support such PSU's by supply their raw material.

The profitability graph of the proposed Project is depicted as under which shows an increasing trend for the project period first 5 years of projection.

PROFITABILITY PROJECTION

Year of Operation	Year 1	Year 2	Year 3	Year 4	Year 5
Profit After Tax (Amount (₹ Lakhs))	211.36	174.34	319.11	554.01	823.94

B. READY MIX CONCRETE PLANT

Ready-mix concrete is concrete that is manufactured in a factory or batching plant, according to a set recipe, and then delivered to a work site by truck mounted in-transit mixers. This results in a precise mixture, allowing specialty concrete mixtures to be developed and implemented on construction sites. The first ready-mix factory was built in the 1930s, but the industry did not begin to expand significantly until the 1960s, and it has continued to grow since then.

Ready-mix concrete is often preferred over on-site concrete mixing because of the precision of the mixture and reduced work site confusion.

Ready-mix concrete, or RMC as it is popularly called, refers to concrete that is specifically manufactured for delivery to the customer's construction site in a freshly mixed and plastic or unhardened state. Concrete itself is a mixture of Portland cement, water and aggregates comprising sand and gravel or crushed stone.

USES

1. It is used in the construction of bridge, dam etc.
2. It is used in the construction overhead roads, pools, multistoried building etc.
3. It can be directly used at the construction site.
4. It help greater element of automation and precision concrete mixing.
5. A much higher quality and more constituent uniformity and increase standardization and speed which is done ten times faster as compared to site mixed concrete.

Advantages of Ready Mixed Concrete

1. **Quality of Concrete:** Ready-mix concrete uses sophisticated plant and equipment, which enables it to produce quality concrete. There is strict control on the quality of all ingredients through rigorous testing, applying stringent controls on process parameters, meticulously monitors key properties of concrete.
2. **Speed of Construction:** Mechanized operations at ready-mix plants ensure that construction activities are speeded up. While the production output from a typical site-mixed concrete operation using 8/12 mixer is around 4-5 m³/hour, the output from a 30-60-m³/hour. Thus there is nearly 10-fold increase in the output which translates into direct savings to the customer.
3. **Elimination of Material Procurement Requirements and Storage Hassles:** With the use of RMC, customers are not required to procure and store cement, aggregates, sand, water and admixtures at site. This not only drastically reduces the space requirements at construction sites but also minimizes efforts on the part of customers to procure different materials, ensure their proper storage and check their quality parameters from time to time.
4. **Saving in Labour Requirement:** Site-mixed concrete is a labour-intensive operation and managing large labour force is a big hassle for the customer. With the use of RMC the labour requirements are minimized considerably, thus benefiting customers.

5. **Reduction in Wastage:** In site-mixed concrete job, wastage occurs in handling of all materials, including cement. The latter is generally of the order of about 2 - 3 kg per 50 kg bag of cement. All such wastages are considerably minimized at RMC plant facility.

6. **Improved Life Cycle Cost:** Increased speed of construction coupled with reduction in labour cost and wastage results in considerable savings to customers. Further, the improved quality of concrete translates into enhanced long-term durability of concrete, thus minimizing the maintenance and repair costs. Overall, when one considers the life cycle costs, the use of RMC become cost-effective in the long run. The benefits directly accrue to the customers.

7. **RMC is Eco-Friendly:** All plants of RMC pass the pollution control norms and are duly certified by the state pollution control authorities. As mentioned earlier, wastages are reduced drastically with the use of RMC. RMC plant can optimizes the mix proportions using the maximum possible potential from each material ingredient. All these improve the environmental performance of concrete.

MARKET OUTLOOK

The RMC sector in India is growing rapidly at a pace of 25-30 per cent annually the business is still in its infancy – the gap between the organised and unorganised sector wide. In industrialized countries ready mix concrete forms around 70-75 per cent of the market share. With India building up its infrastructure and cities see a spurt in verticalisation the ready mix sector is expected to play an increasingly dominant role mainly because it is seen as the most viable option to speed up construction. RMC is also being increasingly preferred alternative for most real estate developers because site mixed concrete is dependent on the availability of labour.

Overall ready mix penetration in India is around 9% but it is projected to be 14% by 2019-20. The demand is highest from the housing segment followed by infrastructure and industry respectively. Due to rapid urbanization all across Kerala, this would be a perfect delivery model for such concrete supply due to space constraints Kerala faces.

MANPOWER REQUIREMENT AT 100% OPERATIONS LEVEL

SL.No.	Department/Designation	Number of Employees
	TECHNICAL & SALES	
1	Plant Manager	1
2	Plant operator	2
3	Plant Helper	4
4	JCB driver	1
5	Lab Head	1
6	Lab Technician	2
7	Lab Helper	2
8	Supervisor	2
9	Sales Executive	3
10	Sales Manager	1
	Sub-Total	19

PROJECT COST

SL.No.	Particulars	Proposed	Total
1	Land & Site Development Exp.	240.00	240.00
2	Buildings	78.80	78.80
3	Plant & Machineries	319.50	319.50
4	Office Automation Equipments	50.50	30.50

5	Technical Knowhow Fees & Exp.	20.00	20.00
6	Preliminary& Pre- operative Exp	10.00	10.00
7	Provision for Contingencies	32.00	32.00
8	Working Capital Margin	500.00	500.00
	TOTAL	1250.8	1250.8

KEMDEL can establish a RMC plant on appropriate government owned land in Kerala at an outlay of 1250.8 Lakhs with an annual production capacity of 2,20,000 CBM

Production	Quantity	Operational Cost	Revenue	PBDT	Employment
Year 1	2.2 Lakhs CBM	2410 Lakhs	3628 Lakhs	1280 Lakhs	20 -30

C. DAM DE-SILTING

There are 81 Dams in Kerala of varies size and capacities in Kerala, of which Kerala Electricity Board is the custodian of 59 dams with 45 reservoirs, while Kerala Irrigation department has custody over 20 dams with 20 reservoirs. It is estimated that 15 dams in Kerala needs immediate intervention by way of de-silting, of which only Mangalam Dam has stated the de-silting project. As per the studies done by the Central Water Commission in 2015, 20% of the dams in the country have attained an average of 23% of siltation which is an indication of a grave situation. This reduction in capacity not only leads to loss of huge potential revenue generation, but also poise great treat during monsoon that can lead to calamities.

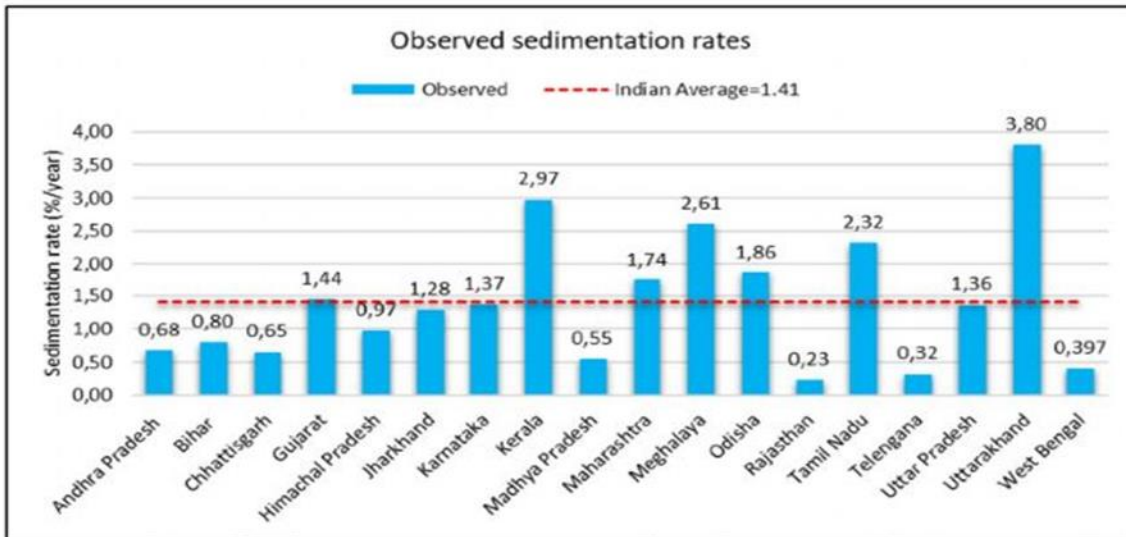


Figure 2 Observed sedimentation rate in some selected states in India (CWC, 2015)

The studies clearly indicate that sedimentation rates in the state are way above the national average. While national average remains below 1.5% per year, Kerala maintains an average of 2.61% per year, topping the chart only second to Uttarakhand.

Sedimentation study stands critical to understand the availability of material that can be monitored predominantly sand and clay, to analyze the revenue potential of the de-siltation project and in turn viability of the project.

MANPOWER REQUIREMENT

The man power required for the project is 34. The manpower requirement for the project is tabled below. Indirect employment generation is also there with regard to the implementation of the project. However that is not quantified in the project.

SL.No.	Department/Designation	Number of Employees
TECHNICAL		
1	Project Consultant	1
2	Supervisor	1
3	Dredger operator	2
4	Helpers	7
5	Quantity Surveyor	1
6	JCB - Driver	3
7	JCB - Assistant	2

8	Hitachi - Driver	3
9	Hitachi - Assistant	2
10	Tipper - Driver	5
11	Tipper - Assistant	4
	Sub-Total	31
	Administrative Staff	
12	Assistant	1
13	Assistant	1
14	Computer Operator	1
	Sub-Total	3
	GRAND TOTAL	34

The production is undertaken at decentralized locations mainly involving experts in the mining field. Therefore the remuneration taken in to account above may even less or more in the execution stage.

PLANT AND MACHINERY

The plant and machinery required for the project is Excavator, wheel Lodder, Lodder and tipper lorries/Torus Lories. For the project operation it is proposed that plant and machinery shall be hired and the sufficient quantity of JCB and other machinery and tipper lorries/Torus Lories.

SL. No.	MACHINERY	Number
1	PNEUMATIC DREDGER	2
2	FEED HOPPER SYSTEM	2
3	Washing Plant – BCD1810	2
4	Dewatering Screen system – 1ST	2
5	PUMP SYSTEM – 1ST	2
6	HYDROCYCLONE -1ST	2
7	HYDROCYCLONE -2ND	2

8	DEWATERING SCREEN SYSTEM – 2ND	2
9	PUMP SYSTEM – 2ND	2
10	STRUCTURAL ITEMS	2
11	CONVEYORS	2 LOT
12	ERECTION & COMMISSIONING	2
13	ELECTRIFICATION	2 SET
14	TRANSPORTATION	2
15	Weigh Bridge (Capacity -----Tonnes)	2
	Earth Moving Equipments - Details	
16	EXCAVATOR 220	2
17	EXCAVATOR WITH BACK HOE	2
18	Hitachi loader	2
19	Tipper	5

COMMERCIAL ANALYSIS

It is proposed in the Project that the approximate quantity of 21, 00,000 M3 sand can be taken in a year from the dams. The sand after reclassification can be expected to be sold out @ ₹ 1200 per m3 and the Residue clay can be disposed of @Rs. 100 per m3. The expected revenue that can be generated from the sale of sand is ₹ 13014 Lakhs.

PROJECT COST

The total cost of the Project is estimated to ₹ 4000.00 Lakhs. The cost given above is inclusive of working capital margin ₹ 1000.00 Lakhs, the net Capital cost of the Project is ₹3000.00 Lakhs. The cost components are tabled below.

Sl. No.	Cost Items	Amount
1	Land Development	-
2	Building and Civil Works	6,600,000.00
3	Plant & Machinery	2809 ,000,000.00

4	Electrical Installations	7,500,000.00
5	Preoperative Expenses	5,000,000.00
6	Working Capital Margin	100,000,000.00
	Total	400,000,000.00

REVENUE AND PROFITABILITY OF THE PROJECT

The important source of the revenue is the sales proceeds of Sand and clay. There is very good demand for these construction materials in the open market. The project can be set up with a project outlay of 4000 Lakhs setting an annual production target of 21 Lakh CBM

Production	Quantity	Operational Cost	Revenue	PBDT	Employment
Annual	21 Lakhs CBM	118,80 Lakhs	130,14 Lakhs	11,34 Lakhs	30 – 40

D. GRANITE QUARRYING AND CRUSHER UNIT

PROPOSED PLANNING

Mining is proposed to be carried out by semi-mechanized method of opencast mining. Drilling and blasting is involved. Excavation of mineral will basically involve removal of overburden by scraper plough tractor attachment. The excavated pits at the conceptual stage shall be backfilled with the overburden generated during overburden removal.

LOCATION

Identify the suitable government land as lease through by District Administration or PPP Model with Private Land.

NEED FOR THE PROJECT AND ITS IMPORTANCE TO THE COUNTRY

The major need of building stone is due to its high compressive strength and durability (among the hardest, dimensional & structural stones) it can effectively withstand the vagaries of nature. Fine-grained granite is employed for ornamental and monumental work as well as for inscription purposes. The mineral-rich colors, and the hardness & density, makes it useful for many applications. Polished slabs and tiles are used in countertops, flooring, retaining walls and landscaping around a center fountain/ pond, staircase and many other design elements (residential and commercial applications). It is also known as the maintenance-free stone. The

proposed mining project will fulfill its end uses in buildings and construction, bridges, paving, monuments and many other exterior projects.

METHOD OF MINING

The proposed method of mining will be Semi mechanized open cast mining. The basic mining techniques adopted will be uses of machines. For the systematic working of open cast mines, the main development work will be the forming of systematic benching. The Mining will be done with the help of tools such as drills, jack hammer, compressors, hand shovel, picks, excavators etc.

SALIENT FEATURES OF MODE OF WORKING

The mining will be done open cast Semi mechanized. The working will be done by forming benches of 5.0m (Average) height. The Stone production will be started from the first year the systematic working of open cast mines, the main development work will be the forming of systematic benching. The height of bench will not be kept more than 5.0m at a time and the width of the benches will be always kept safe according to provisions. The Mining will be done with the help of tools such as drills, jack-hammer, compressors, hand shovel, picks, excavators etc.

Loading of Stone will be done with the help of shovel and excavators at face and at stock yard. Stone will be loaded in Torus by Hitachi (110) loader. The Torus will be used for transportation of Stone and Stone Gitti from mine site to Destination. The cost of the Stone is directly dependent on the size of the material mined. First Stone bench will be opened by removal of Soil / OB than Stone will be mined out either by labour or with the help of JCB / Hitachi.

DEMAND-SUPPLY GAP

There is large demand of masonry stone for road, railway track, building construction etc.

Imports vs. Indigenous production

There will be no import for the project. There will be indigenous inputs in the entire mining activity. It is low category material and to be procured from local market. No export is feasible.

EMPLOYMENT GENERATION (DIRECT AND INDIRECT) DUE TO THE PROJECT

Project will create direct & indirect employment opportunities within the surrounding region. Unit will use good faith efforts to employ local people from the nearby villages depending upon the availability of skilled & un-skilled man-power surrounding the project site.

In operation phase, the proposed project would require significant workforce of non-technical and technical persons listed in table 1. About 22 people will get direct employment and many people will also be affected indirectly and employed with allied and related industries, such as transportation, maintenance, etc

FINAL PRODUCT DETAILS

After all process completed, we have receive Output Product only 80-85% of input.

SL No.	Metal size	Uses
1	40 mm	Road, concrete
2	20mm	concrete
3	12mm	Road, Inter Lock
4	6mm	Inter lock
5	Dust	Tile Brick, solid block

MANPOWER REQUIREMENT

The man power required for the project is 22. The manpower requirement for the project is tabled below. Indirect employment generation is also there with regard to the implementation of the project. However that is not quantified in the project.

SL.No.	Department/Designation	Number of Employees
	TECHNICAL & SALES	
1	Mines Manager	1
2	Plant operator	2
3	Plant Helper	4
4	JCB/Hittachi driver	2
5	Hittachi Assitant	2
6	Driver	1
7	Labour(driller)	5
8	Supervisor	1
9	Sales Executive	3
10	Sales Manager	1
	Total	22

EQUIPMENTS AND MACHINERIES

SL No.	Particulars	Quantity
1	Quarry Primary Stone Crushing Machine	1
2	Quarry Secondary Stone Mining Machine	2
3	Bunker	1
4	Vibrating Screen	2
5	Vibrator Feeder	2
6	Product Conveyer	7
7	Air Compressor stone drilling	2
8	Hitachi Loader with Breaker	1
9	Hitachi 110 Loader	1
10	Torus	1
	Total	345

COST ANALYSIS & PROJECT VIABILITY

WORKING CAPITAL ESTIMATION

Cost of Drilling & Blasting for 1 Pit	= Rs.150/Unit
Cost of Breaking and Loading to Torus	= Rs.150/Unit
Cost of Transportation of Mineral to crusher Unit	= Rs.100/Unit
Power cost	= Rs.150/Unit
Crusher Labour Cost	= Rs.50/Unit
Supervision	= Rs.100/Unit
Maintenance charge	= Rs.100/Unit
Miscellaneous Charge	= Rs. 100/Unit
Royalty & Taxes	= Rs. 100/Unit
Total	= Rs. 1000/Unit
	= Rs. 250/MT
Working Cost for First year	=Rs.500 Lakhs

PROJECT COST

The total cost of the Project is estimated to ₹ **920.00 Lakhs**. The cost given above is inclusive of working capital margin ₹ **500.00 Lakhs**, the net Capital cost of the Project is ₹**420.00 Lakhs**. The cost components are tabled below.

Components of capital Cost

Sl. No.	Cost Items	Amount (Lakhs)
1	Building and civil works	30
2	Plant & Machinery	345
3	Electrical Installation	25
4	Preoperative expenses	25
5	Working Capital Margin	500
	Total	920

REVENUE AND PROFITABILITY OF THE PROJECT

The important source of the revenue is the sales proceeds of Ready mix Concrete. There is very good demand for these construction materials in the open market. The project can be set up with a project outlay of 920 Lakhs setting an annual production target of 2 Lakh MT

Production Capacity of Crusher Unit	= 130-150 Unit/Day
Market Price for 1 Unit (@ Site)	= Rs. 2300-2400/Unit
We have to Sale	= Rs.2000 /Unit
i.e.,	= Rs.500/MT
Revenue (1st year)	= Rs.1000Lakhs
PBDT	= Rs.500Lakhs

UNIT CONVERSION	
1 Unit =	100 CFT
1CFT =	30- 45 KG
1MT =	1000 KG
1 Unit =	3.5-4.5 MT

IX. PROPOSED LONG TERM PROJECTS

a. Capacity Enhancement of Harbors & Rivers by De-siltation

Various fishing harbors in the state are facing exactly the same challenges which the Fishing harbor at Palakkod, Valiyakadappuram faces. To keep the harbor operational and navigable, dredging of the channel which has large deposits of sand among clay and silt. Acute scarcity of sand for use in the construction industry could be mitigated to some extent by way of sale of this sand in the locality. Since the availability of river sand has almost paralyzed, these are the few possible ways to recover sand which construction industry desperately needs in an environmentally friendly manner.

Rivers are also facing similar challenges with deposition of sand and silt along its course. These deposits in turn reduce the carrying capacity of the rivers that can lead to flooding, during monsoon season.

KEMDEL can be that nodal agency appointed by Government for De-Silting work in West coast canal project and Inland Navigation waterway. This proposal will ensure immediate availability of quality sand for public and also generate clay required for brick and tiles units and to make sand available at low cost.

KEMDEL can ensure good quality of sand for the sector with a target production of 2,00,000 CBM in 3 years with an investment outlay of 300 Lakhs.

Production	Quantity	Operational Cost	Revenue	PBDT	Employment
1 – 5 Years	0.6 Lakhs CBM	795 Lakhs	910 Lakhs	115 Lakhs	10 – 12
5 – 10 Years	1.2 Lakhs CBM	1590 Lakhs	1820 Lakhs	230 Lakhs	15 – 20

b. DIMENSIONAL QUARRY MINING

Building stones are naturally occurring rocks which are sufficiently consolidated to enable them to be cut or shaped into blocks or slabs for use as walling, paving or roofing materials in the construction of buildings and other structures. The principal rock types used as building stone include marble, sandstone, slates and granites.

KEMDEL can start the process of dimensional stone mining by manual as well as mechanized and supply as such to suitable clients in and outside the Kerala.

Building Stones are quarried in the form of huge blocks and then reduced into small blocks / slabs / fine pebbles (Jellies) to the required size of the client. These slabs are then carefully dressed by a specialist as per the requirement of client. Building Stone have different patterns or veining. These unique patterns is intriguing and adds to the beauty of the stone.

Proposed mining shall be carried out for a target production of 1,50,000 MT in 3 years with an investment outlay of 1100 Lakhs.

Production	Quantity	Operational Cost	Revenue	PBDT	Employment
1 -5 Years	0.5 Lakhs MT	2160 Lakhs	4320 Lakhs	648 Lakhs	25 – 30
5 – 10 Years	.75 Lakhs MT	3240 Lakhs	6480 Lakhs	777 Lakhs	30 – 40

c. OFFSHORE SAND MINING

As per the provision of the offshore area Mineral Concession rules, 2006 the exploration licenses are conducive/leading to the production lease. The Offshore areas north of Kollam-Kayamkulam region remain not covered by any allocation of blocks for exploration license by Government of India. The Geological Survey of India, Marine and coastal sub division, Mangalore during 2011-12 conducted surveys along an offshore area of 200 Sq km between Azhikal port to Ponnani (Bharathapuzha river mouth) to assess the sandy tract and for delineation of the submerged ancient channels of the river. As per the minutes of the 49th meeting of the State Geological Programming Board, the survey have indicated encouraging results on the sand potential in the off shore area.

KEMDEL propose to obtain exploration license along the offshore of Ponnani area with a view to establish the availability of sand. The extracted sand has to be washed to remove the salt content which is an impurity. This project is envisaged at an outlay of 10000 Lakhs with an annual production capacity of about 32,50,000 CBM

Production	Quantity	Operational Cost	Revenue	PBDT	Employment
Annual	32.5 Lakhs CBM	194,40 Lakhs	230,85 Lakhs	36,45 Lakhs	50 -75

X. FURTHER PROSPECTS

a. IMPORT OF RAW MATERIALS FOR OTHER STATE PSU/ AUTONOMOUS AGENCIES

Many government and semi-government institutions in Kerala are depending on private parties for the imports of raw materials. This is an additional outflow towards government exchequer. KEMDEL can engage in these imports and distributing necessary raw materials setting aside a marginal operational profit. This would be a proposition beneficial for both parties, Government obtaining raw material at a fair price and KEMDEL making a nominal margin.

XI. FINANCIAL SUPPORT AND MANPOWER RECRUITMENT

KEMDEL needs financial support with sanction of manpower recruitment for appropriate short term projects are shown below.

SL. No.	PROJECTS	Project COST of GoK Contribution (Lakhs)	No. Of employees recruited for each projects
1	Beach Sand Mining of Niche Deposits	384	15
2	Ready Mix Concrete Plant	1250.8	19
3	Dam De-silting	4000	34
4	Granite Quarry Mining with Crusher	920	22

XI. ROAD MAP

2022-23 (SHORT TERM PROJECTS)

❖ DAM DE-SILTATION

- Conduct reservoir storage analysis and geological evaluation of sediment resources in appropriate dams for de-siltation after getting permission from government and make DPR for implementation.
- Purchase the machineries for dredging and excavation and also steps taken for establishing de-siltation plant.

❖ READY MIX CONCRETE PLANT

- Identify and purchase the land suitable for Ready mix plant.
- Steps taken for establishing RMC plant.

❖ GRANITE QUARRYING

- Identify the suitable revenue/private land for quarry mining and establishing of crusher plant.
- Necessary steps taken for getting Environmental Clearance and other clearance.

❖ BEACH SAND MINING

- Discuss with KMML, IREL authorities for the possibilities for taking their mining works.
- Approach government for getting permission for beach sand mining as a part for development of harbor (eg Thottapally).

2023-26

- ❖ KEMDEL can start the de-siltation of dam by own equipments by first quarter of 2023.
- ❖ Expand the no. of machineries for dredging and excavation machineries for de-siltation for 2-3 dams at a time.
- ❖ After getting EC for Granite quarry, apply for getting clearance from short fire, PCB, LSGD ...etc
- ❖ KEMDEL can start the Granite quarry with crusher by end of 2024.
- ❖ Erecting and commissioning of RMC Plant.
- ❖ KEMDEL can start the RMC plant by end of 2023.

2026-27(Long TERM PROJECTS)

- ❖ KEMDEL can conduct the prefeasibility study for offshore mining for extraction of minerals as well as production of sand.
- ❖ KEMDEL can prepare DPR for implementing off shore mining and submit to govt. for getting approval.
- ❖ KEMDEL identify suitable lands for dimensional stone mining.
- ❖ KEMDEL approach harbor dept. for getting seasonal maintenance dredging of channels.

2027-31

- ❖ KEMDEL can study the possibility of mineral extraction from solid dredged output from harbor.
- ❖ KEMDEL can start dimensional stone mining after getting EC and other clearances' from concerned authorities.

XII. MAJOR ISSUES AND INTERVENTION REQUIRED FROM GOVERNMENT

❖ Delay in getting permissions from various Govt. Dept.

Many projects submitted before the government for approval are getting delayed at various departments and this will considerably affect the project execution. KEMDEL being a government agency, this could be fast tracked and also could turn advantageous in faster turnaround benefitting the overall project in a positive way.

Considering the scope and industrial requirement of the state, specific to mentioned mining and allied activities in which KEMDEL has was operational proficiency, also core to its objective, its position can be further strengthened if the government can provide its whole hearted support in developing these projects further and translating KEMDEL into a Company, Government can recon with, also providing much needed job opportunities for the people in the State of Kerala.

XIII. CONCLUSION

The existing operations of KEMDEL may be revamped as above to undertake centralized mining related activities under a public sector ownership to protect and value addition of mineral resources available in Kerala. We therefore request that, considering the above projects with the posts proposed for the company may be sanctioned at the earliest.
