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**IREL (INDIA) LIMITED**

**DEPARTMENT OF ATOMIC ENERGY**

**COMMITTEE ON PUBLIC UNDERTAKINGS**  
**(2024-25)**

**TWELFTH REPORT**

**(EIGHTEENTH LOK SABHA)**



**LOK SABHA SECRETARIAT**  
**NEW DELHI**

**TWELFTH REPORT**  
**COMMITTEE ON PUBLIC UNDERTAKINGS**  
**(2024-25)**

**(EIGHTEENTH LOK SABHA)**

**IREL (INDIA) LIMITED**

**DEPARTMENT OF ATOMIC ENERGY**



*Presented to Lok Sabha on 27 March, 2025*  
*Laid in Rajya Sabha on 27 March, 2025*

**LOK SABHA SECRETARIAT**  
**NEW DELHI**

*March, 2025/ Chaitra, 1947 (Saka)*

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## **COMPOSITION OF THE COMMITTEE ON PUBLIC UNDERTAKINGS (2024-25)**

**Shri Baijayant Panda - Chairperson**

### **Members**

#### **LOK SABHA**

2. Shri Tariq Anwar
3. Shri Sudip Bandyopadhyay
4. Shri R.K. Chaudhary
5. Shri Chandra Prakash Joshi
6. Smt. Kanimozhi Karunanidhi
7. Shri Kaushalendra Kumar
8. Shri Shankar Lalwani
9. Smt. Poonamben Hematbhai Maadam
10. Shri B.Y. Raghavendra
11. Shri Mukesh Rajput
12. Shri Sukhjinder Singh Randhawa
13. Shri Pratap Chandra Sarangi
14. Shri Kodikunnil Suresh
15. Shri Prabhakar Reddy Vemireddy

#### **RAJYA SABHA**

16. Shri Neeraj Dangi
17. Shri Milind Murli Deora
18. Shri Narain Dass Gupta
19. Dr. Bhagwat Karad
20. Shri Surendra Singh Nagar
21. Shri Debashish Samantaray
22. Shri Arun Singh

#### **SECRETARIAT**

1. Shri Neeraj Semwal - Joint Secretary
2. Smt. Jyochnamayi Sinha - Director
3. Smt. Mriganka Achal - Deputy Secretary
4. Shri L. Shantikumar Singh - Executive Officer

## **INTRODUCTION**

I, the Chairperson, Committee on Public Undertakings (2024-25), having been authorized by the Committee to submit the Report on their behalf, present this Twelfth Report (18<sup>th</sup> Lok Sabha) on 'IREL (India) Limited'.

2. The Committee on Public Undertakings (2024-25) selected the said subject for detailed examination. The Committee on Public Undertakings (2024-25) was briefed about the subject by the representatives of the IREL on 25 September, 2024 and thereafter took their evidence on 16 December, 2024. The Committee also took oral evidence of the representatives of the administrative Department, the Department of Atomic Energy (DAE) on 16 December, 2024.

3. The Committee (2024-25) considered and adopted the draft Report at their sitting held on 24 March, 2025.

4. The Committee wish to express their thanks to the representatives of IREL and DAE for tendering evidence before the Committee and furnishing the requisite information to them in connection with examination of the subject.

5. For facility of reference and convenience, the Observations and Recommendations of the Committee have been printed in bold letters in Part-II of the Report.

**New Delhi:  
24 March, 2025  
04 Chaitra, 1947(S)**

**BAIJAYANT PANDA  
Chairperson,  
Committee on Public Undertakings**

## ABBREVIATIONS

1.	AMD	-	Atomic Minerals Directorate for Exploration and Research
2.	BARC	-	Bhabha Atomic Research Centre
3.	BSM	-	Beach Sand Minerals
4.	CAGR	-	Compounded Annual Growth Rate
5.	CAPEX	-	Capital Expenditure
6.	CERT-IN	-	Indian Computer Emergency Response Team
7.	CEO	-	Chief Executive Officer
8.	CMD	-	Chairman-cum-Managing Director
9.	CPSU	-	Central Public Sector Undertaking
10.	CRO	-	Chief Risk Officer
11.	CRZ	-	Coastal Regulation Zone
12.	CSIR	-	Council of Scientific and Industrial Research
13.	CSR	-	Corporate Social Responsibility
14.	DAE	-	Department of Atomic Energy
15.	DLP System	-	Data Loss Prevention System
16.	DMRL	-	Defence Metallurgical Research Laboratory
17.	DPE	-	Department of Public Enterprises
18.	EC	-	Environmental Clearance
19.	EMS	-	Environmental Management System
20.	ERM	-	Enterprise Risk Management
21.	EVs	-	Electric Vehicles
22.	FAS	-	Financial Accounting Software
23.	FC	-	Forest Clearance
24.	GDP	-	Gross Domestic Product
25.	Ha	-	Hectare
26.	HAL	-	Hindustan Aeronautics Limited
27.	HREE	-	Heavy Rare Earth Elements
28.	IDCOL	-	Industrial Development Corporation of Odisha Limited
29.	IDS/IPS	-	Intrusion Detection and Prevention Systems
30.	IGCAR	-	Indira Gandhi Centre of Atomic Research
31.	IND-AS	-	Indian Accounting Standard
32.	IRELTDC	-	IREL Technology Development Council
33.	IITs	-	Indian Institutes of Technology
34.	ISO	-	International Organisation of Standardisation

35.	JV	-	Joint Venture
36.	JVA	-	Joint Venture Agreement
37.	KMML	-	Kerala Minerals and Metals Limited
38.	Ktpa	-	Thousand tonnes per annum
39.	LED	-	Light Emitting Diode
40.	LoI	-	Letter of Intent
41.	LREE	-	Light Rare Earth Elements
42.	MCA	-	Ministry of Corporate Affairs
43.	MDO	-	Mine Development Office
44.	MFA	-	Multi Factor Authentication
45.	MMDR Act	-	Mines and Minerals (Development and Regulation) Act
46.	MoU	-	Memorandum of Understanding
47.	MREC	-	Mixed Rare Earth Concentrate
48.	MRECL	-	Mixed Rare Earth Chloride
49.	MSE	-	Micro and Small Enterprises
50.	Nd-Pr	-	Neodymium-Praseodymium
51.	NFC	-	Nuclear Fuel Complex
52.	NGO	-	Non-Governmental Organisation
53.	NIC	-	National Informatics Centre
54.	NITs	-	National Institutes of Technology
55.	NUS	-	Non-Unionised Supervisors
56.	OSCOM	-	Odisha Sands Complex
57.	PAT	-	Profit After Tax
58.	RE	-	Rare Earth
59.	REE	-	Rare Earth Elements
60.	REO	-	Rare Earth Oxide
61.	REPM	-	Rare Permanent Magnet
62.	RMC	-	Risk Management Committee
63.	R&D	-	Research and Development
64.	SmCo <sub>5</sub> / Sm <sub>2</sub> Co <sub>17</sub>	-	Samarium-Cobalt Magnets
65.	TAMIN	-	Tamil Nadu Minerals Limited
66.	TBC	-	Thermal Barrier Coating
67.	TiO <sub>2</sub>	-	Titanium dioxide
68.	UKTMP JSC	-	Ust-Kamenogorsk Titanium & Magnesium Plant Joint Stock Company, Kazakhstan

69. USB - Universal Serial Bus

# REPORT

## CHAPTER I

### INTRODUCTION

#### **Background**

1.1 Indian Rare Earths Limited, whose current name is IREL (India) Limited, was founded in the year 1950. It is a wholly owned Central Public Sector Undertaking (CPSU) of the Government of India, under the administrative control of the Department of Atomic Energy (DAE). It plays a vital role in India's atomic energy sector, particularly in the mining and processing of rare earth minerals and heavy minerals. The Company operates mining and mineral processing plants across Odisha, Tamil Nadu and Kerala. Its activities align with national priorities, including self-reliance in critical minerals, defence applications and nuclear energy. It is a multi-unit-multi-product 'Mini Ratna' Category – I CPSU with “Excellent” MoU rating over the last six consecutive years. The Company's key activities include Mining and Processing, Production, Research and Development, Thorium Extraction and Exports.

#### **Mandate and Vision**

1.2 IREL's mandate is to produce atomic minerals and rare earths, contributing to India's strategic nuclear program and various commercial sectors. Its vision is to be a significant contributor to the global clean energy mission by providing high-quality materials in a responsible manner.

#### **Mission**

1.3 IREL's mission statement is as under:

- To maintain a global reputation and sustainably grow the core business of heavy minerals and rare earths by expanding mining, mineral processing, and rare earth refining asset base domestically and globally.
- To adopt best in class sustainable and technologically advanced business processes and practices across the value chain.
- To foster long term and credible relationships with customers by pursuing a customer first focus.
- To cultivate a conducive environment for continuous improvement, growth and empowerment of current and prospective employees.

- To abide by and promote the highest standards of ethics, governance and integrity in executing responsibilities and managing relationships.

### **Quantum of Rare Earths Reserves in India**

1.4 As furnished in a written reply regarding quantum of rare earth reserves available for mining in India, the principal ore of rare earth (RE) in India is Mineral Sands, commonly known as BSM (Beach Sand Minerals) within which a prescribed substance Monazite occurs, which is a phosphate compound of REs, Uranium and Thorium. In the said source, the availability of RE is reported to be 0.056-0.058% in the form of RE oxide (REO). As per the geological information available, the reported RE resources in India is about 6.9 million tons. Apart from low concentration of REO, mineability is further constrained due to CRZ (coastal regulation zone) regulations, mangroves, forest land and uncontrolled inhabitation.

### **Global Landscape for Rare Earths**

1.5 As furnished by the Company, as per the geological information available, India accounts for around 6% of RE reserves which amounts to around 6.9 million tons out of the total global reserves. India has fifth largest reserves of rare earth elements (REEs). India is among three to four Countries globally having the capability to produce refined REEs, the other Countries being China and Malaysia. China has established a near-monopoly in the global rare earth market, controlling approximately 60-70% of global production and 85-90% of RE processing capacity.

### **Business Overview**

1.6 IREL is involved in mining and processing of BSM which contain Ilmenite, Rutile, Zircon, Monazite, etc. These minerals are essential for various industries, including aerospace, ceramics and nuclear power. IREL mines and processes these atomic minerals containing REEs which are often found together in their natural state. Atomic minerals are suite of seven minerals, details of which are as under:

- (i) Ilmenite, Rutile, Leucosene - Titanium bearing minerals,
- (ii) Zircon - a Zirconium bearing mineral,
- (iii) Sillimanite - a silicate of Aluminium,
- (iv) Garnet - Iron-Aluminium silicate,
- (v) Monazite - phosphatic mineral of Rare Earths, Thorium and Uranium.

1.7 In India, these minerals are mined from raw beach sands commonly known as Beach Sand Minerals (BSM) ore. Ilmenite, Silimanite and Garnet are produced in high quantity, but their prices are generally low in the market. On the other hand, volume of production of Monazite, Zircon and Rutile are lower, but they command high prices in the market. The total installed mineral production capacity is 750 K tons per annum (Ktpa).

1.8 There are 17 REEs, out of which India produces about eight REEs that include Lanthanum, Cerium, Praseodymium, Neodymium, Gadolinium, Dysprosium and Samarium. While REEs are not truly rare in terms of abundance in the Earth's crust, they are rarely found in concentrated and economically viable deposits. Additionally, the process of extracting and refining these elements is complex, requiring specialized technology and infrastructure, so to obtain rare earths at usable purity requires processing enormous amounts of raw ore at great expense, thus the name "rare earths".

1.9 Moreover, REEs such as Thorium and Uranium which come from Monazite are radioactive and handling them is a difficult task. In this context, representatives of Department of Atomic Energy (DAE), during oral evidence before the Committee, explained as under:

“...I would just like to tell you what we mean by Rare Earths... These are Cerium, Praseodymium, Neodymium, etc. They are called rare earth elements. These rare earth elements are very difficult to extract, partly because they come from a mineral called Monazite. Monazite, not only contains these elements, but also contains Thorium and Uranium, which are radioactive. This mineral has certain radiation content and because of this, it has to be very carefully dealt with.”

1.10 Due to their critical applications in electronics, defence, and renewable energy, REEs have gained strategic importance globally. IREL caters to nuclear energy, defence and space sectors by supplying critical rare earths to these industries. Over 90% of its customers in India are in MSE (Micro and Small Enterprises) category. Total revenue from exports of some of the non-strategic heavy minerals such as Ilmenite and Garnet consistently ranges from 40 to 50% of the sales. Revenue from operations has grown at CAGR of over 26%.

### **Share Capital and Shareholding Pattern**

1.11 IREL is 100% owned by Government of India. The authorized share capital is ₹1,000 crore (1,00,00,000 Equity shares of ₹1,000/- each) and the paid-up share capital

is ₹345.46 crore (34,54,600 Equity shares of ₹1,000/- each fully paid up).The Company is not listed on Stock Exchanges.

### Location of IREL’s different facilities

1.12 Location of IREL’s Mineral production units are in Manavalakurichi (MK), Kanyakumari district, Tamil Nadu; Chavara, Kollam district, Kerala and Orissa Sands Complex (OSCOM), Ganjam district in Odisha. The Chemical units are the Rare Earth Extraction Plant located in OSCOM, Ganjam district in Odisha while the Rare Earth Refining Plant is located in Udyogmandal, Aluva, Kerala. The Corporate Research Centre is in Kollam, Kerala and the Registered Corporate Office in Mumbai. As furnished by the Company, there are no offices/units abroad.

1.13 All production units of the Company are certified by ISO:9001:2015, ISO:14001:2015 and ISO:45001:2018. All the R&D centres are NABL accredited as per ISO/IEC 17025 standard.

1.14 The following pictogram shows an overview of locations of IREL’s various facilities:



### CSR Activities

1.15 Details of IREL’s CSR allocation and expenditure in the last 5 years are given in the Table below:

<b>FY</b>	<b>Carry forward balance of previous year (if any) (₹ in Lakh)</b>	<b>Budget Allocation of current year (₹ in Lakh)</b>	<b>Total CSR allocation (₹ in Lakh)</b>	<b>% of allocation of the average of PAT of last 3 years</b>	<b>Total expenditure during the current year (₹ in Lakh)</b>	<b>Balance</b>
<b>2020-21</b>	Nil	484.49	484.49	2	422.15	62.34
<b>2021-22</b>	62.34	678.61	678.61	2	770.77	9.01
<b>2022-23</b>	9.01	1053.17	1053.17	2	1099.20	Nil
<b>2023-24</b>	Nil	1536.22	1536.22	2	1602.02	Nil

1.16 The following Table shows the amount and the areas where the above CSR funds have been utilized during each of the above-mentioned last five years, area-wise:

<b>Area/Intervention</b>	<b>(Amount in ₹ Lakhs)</b>				
	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Preventive health, Water supply and sanitation	65.47	130.57	482.32	611.70	824.86
Education Empowerment enhancing skills	21.44	47.15	58.93	194.32	319.69
Environment Sustainability		19.93	11.79	40.97	24.73
Protection of culture, heritage, etc.	21.96	6.31	4.20	21.82	35.44
Armed forces		2.00			
PM Cares		100.00			
Rural development project	146.10	116.18	200.98	139.71	217.20
Promoting gender equality, old age homes			12.55	63.53	39.23
Promotion of Sports	2.91				
Disaster Management including relief, rehabilitation and reconstruction activities	13.92				
Development of Aspirational district					
Skill development					64.61
Female child empowerment					
Administrative Overheads				27.15	76.26
<b>Total (Amount in ₹ Lakhs)</b>	<b>271.80</b>	<b>422.15</b>	<b>770.77</b>	<b>1099.20</b>	<b>1602.02</b>

## **IREL-IDCOL Limited**

1.17 As furnished by IREL, IREL-IDCOL Limited is a Joint Venture (JV) Company of IREL (India) Limited and Industrial Development Corporation of Odisha Limited (IDCOL) incorporated on 18.01.2018 with IREL holding minimum 51% and IDCOL holding upto 49% of the share capital of the JV Company.

1.18 The objective of IREL-IDCOL Limited is given below:

- a) To mine and separate the minerals from beach sand and to market those minerals anywhere in the world.
- b) Enter into foreign collaboration agreement for value addition, as and when required.

1.19 A CEO and a Project Co-Ordinator has been appointed for the JV Company. A mining Officer of IREL is assisting the Project Co-Ordinator in matters related to JV Company. Rest of the manpower support is occasional and being drawn from major partner of JV i.e., IREL As per Article of Association, the strength of Board members is 15. At present total seven comprising four IREL Directors and three IDCOL Directors are in place.

1.20 As submitted, As per MMDR Act and relevant statute, obtaining various statutory clearances is pre-requisite to mining operation. Pre-project activities of the JV Company are underway to secure statutory clearances for obtaining mining lease. Post receipt of statutory clearances mining lease deed would be executed with State Government of Odisha. Thereafter the project would be operational.

1.21 Commenting on the genesis of IREL-IDCOL and the delay in the starting of the operation, the representatives of IREL in the Committee sitting held on 25.09.2024 has submitted as under:

“...यह जेवी हमने 18 जनवरी, 2018 में फॉर्म किया था। इसका प्रमुख उद्देश्य यह था कि हमने एक रेयर अर्थ प्रोडक्शन के लिए 11 हजार टन का प्लांट एस्टैब्लिश किया था, लेकिन उसके लिए हमारे पास सिर्फ 40 परसेंट कच्चा माल एवलेबल था। इसलिए, हमें एडिशनल माइनिंग लीजेज चाहिए थी। उसके प्रोसेस में हमने यह जेवी बनाकर माइनिंग लीज लेने की कोशिश की। स्टेट गवर्नमेंट से इसलिए जेवी बनाया, ताकि हमें क्लीयरेंस जल्दी मिल जाएं। लेकिन, वैसा नहीं हो पाया। इसके बारे में मैं आपको आगे बताऊंगा। इसमें जो लीज लेने का प्रोसेस है, इसमें सबसे पहले एक गवर्नमेंट एजेंसी

एमडी है, जो एक्सप्लोरेशन रिपोर्ट सबमिट करती है। हमने हलांकि वर्ष 2015 में अपना रिक्वेस्ट डाला था, लेकिन वह एक्सप्लोरेशन रिपोर्ट अप्रैल, 2019 में आई थी। उसके बाद स्टेट गवर्नमेंट को कोऑर्डिनेट्स डेवलप करने होते हैं, जिसमें लैंड रिकॉर्ड की उपलब्धता आती है। लैंड फॉरेस्ट लैंड है या रेवेन्यु लैंड, प्राइवेट लैंड है या गवर्नमेंट लैंड है, सर्वे नम्बर्स क्या है, ये सारे प्रोसेस छः महीने में पूरे होने थे, लेकिन इसमें डेढ़ साल का समय लग गया। वह लगभग अक्टूबर, 2020 में आया। उसके बाद डिपार्टमेंट ऑफ एटॉमिक एनर्जी प्रॉस्पेक्टिव लेसी को नॉमिनेट करता है। वह जनवरी, 2021 में हो गया था। उसके बाद स्टेट गवर्नमेंट को मिनिस्ट्री ऑफ माइन्स से अप्रूवल लेना होता है, फाइव वन सेक्शन ऑफ एमएमडीआर एक्ट। उसके लिए एक महीने का समय निर्धारित है। लेकिन, वह हमें एक साल तीन महीने में मिला था। उसको लेने के बाद स्टेट गवर्नमेंट ने एक लेटर ऑफ इंटेट दिया। लेटर ऑफ इंटेट मिलने के बाद ही इसमें आईआरईएल जेवि का रोल शुरू होता है कि हमें स्टैचुटोरी क्लीयरेंस लेना है। स्टैचुटोरी क्लीयरेंस में एनवायरमेंट क्लीयरेंस होता है, सीआरजेड होता है और फॉरेस्ट क्लीयरेंस होता है। सीआरजेड और ईसी में तो हमने डाटा कलेक्ट कर लिया है। लेकिन, जैसा आपको फॉरेस्ट क्लीयरेंस के बारे में बताया है, उसकी वजह से उसमें डिले हो रहा है। इस प्लांट की कैपेसिटी 3 लाख टन होगी। लगभग 1150 करोड़ के आसपास इसका आउटले है। पे बैक पीरियड छः साल है और इंटर्नल रेट ऑफ रिटर्न 13.85 परसेंट है।”

1.22 On being asked about the timeline for starting operation of IREL-IDCOL, IREL has stated as under:

“Company is under the process of obtaining mining lease for which the process of statutory clearances such as EC, FC, CRZ etc. have been taken up. Tentatively the operations will start within two to three years from the date of getting the mining lease deed executed.”

## **Challenges and Risks**

1.23 As furnished in a written reply, the major challenges faced by the Company are as under:

- The RE market is dominated by China. China controls the market in term of price, supply and demand. The Company, therefore, has to make its market strategy keeping this aspect in mind.
- Over supply and reduced demand impacting price realization and sales.
- End of the value chain product of most of IREL's products are lifestyle products viz. TiO<sub>2</sub> pigment, Aircraft, etc. Adverse impact on GDP growth affects the Company's sales.

- Non-availability of proper land records with revenue/ forest departments in the state.
- Environmental and regulatory compliance requirement are time consuming and costly.
- High CAPEX towards forest diversion and long gestation period.
- Dense inhabitation in coastal areas. Encroachments leading to sterilization of Land (e.g. 1144.0618 Ha, only 834 Ha is available for mining, the balance area is occupied by settlements, public buildings, roads, etc.)
- Change of land use and converting the monazite bearing areas into Forest / Eco-sensitive zones. In all BSM deposit where G-2/G-3 level exploration already completed by AMD or any State Agency, identified area and its land use pattern should not be changed for any developmental program before completion of mining and with due concurrence of DAE.
- Request to nominate state government owned corporations as prospective lessee. No experience in handling radioactive minerals.
- Projects related to Atomic Minerals considered akin to bulk minerals. Exemption from Public Hearing.
- Conducting GRAM SABHA under Forest Conservation Act 1980 for diversion of forest land within ML area for Atomic Minerals may be exempted.
- Lobby of illegal miners developed during opening of the sector creates hindrances at every step including award of contract.
- Undue protests from NGOs instigating locals misrepresenting factual information.

1.24 IREL (India) Limited plays a pivotal role in India's nuclear and strategic material supply chain. In view of China's near-monopoly in the global supply and pricing of REs and the imperative need for India's self-sufficiency in RE production and supply to meet its domestic requirement and to assess India's preparedness to face any global geo-political challenges in terms of RE value chain, the Committee selected IREL (India) Limited for comprehensive examination. In the succeeding Chapters of the Report, the Committee have discussed the main issues pertaining to the Company and in Part-II of this Report, the Committee have given their Observations/Recommendations.

## CHAPTER – II

### PERFORMANCE OF THE COMPANY

#### Physical and Financial Performances of IREL

2.1 The Physical and Financial Performances of IREL for last five years are enumerated in the Table below:

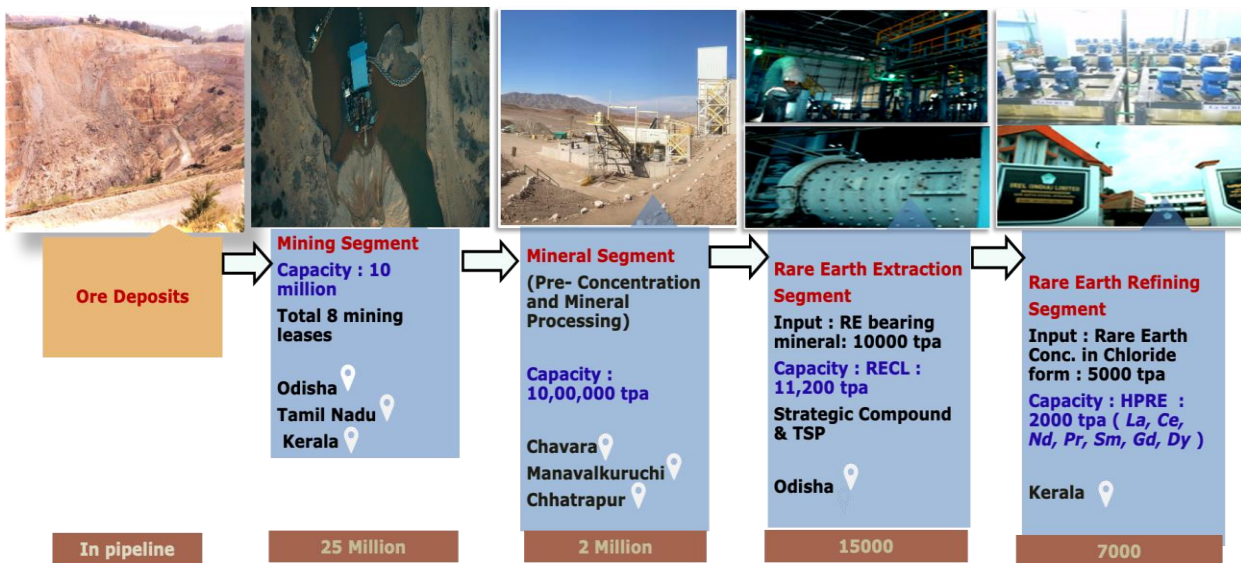
<b>Particulars</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Production of Minerals (Ktpa)	445	460	494	514	532
Production of MRCL (tpa)	5034	4433	5578	5581	5872
Revenue from Operations (₹ in Crore)	1038.74	974.13	1480.00	1897.51	2104.45
Profit/ (Loss) Before Tax (₹ in Crore)	402.94	415.11	746.68	1144.37	1344.84
Profit After Tax (PAT) (₹ in Crore)	291.76	315.69	555.57	808.13	1012.22

2.2 As can be seen from the above data, IREL's production of minerals has been increasing in the last 5 years, from 445 Ktpa in 2019-20 to 532 Ktpa in 2023-24. The same trend can be seen for Chemicals production too, though in a lesser degree, from 5034 tpa in 2019-20 to 5872 tpa in 2023-24. The Company's Profit After Tax (PAT) has also increased significantly in the last 5 years, from ₹291.76 crore in 2019-20 to ₹1012.22 crore in 2023-24. There is tremendous increase in PAT in the last 5 years, even though the production of Minerals and Chemicals has not increased so much during the same time period. Regarding the Company's sudden increase in revenue which is not commensurate with that of production, representatives of IREL, during the sitting of the Committee, explained as under:

“... रेवेन्यू बढ़ा है, लेकिन प्रोडक्शन नहीं बढ़ा, उसका कारण यह है कि पिछले 8 सालों में हमने वैल्यू ऐडेड प्रॉडक्ट्स इसमें ऐड किए हैं। अतः इसमें रेयर अर्थ वैल्यू ऐडेड प्रॉडक्ट्स हैं, रिफाइन्ड रेयर अर्थ वैल्यू ऐडेड प्रॉडक्ट्स हैं, डिस्पोजियम, नियोडीमियम, समेरियम सारे वैल्यू ऐडेड प्रॉडक्ट्स हैं। अतः वैल्यू ऐडेड प्रॉडक्ट्स बढ़ने के कारण इसके रेवेन्यू और प्रॉफिट अच्छे आए हैं।

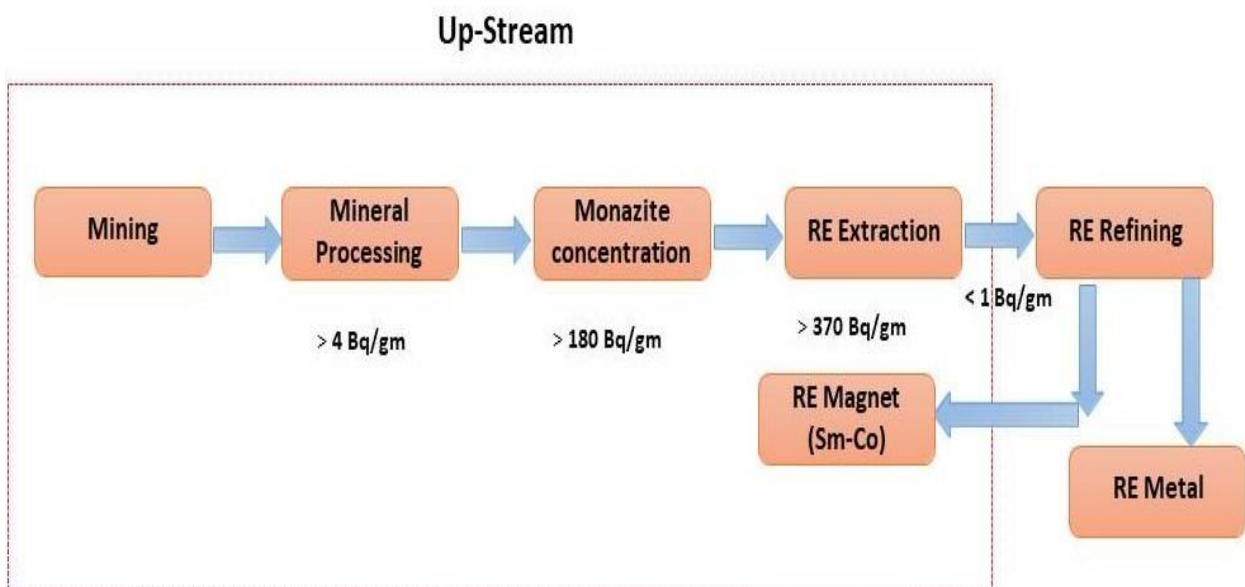
#### IREL's Operations at a Glance

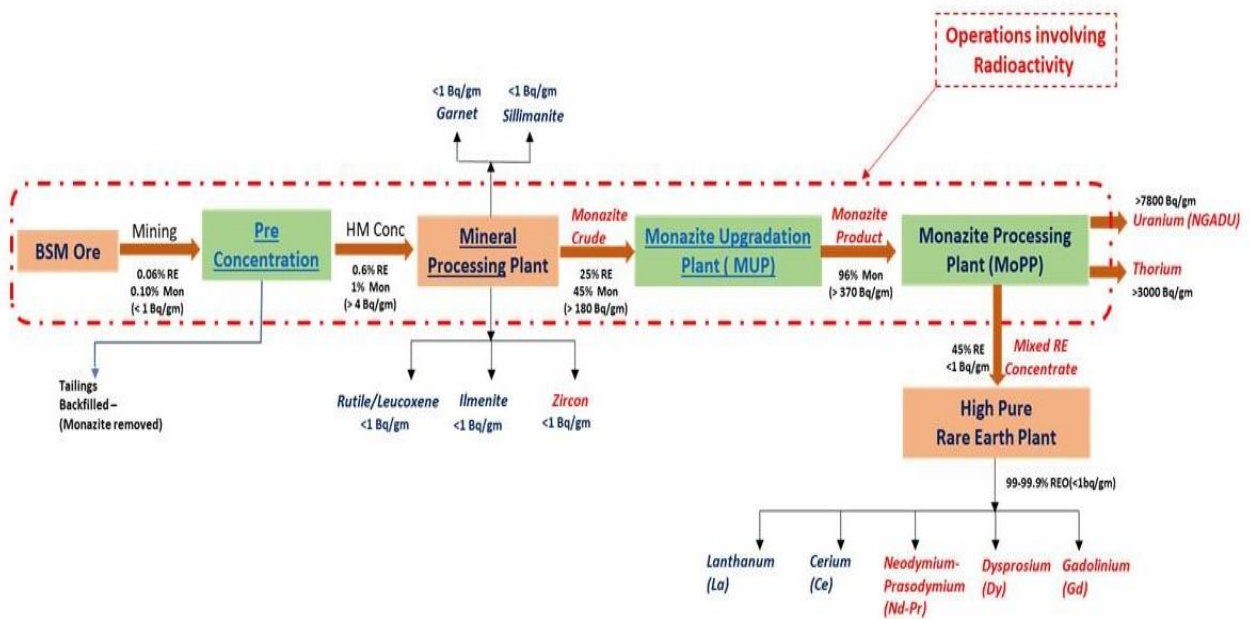
2.3 The following pictogram shows an overall view of IREL's operations:



2.4 The Rare Earth Extraction plant has an installed capacity of producing about 11,200 tpa of mixed Rare Earth concentrate (MREC) and 13,500 tpa of tri-sodium phosphate. The plant also produces strategic materials which are supplied to DAE. Thorium oxalate generated during the process is stored in engineered trenches for future use in the 3<sup>rd</sup> stage nuclear power programme of the Country. Rare Earth Concentrate produced from the Rare Earth Extraction Plant is further refined to produce separated High Pure Rare Earth in its Plant located in Aluva, Kerala.

2.5 The following diagrams show the flow sheet of the entire RE mining to refining process:



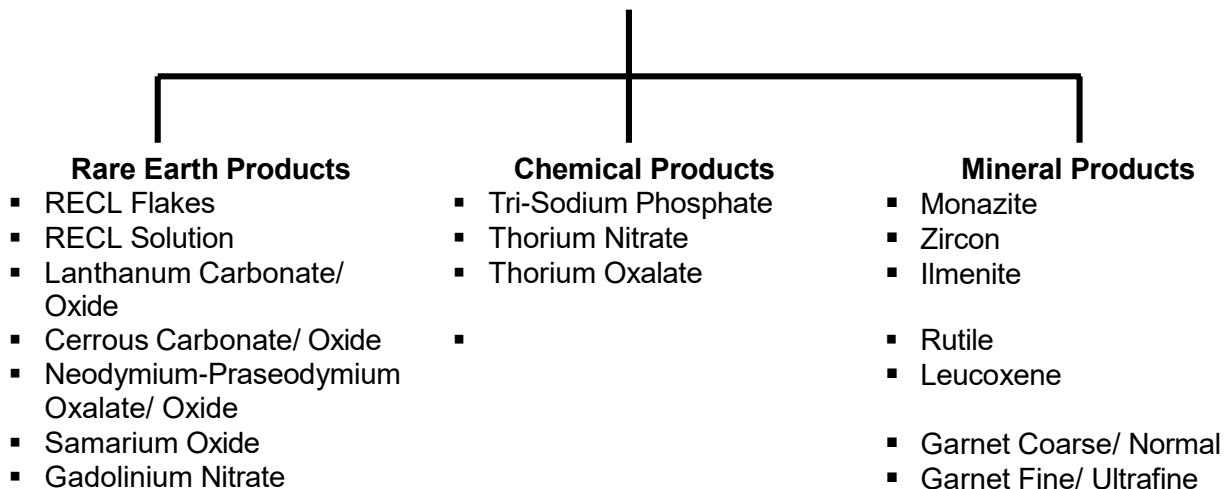


2.6 As can be seen from the above pictograms, Beach Sand Minerals (BSM) Ore are used a raw/source material and after due processing and refining, seven minerals are extracted, namely Rutile, Leucoxene, Ilmenite, Garnet, Silimanite, Zircon and Monazite. From Monazite, rare earths such as Lanthanum, Cerium, Neodymium, Praseodymium, Dysprosium, Gadolinium, along with Uranium and Thorium are extracted, which are used in nuclear energy and other fields of strategic importance.

### Product Profile

2.7 Details of entire range of products of IREL in the Rare Earth, Chemicals and Minerals segments are given diagram below:

#### IREL (India) Limited



- Dysprosium Oxide
- Lanthanum Metal
- Cerium Metal
- SmCo<sub>5</sub> Magnet
- Sm<sub>2</sub>Co<sub>17</sub> Magnet
- Sillimanite

2.8 It has been submitted that mineral products such as Ilmenite, Silimanite and Garnet are produced in high volume, but they command low price in the market. Whereas, Monazite, Zircon and Rutile are produced in lower volume, but they command very high price in the market.

### **Marketing and Export**

2.9 As furnished by the Company, Ilmenite, Rutile and Zircon are major minerals being sold commercially by IREL in India. While Ilmenite is available in bulk in the resources being exploited by IREL, the resources are lean in terms of Rutile and Zircon. Hence, though the market share for Ilmenite is estimated to be in the range of 70 to 80%, that for Rutile and Zircon is estimated to be of the order of about 25-30% and 10-15% respectively. It has also been furnished that being a Government of India Undertaking, IREL caters to the demand of domestic industries and exports only the surplus material. As such, surplus Ilmenite and Garnet are mostly exported.

2.10 It has also been submitted that IREL has consistently been able to garner substantial sales revenue from exports due to the consistent quality of products exported and timely delivery, meeting global standards. The total exports revenue has been consistently ranging from 40 to 50% of the sales meeting the MoU targets set which stands as testimony to IREL's commitment to earn valuable forex for the Country while meeting the core strategic objectives for which IREL was incorporated. The revenue from operations have been constantly increasing at a CAGR of about 22% over the last five years. Regarding export, representatives of IREL, during oral evidence before the Committee, stated as under:

“... we are exporting our products to Asian Countries excluding China. Value-wise it is at 39 percent. So, 39 percent we are exporting excluding China, and for Middle East, it is around 11 percent. I am talking about value-wise. It is 11 percent for Middle East and around 12 percent for Europe and two per cent for U.S and to other Countries, we are exporting 0.3 per cent.”

2.11 Regarding Monazite and other strategic rare earths, it has been submitted that Monazite, being associated with radioactivity is not exported for extraction of rare earths and other associated materials and the same is processed in-house for production of Rare Earths Compounds and strategic materials required by the Department of Atomic Energy. However, individual RE Compounds are free from radioactivity and can be exported. Among the lighter rare earths that are available in the resources exploited by IREL, NdPr (Neodymium-Praseodymium) Oxide has good demand for production of Rare Earth Permanent Magnets. However, IREL does not encourage export of this product keeping in mind the future requirements for magnet production (as and when the industry is set up in India) for Electric Vehicles, etc.

2.12 In a written submission, it has been stated that over 90% of IREL customers in India are in MSE category. Continuous efforts to reduce the cycle time for servicing these customers are made. For export of surplus material, newer methods of logistics are explored for e.g. break bulk shipment of small consignments, in-house stuffing of containers. Multimodal transportation adopted for domestic sales of slow-moving lean grade Ilmenite from Odisha for boosting sales of this product to customers in Southern India owing to reduced logistics cost. For domestic supplies, OTP based dispatches are implemented to make the system foolproof. Despite the Company under entity list of the USA, Customer Relationship Management software in open source is implemented for customers to place orders online and get real time information on their orders.

2.13 Explaining how MSMEs work in the minerals value chain, representatives of IREL stated, during oral evidence before the Committee, as under:

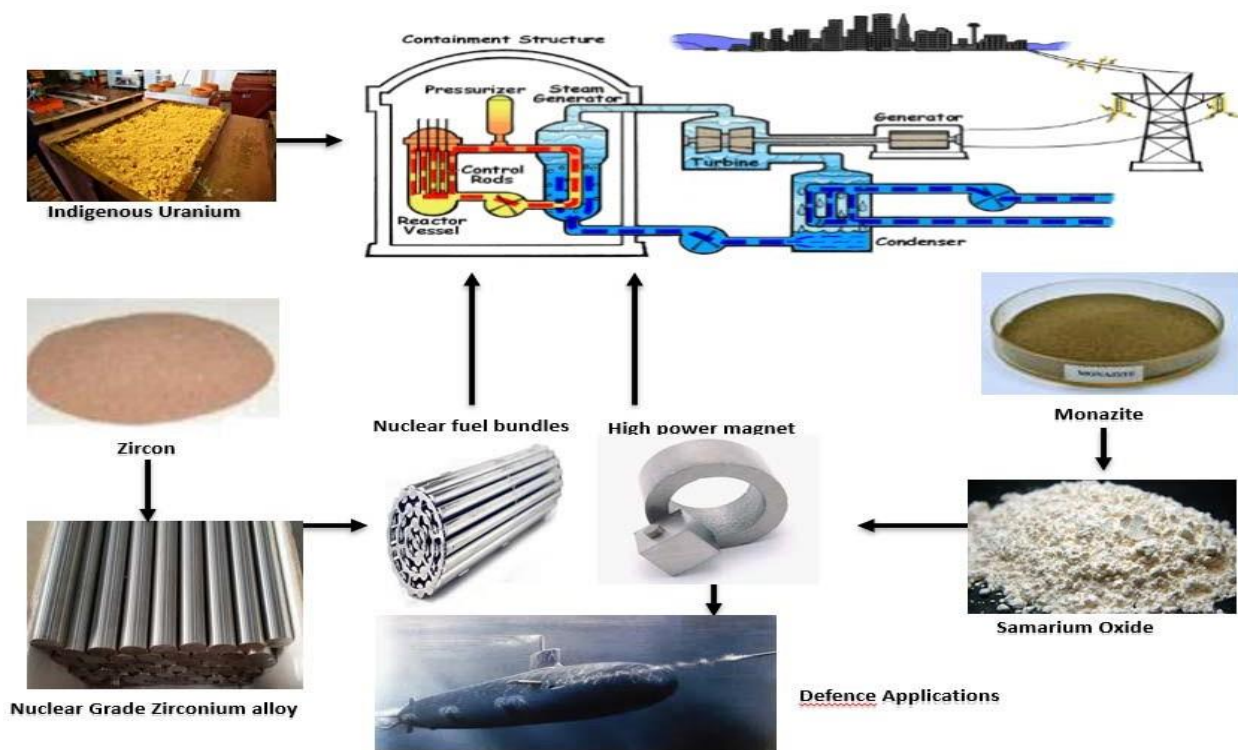
“एमएसएमई ज्यादा बड़ी कंपनियों के लिए एनसिलिअरी का काम करती हैं। जैसे डिफेंस इंडस्ट्री है और डिफेंस के लिए एक क्वालिटेटिव वेल्डिंग इलेक्ट्रोड की जरूरत पड़ती है। हमारा मेटेरियल एमएसएमई में जाता है और वह वेल्डिंग इलेक्ट्रोड बनाते हैं और वेल्डिंग इलेक्ट्रोड शिप बिल्डिंग में यूज होते हैं।”

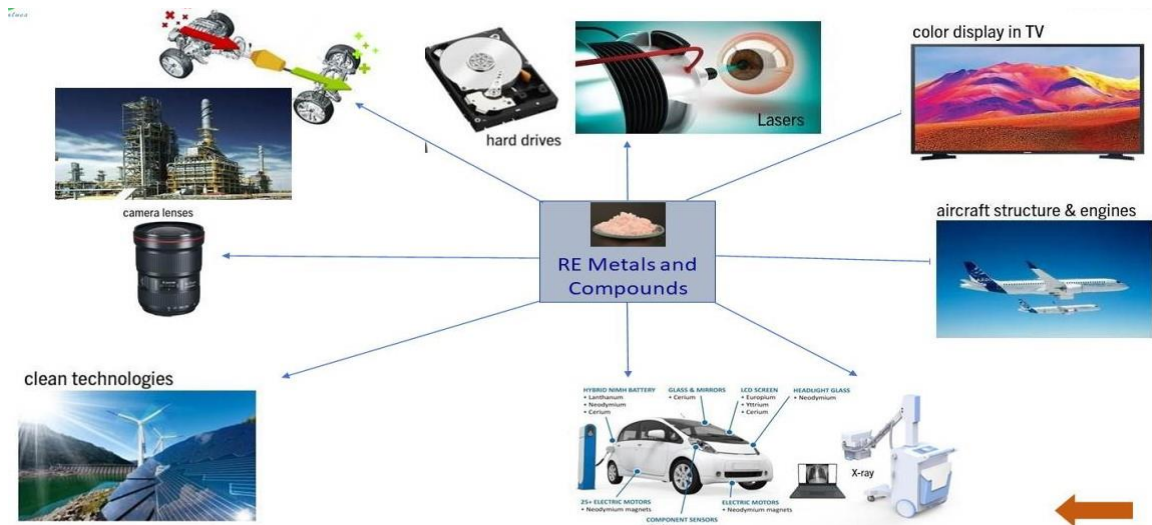
2.14 IREL has also submitted that under the new product development initiative, development of high purity dysprosium oxide and gadolinium nitrate hexahydrate has been undertaken with close interaction with end-users. Producing these products required for strategic nuclear applications from indigenously mined ore insulates the Country from geo-political risk of non-supply from the major supplying Country in India's neighborhood.

## Strategic Application of IREL's Products

2.15 REEs and their associated minerals play a crucial role in modern technology, defence, energy, and industrial applications due to their unique magnetic, luminescent, and electrochemical properties. The processed mineral products find application in number of commercial sectors such as aerospace industry, infrastructure development, ceramics, foundries, oil industries etc., while REs are used in niche applications such as renewable energy, EVs, space, defence, consumer electronics, etc. IREL contributes to the atomic energy programme by way of supplying strategic material to DAE. IREL also has excellent contribution for sustenance of more than 2000 industries operating in the value chain of its mineral & Rare Earth products. IREL is significant contributor to the global green energy mission by providing high quality performance-enhancing materials and operating in socially responsible manner.

2.16 The pictograms below show the various applications of REEs and their associated minerals:





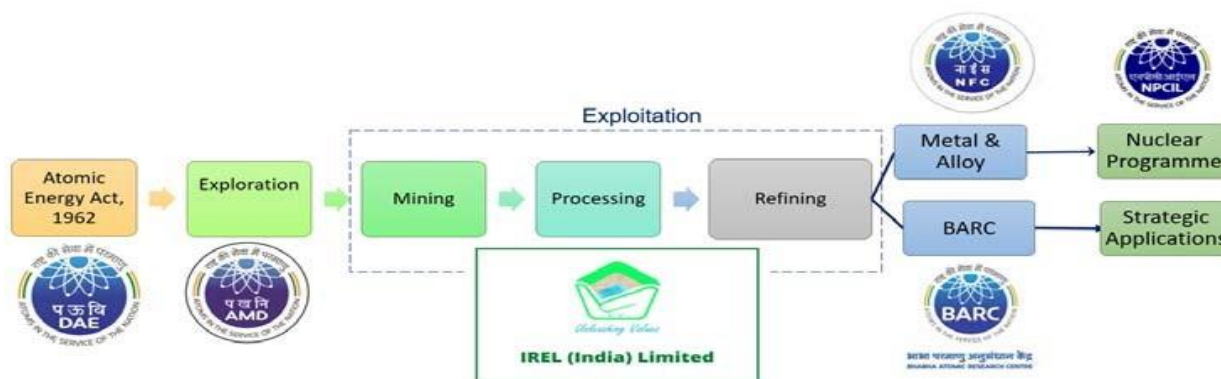
## Introduction of New Products

2.17 Regarding the new products or technologies the Company has introduced in the last 5 years, the Company has furnished that new technologies have been introduced in the field of rare earths applications. Rare Earth Permanent Magnet (REPM) facility at BARC Campus, Visakhapatnam has been established to produce Rare Earth Permanent Magnets (Samarium Cobalt) to meet the requirement of Defence and Atomic Energy sectors. The Rare Earth and Titanium Theme Park is established at Bhopal to produce RE metals, recovery of REE from end-of-life cycle magnets, production of LED/ Lamp phosphors, etc. All the above are new products being produced in the Country for the first time. Further, facilities have also been established for extraction of Dysprosium and Gadolinium for strategic applications, which are Heavy REE available in Indian resources in traces to the tune of 1 and 7 ppm only.

2.18 Besides the above, it has also been furnished that IREL has also developed thermal barrier coating (TBC) material such as yttrium stabilized zirconia and lanthanum zirconate which has application in defence and strategic sectors.

## Contribution to India's Nuclear Energy Sector

2.19 The following chart shows the relationship between IREL and India's Nuclear Programme:



2.20 As furnished by the Company, the contributions of IREL to India's nuclear energy sector are as under:

- Supply of Zircon to NFC for production of zirconium alloy to house nuclear fuel.
- Supply of critical Rare Earths i.e. Gadolinium and Dysprosium to DAE.
- Supply of Rare Earth Permanent Magnets (Samarium-Cobalt) magnets to DAE. The facility for production of Rare Earth Permanent Magnet for use in Atomic Energy and Space sectors has been set up at Vizag which was dedicated to the nation by the Hon'ble Prime Minister on 11<sup>th</sup> May 2023.
- Stockpiling of Thorium for use in 3<sup>rd</sup> stage atomic power programme.

## Major Projects Completed

2.21 Some of the major projects completed by the Company are given below:

### a) Rare Earth Permanent Magnet Plant, Vizag, Andhra Pradesh

IREL has established a Rare Earth Permanent Magnet (REPM) Plant in BARC campus at Vizag, Andhra Pradesh for producing Samarium-Cobalt magnets for use in strategic sectors of such as Defence and Atomic Energy. IREL has integrated and upscaled the laboratory scale technologies developed by BARC/ DMRL to industrial scale. The facility was dedicated to the nation by Hon'ble Prime Minister on the occasion of "25th Anniversary of the National Technology Day". Magnets of designed grades have been supplied to BARC and DMRL for testing in end use applications.

**b) Rare Earth Metal Production Facility, Bhopal, MP:**

IREL has established a Rare Earth Metal producing facility at Bhopal, Madhya Pradesh by carrying out industrial engineering and upscaling the scientific principles developed by BARC in laboratory scale. Production of Cerium and Lanthanum metals have been operationalized and the metals so produced have been supplied to leading R&D institutions and industry to develop specialty steels.

**c) Capacity Expansion of OSCOM Plant in Ganjam District of Odisha.**

IREL has undertaken Capacity Expansion of OSCOM Plant in Ganjam District of Odisha with an objective to increase the mineral production capacity from 2.84 lakh tons per annum (tpa) to 6.35 lakh tpa. The project has been commissioned.

**d) Desalination Plant:**

5 million liters per day (MLD) sea water desalination plant at OSCOM Plant at Ganjam, Odisha has been established based on indigenous technology developed by BARC. The plant was dedicated to the Nation by Hon'ble Prime Minister of India on 5<sup>th</sup> March 2024. Part of the water produced from the plant will be distributed to nearby villages under the company's CSR policy to relief the local inhabitants from the water scarcity in the region.

## **Major Projects Ongoing**

2.22 Some of IREL's major ongoing projects are given below:

**a) Rare Earth & Titanium Theme Park, Bhopal, Madhya Pradesh**

IREL is setting up a Rare Earth and Titanium Theme Park at Acharpura industrial facility in Bhopal by carrying out industrial engineering and upscaling the scientific principles developed by BARC in laboratory scale. The facility is developed at pilot scale to demonstrate industry scale technology to entrepreneurs to have hands on experience and motivate them to set up commercial plants. The facility also aims to develop skilled manpower through skill development in operating the commercial plants.

The pilot facility for production of Metals has been completed. Further, the facility for recovery of Rare Earths from end of life magnets aiming towards circular economy has been operationalized. Facilities for production of LED lamp/ phosphor, Neodymium metal and titanium sponge are under various stages of procurement and installation.

**b) Titanium Slag**

IREL is in the process of setting up a Joint Venture Company with UKTMP JSC, Kazakhstan for setting up a titanium slag plant based on Ilmenite produced from eastern mines. The draft Joint Venture Agreement (JVA) has been recently approved by the Government of India. After the same is signed between both the parties and company incorporated, pre-project activities such as preparing feasibility report, obtaining statutory clearances, detailed engineering and construction activities will be taken up.

**c) Technology Demonstration Plant:**

IREL is establishing a Technology Demonstration Plant for the production of 4N pure nano-titania and nano-zirconium oxychloride based on in-house technology. The products find applications in paint industry and the high purity zirconium oxychloride can be a feed stock for production of Nuclear grade zirconium oxide.

**d) IREL-IDCOL Limited:**

IREL has formed its first subsidiary along with Industrial Development Corporation of Odisha Limited (IREL-IDCOL Limited) for harnessing the atomic mineral deposits in the state of Odisha. Letter of Intent (LoI) over an extent of 852 Ha. has been received. Pre-project activities for obtaining EC, CRZ clearance, Forest clearance & NOC from Chief Wildlife Warden, etc. have been initiated for obtaining mining lease prior to taking up construction activities.

**e) Bramhagiri Mineral Sand Deposits:**

IREL has received LoI over an extent of 1487 Ha for the above deposit in the state of Odisha. Activities for selection of Mine Development Office (MDO) has been undertaken and the agency so selected will obtain all the statutory clearances like EC, CRZ, Forest etc., develop mining plan and other related activities prior to undertaking mining operations. Evaluation of offer received for appointment of an MDO is under progress.

**f) Inayam-Midalam Mineral Sand Deposits:**

IREL has received LoI over an extent of 1144 Ha for the above deposit in the state of Tamil Nadu. Activities for obtaining EC, CRZ recommendations, forest clearance, etc. have been initiated for obtaining mining lease. The deposit will be for sustaining existing operations of MK unit in Tamil Nadu.

**g) Joint Venture with Tamil Nadu Minerals Limited (TAMIN):**

Joint Venture Company by the name IREL TAMIN Limited has been incorporated on 28<sup>th</sup> June 2024. The company is approaching DAE to advise the State Government to identify the precise area so that the prospective lessee can be nominated by DAE.

**Investment Plans for the next 5 years**

2.23 The following Table enumerates the Company's key investment plans for the next 5 Years:

<b>Sl. No.</b>	<b>Project</b>	<b>Details</b>	<b>Estimated Investment</b>
(a)	Bramhagiri Deposit, Odisha (1487 Ha.)*	A Mining and Mineral Separation Plant would be established for production of 5 lakh tons per annum (tpa) of processed minerals.	₹2800.00 Crore. The investment will be met from internal accruals.
(b)	Inayam-Midalam deposit in Tamil Nadu (1144 Ha.)*	Excavation of around 15 Lakh MT Mineral sands per year from the mines for sustenance of IREL's Plant in Manavalakurichi.	₹7.00 Crore. The investment will be met from its internal accruals.
(c)	IREL-IDCOL Limited (852 Ha.)*	IREL-IDCOL Limited is a subsidiary of IREL, established to harness the mineral sands deposit in Hrushikulya-Bajrakot-Brahmapur Deposit in Odisha.	₹1133.50 Crore. IREL's equity participation in the subsidiary will be around ₹173.50 Crore, which will be met from its internal accruals.
(d)	IREL UKTMP Limited #	Joint Venture Agreement has been signed with UKTMP JSC, Kazakhstan in November 2024 to set up a facility for production of Titanium Slag, an intermediate product in the value chain of Titanium. Formation of the Company is under progress.	₹730.00 Crore. IREL's equity participation in the subsidiary will be around ₹111.69 Crore, which will be met from its internal accruals.
(e)	IREL-TAMIN Limited *	IREL-TAMIN Limited is a Joint Venture Company of IREL, established to harness the mineral sands deposit in	The capital investment is estimated to the tune of ₹3630 Crore. IREL's equity participation in the Joint Venture Company will be

		Kudiraimozhi and Santakulam deposits in Tamil Nadu.	around ₹544.50 Crore, which will be met from its internal accruals.
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\*: Pre-project activities such as obtaining statutory clearances are in progress.

#: Incorporation of the Company is in process.

2.24 It has also been submitted that other than the above, modernization and improvement schemes to the tune of around ₹850.00 crore has been planned in the next five years to infuse state-of-the-art equipment for improving performance of the plant.

### **Make in India and Atmanirbhar Bharat initiatives**

2.25 On being asked about IREL's contribution to India's Make in India and Atmanirbhar Bharat initiatives, IREL, in a written submission, has furnished as under:

"IREL aligns its activities with 'Atmanirbhar Bharat' initiatives related to self-reliance in mineral resources and energy security. Some of the notable initiatives in this direction are as under:

- The processed minerals and chemicals produced by IREL are supplied to about 2000 industries (mostly MSEs) operating in the downstream sector resulting in import substitution and promote the Make in India initiative of the Government of India.
- Rare Earth Elements available in trace in Indian resources is extracted and supplied to BARC for strategic uses.
- Further, a "Rare Earth Permanent Magnet" (REPM) facility at BARC Campus, Visakhapatnam has been established to produce Rare Earth Permanent Magnets (Samarium Cobalt) from indigenous source material (Samarium oxide produced by IREL) to meet the requirement of Defence, Space and Atomic Energy sectors.
- In pursuit of self-reliance in products using Rare Earths, a Rare Earth and Titanium Theme Park is established at Bhopal. In the said facility, mini-plants have been established to produce Rare Earth metals, recover Rare Earth Elements from end-of-life magnets, production of LED/ Lamp phosphors, etc.
- Joint Venture Agreement has been signed with UKTMP JSC, Kazakhstan to set up a facility for producing Titanium Slag, an intermediate product in the value chain of Titanium, which is expected to catalyze the growth of Titanium sector in the Country."

2.26 On being asked in what respect IREL is able to make India self-sufficient in rare earths or any imports being made, IREL has submitted as under:

“...India is not reliant on any Country for accessing rare earths. Though Indian resource is significantly less w.r.t grade and it is tied with radioactivity making the extraction long, complex and expensive. The LREE produced within the Country are in surplus and HREE is predominately not available in Indian resource. The import is in miniscule quantities comprising of certain other element along with RE for specialized applications mostly in the form of proprietary compounds. HREE is imported for applications in laboratory scale. Hence, dependence on China is only for HREE in miniscule quantities for laboratory applications.

### **IREL’s Main Competitors**

2.27 When asked about IREL’s main competitors, both domestically and internationally and its position in the global market for rare earth minerals and heavy minerals, IREL has, in a written submission, stated as under:

“Ilmenite, zircon and rutile are major heavy minerals produced across the globe. While major producing Countries are Australia, South Africa and China, the names of major players in this field are given below:

- (i) Iluka Resources, Australia
- (ii) Eramet, Senegal
- (iii) Rio Tinto, South Africa
- (iv) Tronox Mineral Sands, South Africa
- (v) Kenmare Resources, Mozambique
- (vi) Bemax Resources, Australia
- (vii) Sierra Rutile Ltd, South Africa

As regards Rare Earths, major producers are based in China. The names of major players in the field are given below:

- (i) China Northern Rare Earth, China
- (ii) China Southern Rare Earth, China
- (iii) Lynas Rare Earths Ltd, Australia/Malaysia
- (iv) China Min Metal Rare Earths, China
- (v) Guangdong Rare Earth, China
- (vi) Arafura Resources, Australia
- (vii) Molycorp/MP Materials, USA

Domestically, Kerala Minerals and Metals Limited (KMML), a State-owned PSE is involved in the production to Titanium Dioxide from mineral sands, competing indirectly in the mineral processing space.

As regards global position, IREL contributes to about 5% of the global market in heavy minerals and 3% in case of Rare Earths.”

## **Competitive Advantage of IREL**

2.28 As per the Company, the top three competitive advantages in the market are as under:

- (i) Consistent product quality makes IREL a preferred supplier.
- (ii) Despite large product portfolio, the company is price competitive across the product range.
- (iii) Flexibility to deliver small and large volume of material with about 96% of customer base being MSME industries.

## **China's Dominance in the Global RE Market**

2.29 As submitted by IREL, it is a known fact that China is taking control of many sources of Rare Earths from around the world. As per the U.S. Geological Survey, Mineral Commodities Summary, China have around 44 million tons of Rare Earth reserves which is the highest in the world and is around 6.4 times higher than India. Further, the grade of Rare Earths in their resource is 100 times richer than that of India resource.

2.30 Commenting on how China is able to play monopoly game in the global RE market, representatives of IREL, during oral evidence before the Committee, stated as under:

“... लेकिन रेयर अर्थ का इको सिस्टम काफी लंबा है और यह दस से बारह सेगमेंट का होता है। किसी भी कंट्री को आगे बढ़ने के लिए इसका पूरी तरह से इस्तेमाल करने के लिए जब तक वह पूरे 12 सेगमेंट नहीं आएंगे, उसका लाभ नहीं मिल पाता है। चाइना ने जो मोनोपॉली स्थापित की है, वह इस तरह से ही की है कि उन्होंने पूरा का पूरा सेगमेंट अपना इस्टेब्लिश किया है। इसके लिए उन्होंने इंटरनेशनल इंवेस्टमेंट को रेड कार्पेट वेलकम किया और उसमें उनकी कोई कंडिशन नहीं थी। उनके हिसाब से जब पांच साल तक इंटरनेशनल इंवेस्टर्स ने उनकी कंट्री में काम किया तो लेबर फोर्स इसके लिए एकवायर कर लिया और उन्होंने अपना इंडस्ट्री खोल ली। हमारे यहां यह इको सिस्टम डेवलप नहीं हुआ और इस वजह से चाइनीज़ मोनोपॉली इसमें इस्टेब्लिश हो गयी।”

2.31 Further commenting on how China created RE ecosystem and their superior quality and quantity of RE content in their ores and very low price of their products, representatives of IREL stated as under:

“Initially, China was getting all the material from America. Since they were highly polluting, they wanted everything to be shifted to China. So, China started producing everything and they developed the skilled manpower. The ecosystem was getting developed as a result of that. Thereafter, when they started their own production, they had adequate skilled manpower. The process was established. So, the ecosystem was entirely developed ...

The second one is the RE content is 0.056 per cent to 0.058 per cent and there is the mineability constraint... The main point is that the RE content is in miniscule in the mother earth. Our monazite content is 0.10 per cent of the HM content. From there it will be 56 per cent. You can think of the entire volume of material, we have to handle to get this much of quantity of the rare earth material. The RE content in our Country at 0.056 to 0.058 per cent whereas in China, which is found at 6 per cent REO content. In our material, we will get Neodymium at the rate of 0.0112 per cent and praseodymium will be 0.0035 per cent. Similarly, the content of Samarium is 0.0017 per cent and Dysprosium is 1.3 ppm only.

In that case, if you see, at the China level, it will be too high. On top of that, our material is radioactive. Further, the process is very difficult...

“... This market is dominated by China. China is producing at a very low price. That is why they are able to dump its products at very low price”.

## **Major Achievements**

2.32 Some of the major achievements listed by the Company are as under:

- (i) First time production of Rare Earth Permanent Magnets in the Nation, Rare Earth Permanent Magnet Plant dedicated to the Nation by Hon'ble Prime Minister on the occasion of 25<sup>th</sup> anniversary of National Technology Day. 1<sup>st</sup> lot submitted to BARC for field trials.
- (ii) First time production of Rare Earth Metals in the Nation in the Rare Earth & Titanium Theme Park established in Madhya Pradesh. Samples provided to RRCAT and BARC for developing special alloy steels.
- (iii) One of the three to four Countries globally producing Rare Earths by setting up a 11000 RE Plant based on 10,000 tons per annum (tpa) Monazite feed in its unit at OSCOM, Ganjam, Odisha. The Plant was commissioned in the year 2015 for producing Mixed Rare Earth Chloride (MRECL).
- (iv) Commissioned the first of its kind refinery plant for production of High Pure Rare Earths in its unit at RED, Aluva, Kerela based on in-house R&D. One of the three to four Countries globally producing refined Rare Earths.

- (v) Established the capacity to produce Dysprosium and Gadolinium, scarce HREE available in trace quantity in Indian deposit.
- (vi) During the last five years, the revenue from operations, profit before tax and net worth grew by around 2.1, 3.4 and 3.0 times respectively.
- (vii) Highest ever atomic mineral production achieved in the year 2023-24.
- (viii) Highest ever production of Mixed Rare Earth Concentrate achieved in the year 2023-24.
- (ix) Issued 200% equity bonus shares to the Government of India thereby raising the paid-up equity capital to ₹345.46 Crore from ₹86.37 Crores.
- (x) Dividend of around ₹304 Crore declared in the year 2023-24 and the total dividend paid over the last 10 years surpasses the initial infused equity by more than 14 times.
- (xi) Stemming from its in-house R&D, IREL has developed Thermal Barrier Coatings from its mineral & Rare Earth products to resist oxidation for aero engine parts, gas turbines, components for space, etc. being used in HAL.
- (xii) Established facilities for production of 6N Neodymium oxide (super purity) used in hi-tech LASER Glass technology.

2.33 It has also been submitted that an MoU was entered with Ministry of Energy & Minerals in the Sultanate of Oman in the field of mining, particularly for rare minerals and preliminary exploration activities are going on, but reserves of REE are yet to be established. It has also been submitted that except UKTMP JSC of Kazakhstan and Oman, no MoUs have been signed with other foreign Countries or planned to sign as yet.

### **Environmental Sustainability**

2.34 The Company has an Environmental Management System (EMS) in place, and all its plants are certified for ISO 14001:2015. When asked about steps the Company has taken to reduce its environmental footprint and to achieve net zero targets, IREL has furnished as under:

“To reduce the carbon footprint, the following activities are taken up:

- No use of chemicals in the mining and mineral processing activities. IREL uses physical separation process to extract the minerals.
- Systematic plantation of native species is carried out over the mined-out area.
- IREL has installed solar power plants to the tune of 1588 kWp.
- LPG has been used as a replacement for coal in boilers and furnace oil in dryers.”

2.35 Moreover, commenting on the steps taken to achieve net zero emission target set by the Government, representatives of IREL, during oral evidence before the Committee, stated the following:

“... हमारा 50 परसेंट रेवेन्यु एक्सपोर्ट मार्किट से आता है और ज्यादातर मेटेरियल जापान, कोरिया, वेस्टर्नयूरोप, जर्मनी, यूके, यूएस और गल्फ कंट्रीज़ को एक्सपोर्ट होता है और धीरे-धीरे हम लैटिन अमेरिका में भी एंट्री कर रहे हैं। ज्यादा इन कंट्रीज़ का रिक्वायरमेंट यह होता है कि वे हमसे अंडरटेकिंग्स लेते हैं कि आपकी प्रोसेस नेट जीरो स्पोर्टिंग है या नहीं।

उसमें उनके स्कोप-1, स्कोप-2 और स्कोप-3 के मानक स्थापित हैं। हमें उसे ग्रेजुअली क्वालिफाई करना होता है और उस प्रोसेस में ईएसजी से रिलेटेड काम हम ने काफी पहले शुरू कर दिया था। हमने एक 10 पॉइंट का फॉर्मेट बनाया हुआ है, जिसमें हम अपनी प्रोडक्शन प्रोसेस को उससे कंप्लाय करने के लिए इंसिस्ट करते हैं। इस 10 पॉइंट फॉर्मेट में ग्रीन बेल्ट है। इसमें वाटर रिसाइक्लिंग और एयर प्यूरिफिकेशन है। ये सारी प्रोसेस इसमें इंकलूडेड हैं। हम इसे काफी क्लोजली मॉनिटर करते हैं।”

2.36 Regarding the steps taken to contain radioactivity in the mining sites and to protect the local people from exposure to radioactivity, representatives of IREL, during oral evidence before the Committee, stated the following:

“...आस-पास के विलेजेस में जो एनवायर्नमेंटल इश्यूज़ हैं तो हमारे एंप्लॉयज़ के लिए एक रेडियो एक्टिविटी मेजरमेंट का सिस्टम है कि जब एंप्लॉय प्लांट के अंदर जाता है तो हम उसको एक टैग देते हैं। वह कितनी रेडियो एक्टिविटी एब्जॉर्ब किया, उसे मेजर करता है। जब वह वहां से बाहर निकलता है तो फिर दोबारा मेजर किया जाता है कि यह एब्जॉर्बल नम्बर हैं या उससे ज्यादा हैं। यदि ज्यादा होते हैं तो फिर जो रिक्वायर ट्रीटमेंट है, वह उसको दिया जाता है। साथ ही इनका रोटेशन होता रहता है जैसे रेडियो एक्टिव ऑपरेशन में लगातार शिफ्ट्स में लोगों को नहीं रखा जाता है। हम उनको रोटेट करते रहते हैं।

... जहां तक आस-पास के गांवों की बात है तो हमारे प्लांट के अंदर एक स्पेशल यूनिट है, जिसे हम हेल्थ फिजिक्स यूनिट कहते हैं। वहां उनके पास वर्ल्ड क्लास इक्विपमेंट्स हैं। उनके पास वर्ल्ड क्लास साइंटिस्ट्स होते हैं तो वे आस-पास के गांवों में जाकर, प्लांट के अंदर जाकर रेडियो एक्टिविटी लेवल क्या है, उसे लगातार मेजर करते हैं। यह भी मेजर करते हैं कि पानी में किसी तरह का रेडियो एक्टिविटी लेवल बढ़ा या नहीं, एयर में बढ़ा या नहीं, इन सबको मेजर किया जाता है और इन सबकी डायरेक्ट रिपोर्ट बीएआरसी में होती है। उसमें हमारा कोई कंट्रोल नहीं होता है। एक एटॉमिक एनर्जी रेगुलेटरी बोर्ड है, वहां रिपोर्टिंग होती है और बीएआरसी में रिपोर्टिंग होती है। कभी ऐसी कोई कमी पाई जाती है तो पहला आदेश वहां से आता है कि आप अपना ऑपरेशन बंद कीजिए। हमें उसको ध्यान में रखना होता है।”

### **Research and Development (R&D) initiatives:**

2.37 As per the Company, IREL Technology Development Council (IRELTDC) has been formed for promoting application-oriented R&D that would be beneficial to the overall programme of DAE in both strategic and non-strategic fields utilizing products of IREL. The council invites project proposals from laboratories and institutes of eminence such as CSIR, IIT, NIT, etc. for funding and monitors the R&D schemes.

2.38 In line with the directives of Department of Public Enterprises (DPE) on Corporate R&D policy, IREL has well defined R&D policy, approved by the Board of Directors. All in-house R&D programmes of the company as well as sponsored projects concerning development of processes for production of products in the value chain and development of existing products through participative programmes undertaken by Council of Scientific and Industrial Research (CSIR) laboratories, Indian Institute of Technologies (IITs) and other government R&D institutions are scrutinized, approved and monitored regularly for time bound implementation by IREL Technology Development Council (IRELTDC) constituted by Secretary, DAE and comprises members who are eminent scientists working in relevant fields in various CSIR laboratories, IITs, and R&D Laboratories of national importance such as Indira Gandhi Centre of Atomic Research (IGCAR), etc. along with Independent Directors of the Company's Board and all Functional Directors of the company including CMD.

2.39 Given below are the focus areas of IRELTDC:

- Value addition and product/Process up-gradation.
- New product/process development.

- Development of auxiliary industries based on IREL's products.
- Database creation for benchmarking of processes, equipment's, etc.
- Setting up of Pilot Plant facilities as demonstration plants.

2.40 The Company has also submitted some of the notable projects which have been taken up by based on the above R&D, which are as under:

- Extraction of Neodymium metal by Molten Salt Electrolytic Process.
- Development of flow sheet for production of 99.99% Gadolinium oxide and 99.99% Europium oxide from Gadolinium concentrate.
- Development of self-cleaning coatings on glass using TiO<sub>2</sub> Nano-particles developed at IREL.
- Eco-friendly Natural Dyeing of Cotton and Silk using Rare Earths Metal Salts as Mordants.
- Process development for the production of Nano Titania from Ilmenite by sulphuric acid.

### **Long-Term Goals**

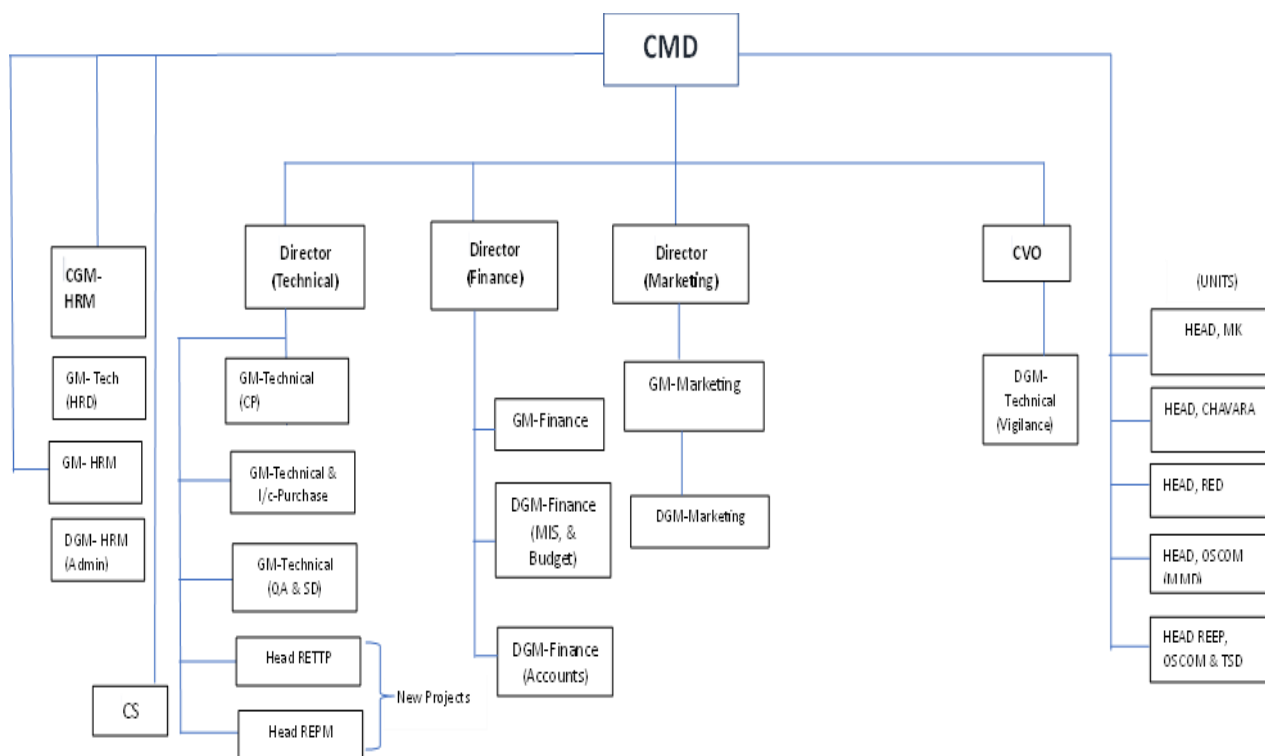
2.41 Given below are some of the some of the company's long-term goals (5-10 years):

- i. Scale-up production of Rare Earth Concentrate and Refined RE.
- ii. Horizontal expansion to increase resource availability of RE bearing mineral.
- iii. Identify the strategic resources for HREE and other critical minerals (Li, Nb, Ta).
- iv. Retain leadership in mineral sands and RE market.
- v. Execute and commission urban mining project.
- vi. Exploring avenues of REE resources abroad, basically HREE and magnetic RE.
- vii. Improving plant processes and efficiencies and establish improved technology for REE extraction and refining, etc.

## CHAPTER III CORPORATE GOVERNANCE

### A. Board of Directors

3.1 Given below is the organogram of IREL management as submitted by the Company:



3.2 The current Composition of Board and actual strength of IREL as on February, 2025 as under:

Directors	Sanctioned Strength	Actual Strength
Functional Director	4	3
Government (Official) Directors	4	4
Non-official (Independent)	4	NIL
<b>Total</b>	<b>12</b>	<b>7</b>

3.3 The Committee were informed during the sitting of the Committee that the officer holding the post of CMD, IREL superannuated on 30 November, 2024 and since then the

Director (Finance) had been holding the additional charge of CMD. As per IREL's latest submission (the Table above), the CMD's position is has still not been filled. Moreover, as can be seen from the above Table, all the four (04) posts of Non-official Independent Directors are vacant and consequently, the Board strength has been reduced to half of the total sanctioned strength of 12. Regarding the vacant positions, IREL has submitted that the matter has already been taken up with the appropriate authority and their response is awaited.

3.4 When asked to elaborate how IREL ensures a balance mix of executive and non-executive Director, IREL stated as under:

"The Company complies DPE guidelines on Corporate Governance and in no case, the number of Functional Directors exceed 50% of the actual strength of the Board... Non-executive directors consist of independent directors and part time nominated directors from Administrative Department and other Government departments".

3.5 On being asked to state as to how IREL ensures independence of non-executive Directors, IREL, in a written reply, has furnished the following:

"Non-Executive Directors of IREL consists of nominated officers by Department of Atomic Energy and Independent Directors appointed by Government of India. The Company doesn't pay any remuneration or sitting fees to its nominated Directors. Independent Directors are only paid sitting fees. All the Directors are required to disclose their directorship and office or place of profit occupied by them in any other company on their appointment and on annual basis and as and when any change take place in their directorship. It is ensured that there is no conflict of interest that could impact their ability to act independently. Further their pecuniary relationship is disclosed in the annual report of the Company. Independent Directors abstain from discussion on agenda item pertaining to approval of sitting fees payable to them".

3.6 Regarding the question of ensuring diversity in the IREL Board of Directors in terms of skills, experience and demographics, IREL has stated as under:

"IREL being a CPSE, selection of Functional Directors is done by Public Enterprise Selection Board (PESB) by inviting application on all India basis and selection is based on their qualification and experience in the relevant field. Further nominated Directors consists of officers of the Administrative Department (i.e. DAE) and the Ex-Officio appointments".

## B. Human Resource

3.7 The details of the workforce of each of the last 5 years as on 31<sup>st</sup> March of each year, as furnished by the Company, are given below:

Year	Total No. of Employees	Total No. of SC Employees	Total No. of ST Employees	Total No. of OBC Employees	No. of Women Employees
2020	1222	232	37	367	82
2021	1096	213	36	144	76
2022	952	197	32	152	73
2023	818	163	24	168	65
2024	797	156	33	294	65

3.8 On being asked whether the Company is able to meet its mandate fully with the present workforce, IREL replied in the affirmative.

3.9 The category-wise break-up of SC, ST, OBC and other category employees with sanctioned vis-à-vis actual strength of the Company, including backlog of posts in each of the categories, has also been furnished, the details of which are as under:

The category-wise break-up of IREL employees as on 31.03.2024						
Sr. No.	Category of Post	Sanctioned Post	Total No of employees	Total No. of ST employees	Total No. of SC employees	Total No. of OBC employees
1	2	3	7	4	5	6
1	A*	304	250	33	156	294
2	B*	230	57			
3	C*	546	490			

\*IREL being a CPSE, categorization of Group - A, B and C is not applicable. Data pertaining to A, B and C Group covers the following respectively:  
A- Executives; B- NUS (non-unionized supervisors); C- Workmen

3.10 It has also been stated that no backlogs of SC/ ST posts are there, only one backlog vacancy is there for OBC category as on 31.03.2024.

## Women Participation in the IREL Workforce

3.11 The Table below shows the number of sanctioned and existing number of women employees in executive and non-executive categories as on 01.11.2024, as furnished by the Company:

<b>Women Employees</b>	<b>Total Sanctioned Strength</b>	<b>Existing Number of women employees</b>
Executive	304	22
NUS	230	11
Non-Executive	546	31

3.12 It has also been submitted that women candidates applying for a post in IREL are exempted from paying the application fees and equal work with equal pay is extended to them without any disparity. Moreover, all kind of opportunities and resources are accessible to them regardless of gender.

3.13 Commenting on the state of women representation in the IREL workforce and the general difficulty in deploying women employees at plant sites, representatives of IREL, during oral evidence before the Committee, stated the following:

“विमन रिप्रजंटेशन ... इसमें हमें काफी समस्या आयी क्योंकि हमारे प्लांट्स रिमोट एरिया में हैं। जब हमने शुरुआत की थी तो उस समय स्थिति डिफरेंट थी, अब थोड़ा डेवलपमेंट हुआ है। हम हेड ऑफिस में ज्यादा से ज्यादा कम्पनसेट करने के लिए वूमन इम्प्लॉयी लेने की कोशिश करते हैं। इस प्रोसेस में हेड ऑफिस में हमने 60:40 के आस-पास रेश्यो रखा हुआ है। So, women employees are more than male employees. ओवलऑल हम फिर भी बहुत अच्छा रेश्यो नहीं रख पाए। यह सात परसेंट के आस-पास आता है। रिमोट एरिया मेनिफेक्चुरिंग यूनिट में वूमन इम्प्लॉयी बहुत इंटेरेस्ट भी नहीं लेती हैं, क्योंकि वहां शिफ्ट ऑपरेशन होता है। यह एक नेगेटिव आसपेक्ट है। सेक्रेटेरियल स्टाफ में हम ज्यादा से ज्यादा रखने की कोशिश करते हैं।”

## Employee Welfare and Capacity Building

3.14 The Committee were informed that the following welfare/social security schemes have been introduced by the Company for its employees:

- **Maternity Benefit:** To support employees who are temporarily unable to work due to childbirth or the need to care for a newborn or newly adopted child.

- Gratuity Benefit: By offering gratuity, employers ensure that employees are rewarded for their long-term service and are financially supported when they exit the organization.
- Provident Fund: To ensure a financial safety net for retirement and emergencies.
- Group Medical Policy/ Group Term Life Insurance scheme: To provide financial assistance to the family members or dependents of an individual who has passed away, typically the primary wage earner.
- Post Retirement Medical Scheme: To ensure that individuals have access to necessary healthcare services, especially in times of illness, injury, or old age.
- Superannuation scheme: Provides financial security after superannuation.

3.15 Regarding various steps taken by the Company for capacity building and employee welfare, the Company has stated that to enhance the skills, capabilities and knowledge of employees, trainings are provided to the employees at various levels, some of which are listed below:

- Onboarding/ Orientation training programme (New Joiners)
- Technical Skills Training (For all employees)
- Project Management (Senior Level)
- Leadership & Management Training Programme (Middle level/Senior Level)
- Capacity Building Programme (All levels)
- Compliance and Legal Training (All level)
- DPE Sponsored training programme etc. (All level)

3.16 The Committee observed from the Company's reply that the Company various motivational programmes/schemes/plans in place. It has also an integrated IT system for centralised and integrated employee management covering all the facets of Human Resource Management. Grievance Redressal Committees for employees are already in place in the Company's various units. For lodging grievances, an online portal as a part of integrated IT system is under development. It has also been observed that during the last 5 years, the number of grievances received and disposed of is 13.

### **C. Risk Management and Compliances**

3.17 The Committee observed from the written submission that the Company is obtaining a certificate from Practicing Company Secretary on annual basis for Compliance of the conditions of Corporate Governance as stipulated under DPE Guidelines on Corporate Governance, 2010. There are no legal or regulatory disputes involving the Company.

3.18 On being asked what measures are being adopted to ensure effectiveness of the key Committees like Audit, Compensation, nomination/governance and the impact of such measures over a period of last five years, IREL has stated as under:

“IREL has formulated various statutory and non-statutory committees which together consist of Board level committees of Audit, CSR, NRC and Risk management committee. To ensure effectiveness of these committees, Independent Directors have been made the Chairman of these committees and the majority of the members of these committees consist of Independent Directors”.

3.19 Regarding the whistleblower protection policy to encourage reporting of unethical behavior, IREL has submitted that the existing whistleblower policy provides a mechanism to employee or a group of employees who wish to report on unethical or improper practices to have easy access to the appropriate authority. The purpose of this policy is to provide a framework to promote responsible, safe and secure whistle blowing, with an aim to curb and stop all activities, which are against organizational interests. This policy shall also protect employees wishing to raise a concern about serious irregularities within the organization and to provide assurances that any and all suspected activity will be fully investigated. This neither releases employees from their duty of confidentiality in the course of their work nor can it be used as a route for raising malicious or unfounded allegations against people in authority and/or colleagues in general.

3.20 On being asked as to how does IREL ensure transparency and accuracy in disclosing financial statement, IREL has stated as under:

“Ensuring accuracy and transparency in financial reporting is critical for any business looking to maintain stakeholder trust, comply with regulations, and make informed decisions.

For ensuring transparency and accuracy in financial reporting, the methodologies of IREL are as under:

- IREL has adopted the IND-AS as notified by MCA. Ind AS provides the guideline on how financial transactions should be recorded and reported. IREL is following the same in true spirit. The concerned officers are regularly updating the evolving standards through training and otherwise to avoid errors and inconsistencies in financial reports.
- IREL has implemented strong internal controls by segregation of duties. The responsibilities among different employees are distributed in the manner so that no single individual controls all aspects of a financial transaction. In addition, there is full-fledged delegation of powers for approving the financial transaction.
- Chartered Accountants Firms are being appointed by IREL as Internal Auditors to conduct the thorough examination of books of accounts and records of the Company. They are submitting monthly reports which in turn submitted to Audit committee. Their suggestions and observations are reviewed, and corrective action is taken to avoid errors and inconsistencies in financial reports. In addition, CAG appointed statutory auditor is also verifying the records and giving its report to the members of the company. They examine financial records, transactions, statements, and reports of IREL, and provide an opinion on whether they are fair, accurate, and complete. They also identify any material errors, misstatements, fraud, or non-compliance issues, and recommend corrective actions.
- IREL has detailed accounting policies/manuals duly approved by the Board clearly defining the methods, assumptions, and practices which IREL uses to prepare its financial statements. By documenting these policies, IREL creates a reference point that ensures consistency over time and across various financial reports, reducing the risk of errors or discrepancies. These accounting policies are regularly reviewed and updated.
- IREL uses the accounting software “FAS” for recording the financial transactions and Trial Balance is automatically coming from the software.
- IREL is regularly making account reconciliation which involves comparing internal financial records against external statements (like bank statements, statement of debtors/creditors) to identify and rectify discrepancies. This routine check ensures that IREL's financial information is accurate and reliable, helping to prevent errors and fraud.
- IREL adopted comprehensive disclosure in its annual report ensuring that all relevant financial information is openly shared with stakeholders. This includes not just the mandatory financial statements but also notes on accounting policies, decisions, and any risks the company faces”.

3.21 Regarding internal control mechanisms for financial reporting, IREL has submitted the following:

- IREL has adopted the IND-AS as notified by MCA and financial transactions are recorded as per principles mentioned in Ind AS. For recording the

transaction there is maker & checker concept i.e. vouchers are approved by the officers other than maker.

- IREL uses the accounting software “FAS” for recording the financial transactions and Trial Balance is automatically coming from the software. The transactions are being recorded in software only after approval of the vouchers by the concerned officials.
- IREL has duly approved following documents for its operations:
  - Purchase procedures
  - HR manuals
  - Internal financial control (IFC) documents
  - Delegation of powers etc.
- Internal Audit is being carried out by the chartered accountants’ firms to verify whether all the transactions are being carried out in line with the policies and procedures of IREL or not. They submit monthly report.
- The scope of internal audit is covering all the areas of operations including physical verification of fixed assets, stores, finished goods and accordingly reports are being submitted to the management for review.
- Internal Audit reports is being submitted to Audit committee.
- IREL has an internal financial control framework, which is approved by the Board. This ensures that there is internal control mechanism over financial reporting is operating effectively. This document is a base for the internal auditor to conduct audit.

3.22 On being asked about the mechanisms available to mitigate operational and financial risk, IREL has furnished as under:

“IREL has in place a robust “Enterprise Risk Management (ERM)” policy and in line with the ERM policy, the Risk Officers at Unit level identify various risks in consultation with each functional department and suggest mitigation measures for each identified risk. After reviewing the applicable risks and mitigation measures suggested by Risk Officer along with action taken reports, Head of the Unit submits the Quarterly Risk Reports to Chief Risk Officer (CRO) at Corporate Office. CRO evaluates these risks and categorizes these risks into High /Medium/Low intensity risks based on their potential impact on the Organization and submits the consolidated report to Risk Management Committee (RMC) for Review at Corporate Office for further direction towards mitigation. The RMC reviews various risks identified by the Units on half-yearly basis. The observation and recommendations of RMC on the potential risks are reported to Units and Business

Heads (Concerned Director) for necessary action. Further, the Board level committee on risk management reviews the high and medium intensity risks of the Units along with action taken reports for the corresponding period. A list of high intensity risks so identified along with action taken reports are submitted to Board for information.

Considering the source of Operational and financial risks are varied, possible risk areas of IREL are:

Operational:

- Economic risks, including interest rate and foreign exchange fluctuations, market conditions, and cost of doing business internationally.
- Technology risks
- Engineering or operational risks pertaining to the Company's products and manufacturing processes as well as business process failures.
- Counterparty risk
- Market risk
- Regulation and Compliance risks
- Business continuity risks, including planning for cyclones, fire and other events that require disaster management.
- Human resource risks, including succession planning, recruitment, compensation, and retention issues.

Financial:

- Liquidity or credit risk, including funding and cash requirements of the Company. Specifically, access to debt and equity resources necessary to operate and expand the company's business and compliance with financier's required covenants (if any)
- Accounting and financial control risk."

3.23 When asked about the measures taken/to be taken for protecting sensitive information and cyber security, IREL has furnished as under:

"Following are the measures IREL has taken to protect sensitive information and ensure robust cyber security:

(i) Multilayered Cyber Security at Gateway Level:

IREL has implemented a comprehensive multilayered cyber security framework at the gateway level. This includes advanced firewalls, intrusion detection and prevention systems (IDS/IPS), and other security measures to defend against cyber threats from external and internal sources.

(ii) Honeypot Installation as per CERT-In Directive:

As per the directives issued by CERT-In (Indian Computer Emergency Response Team), IREL has deployed Honeypot systems to proactively assess cyber threats. This helps in identifying potential attack patterns and vulnerabilities, allowing us to take necessary precautions and enhance overall security.

(ii) Sharing Cyber Threat Information from CERT-IN and DAE:

IREL actively shares all relevant cyber threat information received from CERT-In and the Department of Atomic Energy (DAE) with our units. This ensures that each unit is informed about the latest cyber threats and can configure their respective gateway security measures accordingly. This collaborative approach strengthens the overall security framework across the organization.

(iii) Centralized Antivirus with USB Blocking and Malware Protection:

IREL has implemented a centralized, managed antivirus solution across all systems, providing protection against malware, spyware, ransomware, and other malicious software. Additionally, USB ports are blocked on all devices to prevent unauthorized access and the introduction of potential security risks.

(iv) Data Loss Prevention (DLP) System in Units:

To safeguard sensitive information, IREL has implemented a Data Loss Prevention (DLP) system across all units. This system ensures that critical data cannot be transferred or exposed without proper authorization, mitigating the risk of data leaks or unauthorized dissemination.

(v) NIC Email Services with Multifactor Authentication (MFA):

IREL uses the National Informatics Centre (NIC) email services, which are equipped with Multifactor Authentication (MFA). This adds an extra layer of security to email communications, ensuring that only authorized personnel can access sensitive emails and related attachments.

(vi) Separation of Finance Server from Other Networks:

In order to protect sensitive financial data, IREL has separated its finance server from the rest of the network. This segmentation ensures that access to financial information is tightly controlled and isolated from other systems, minimizing the risk of unauthorized access or data breaches.

These measures, along with our ongoing commitment to improving cyber security, ensure the protection of sensitive information and the resilience of our systems against evolving cyber threats.”

## PART-II

### OBSERVATIONS/RECOMMENDATIONS OF THE COMMITTEE

#### A. *Overview*

1. The Committee note that IREL (India) Limited is a key contributor to India's strategic mineral supply chain. It was founded in 1950 as Indian Rare Earths Limited, IREL (India) Limited (Company's current name) is a wholly owned Central Public Sector Undertaking (CPSU) of the Government of India, under the administrative control of the Department of Atomic Energy (DAE). It is 100% owned by Government of India. It plays a vital role in India's atomic energy sector, particularly in the mining and processing of rare earth minerals and heavy minerals. The Company operates mining and mineral processing plants across Odisha, Tamil Nadu and Kerala. Its activities align with national priorities, including self-reliance in critical minerals, defence applications and nuclear energy. It is a 'Mini Ratna' Category – I CPSU with "Excellent" MoU rating over the last six consecutive years.

The Committee were further informed that IREL's mandate is to produce atomic minerals and rare earths, contributing to India's strategic nuclear program and various commercial sectors. Its vision is to be a significant contributor to the global clean energy mission by providing high-quality materials in a responsible manner.

It has also been noted that as per the geological information available, the reported rare earth (RE) resources in India is about 6.9 million tons, which accounts for around 6% of total global RE reserves. India has fifth largest reserves of rare earth elements (REEs). Apart from low concentration of RE oxide of India, mineability is further constrained due to CRZ (coastal regulation zone) regulations, mangroves, forest land and uncontrolled inhabitation.

The Committee further note that India is among three to four countries globally having the capability to produce refined REEs, the other Countries

being China and Malaysia. China has established a near-monopoly in the global rare earth market, controlling approximately 60-70% of global production and 85-90% of RE processing capacity.

The Committee were informed that due to their critical applications in electronics, defense, and renewable energy, REEs have gained strategic importance globally. IREL caters to nuclear energy, defense and space sectors by supplying critical rare earths to these industries. Over 90% of its customers in India are in MSE (Micro and Small Enterprises) category. Total revenue from exports of some of the non-strategic heavy minerals such as Ilmenite, Zircon and Rutile consistently ranges from 40 to 50% of the sales. Revenue from operations has grown at CAGR of over 26%.

The Committee have also learned that IREL faces some challenges such as dominance of China in rare earth markets, controlling global supply and pricing; stringent environmental and land acquisition regulations; long gestation periods for mining approvals; lobbying and illegal mining activities impacting operations; and low-grade Indian rare earth deposits compared to global standards.

IREL (India) Limited plays a pivotal role in India's nuclear and strategic material supply chain. In view of China's near-monopoly in the global supply and pricing of REs and the imperative need for India's self-sufficiency in RE production and supply to meet its domestic requirement and to assess India's preparedness to face any global geo-political challenges in terms of RE value chain, the Committee have put forth their Observations/Recommendations in the subsequent paras after having heard the views of IREL and Department of Atomic Energy (DAE). The Committee hope that the Company would make earnest efforts for implementation of the Observations/Recommendations in this Report to augment their overall performance.

***B. Vacant Positions of Regular CMD and Four Independent Directors***

- 2. The Committee note that there is no regular CMD since the superannuation of the officer hold the post of CMD on 30 November, 2024 and since then the Director (Finance) has been holding the additional charge of CMD. Moreover, all the four (04) posts of Non-official Independent Directors are vacant and consequently, the Board strength has been reduced to half of the total sanctioned strength of 12. Though the Committee learned that IREL has already taken up the matter with the appropriate authority and their response is awaited, the Committee feel that these vacancies not only hamper the functioning of the Company, but also violate the principle of Corporate Governance. Therefore, the Committee urge upon the Government of India through DAE, being the administrative Ministry, to fill up the vacant posts of four Independent Directors and appoint a regular CMD without any further delay. Also, if the Company is discharging their functions effectively with less number of Independent Directors, they may think of reducing the sanctioned posts of Directors in the organization in future.**

***C. Exploring ways to establish RE Ecosystem in India***

- 3. The Committee note that creating an ecosystem of REs is very long drawn process and it consists of ten to twelve segments and unless all the segments are developed, any country cannot benefit from the ecosystem in order to move ahead. The Committee also learned that the monopoly that China has established is such that it has established the entire segments and for that to happen, it gave a red carpet welcome to international investments with no conditions. So, international investors worked in China for 5 years and during this period the Chinese developed the required skilled manpower and consequently they were able to establish their own RE industry of the entire value chain. This kind of ecosystem has been developed there and due to this, the Chinese monopoly got established in the global RE market.**

The Committee are happy to note that India has also gained the requisite expertise over the years in the mining and processing of REs, which in India's case is radioactive too. IREL also has the capability to extract REs out of the far inferior and very less concentrated Indian RE ores, India's RE content being 0.056 to 0.058% whereas that of China is 6%. It is also learned that over 90% of IREL customers in India are in MSE (Micro and Small Enterprises) category. The processed minerals and chemicals produced by IREL are supplied to about 2000 industries (mostly MSEs) operating in the downstream sector. They make ancillary products for bigger companies, resulting in import substitution and promote the Make in India initiative of the Government of India.

The Committee feel that IREL and DAE may consider exploring ways for bringing skilled manpower and required expertise to further/fully develop the entire RE ecosystem to cater to the entire rare earth value chain in order to be able to counter to a certain extent China's monopoly in the global RE market. The Committee would like to be apprised of the steps taken in this regard.

***D. Delay in starting operation of IREL-IDCOL Limited***

4. The Committee note that IREL has formed a Joint Venture (JV) Company called IREL-IDCOL Limited in collaboration with Industrial Development Corporation of Odisha Limited (IDCOL). The JV Company was incorporated on 18.01.2018 with IREL holding minimum 51% and IDCOL holding upto 49% of the share capital. A CEO and a Project Co-Ordinator have been appointed for the JV Company. A mining Officer of IREL is assisting the Project Co-Ordinator in matters related to the JV Company and rest of the manpower support is occasional and are being drawn from IREL.

The Committee further note that IREL-IDCOL is under the process of obtaining mining lease for which the process of statutory clearances such as Environmental Clearance (EC), Forest Clearance (FC), Coastal

Regulation Zone (CRZ), etc. have been taken up. Because of not getting timely clearances of the above statutory clearances, starting of operation of the Company is getting delayed. The Committee recommend that the issues pertaining to granting of clearances of the above statutory clearances may be taken up at the level of the Department so that the process may be expedited and IREL-IDCOL may start operation without any further delay.

***E. Importance of early and timely completion of ongoing Projects***

5. The Committee note that IREL has about seven major ongoing projects which are at different stages of implementation. Rare Earth and Titanium Theme Park is being set up in Bhopal, Madhya Pradesh for motivating and training entrepreneurs to set up plants using rare earth products at commercial scale. A Joint Venture Company with UKTMP JSC, Kazakhstan is also being established for setting up a titanium slag plant and a Technology Demonstration Plant for the production of 4N pure nano-titania and nano-zirconium oxychloride based on in-house technology is also being established. Moreover, mining plants are being developed at Bramhagiri Mineral Sand Deposits in the state of Odisha and Inayam-Midalam Mineral Sand Deposits in the state of Tamil Nadu. Another domestic Joint Venture Company by the name of IREL-TAMIN Limited has also been incorporated, to carry out rare earth mining in the state of Tamil Nadu, in addition to the already incorporated IREL-IDCOL Limited.

While expressing their happiness at IREL's scale and scope of the ongoing projects, which if developed fully, will significantly improve the Country's capability in establishing the entire value chain in rare earth from mining to processing to commercialization in collaboration with private entrepreneurs, the Committee are of the strong view that timely completion of these projects is of utmost importance to make the projects cost-effective and achieve their purposes for which they have been established and start working for the nation sooner in a strategic sector as RE in today's uncertain geopolitical scenario. The Committee, therefore, recommend that all these projects be

completed within their stipulated time of completion and would like to be apprised of the status within six months.

***F. Exploring ways for Collaboration with other Foreign Companies***

6. The Committee have learned that the main competitors of IREL for rare earth minerals and heavy minerals in the international market are mainly based out of in China, Australia, South Africa, Senegal, Mozambique, etc. and China has monopolized the International RE market because of the sheer scale and size of its well developed RE industry ecosystem and globally diversified source of RE ores. The Committee strongly feel that in today's interconnected global economy, collaboration with like-minded foreign companies may give an edge for long-term success and growth. Partnering with International Companies provides businesses with access to new markets, advanced technologies, diverse expertise, and expanded networks that drive innovation and competitiveness. The Committee, therefore, desire that IREL should explore the avenues to collaborate with foreign companies of Australia, South Africa, Senegal, Mozambique, etc. through mutual understanding for technology transfer, sharing of skilled manpower, knowhow and expertise to grow together in the international market on mutual benefit or win-win condition.

***G. Environmental impact of Rare Earth (RE) mining***

7. The Committee learn that Rare earth elements (REEs) are essential for modern technologies, including electronics, renewable energy systems, and defence applications. However, the long-term extraction and utilization of these materials pose significant environmental and health risks that must be addressed through responsible policies and sustainable practices. Moreover, RE mining is highly disruptive to ecosystems and the extraction process generates large amounts of toxic waste, including radioactive materials such as thorium and uranium, which can contaminate soil and water sources. Additionally, open-pit mining and chemical processing lead

to deforestation, habitat destruction, and increased greenhouse gas emissions. Over time, these impacts contribute to biodiversity loss and environmental degradation.

The Committee have also learned that communities near rare earth mining sites face serious health concerns. Exposure to heavy metals and radioactive by-products can lead to respiratory diseases, organ damage, and increased cancer risks. Workers in the industry are particularly vulnerable to occupational hazards, including exposure to toxic dust and chemicals.

The Committee also acknowledge that IREL has taken steps to reduce its environmental footprint and to achieve net zero targets by putting in place mandatory Environmental Management System (EMS) and adopting practices such as not using chemicals in the mining and mineral processing activities and using physical separation process to extract the minerals; systematic plantation of native species over the mined-out area; installation of solar power plants to the tune of 1588 kWp for its use and for local consumption; use of LPG as a replacement for coal in boilers and furnace oil in dryers and so on.

While appreciating the fact that IREL has been doing everything in its capacity to reduce its operations' impact and harm on environment and, the Committee strongly desire that to mitigate these risks, IREL should never let its guards down and adopt stricter environmental regulations, invest in cleaner extraction technologies, and promote recycling of rare earth elements from electronic waste. The Company should also collaborate with industries to develop sustainable alternatives and improve waste management practices.

The Committee feel that by implementing responsible mining practices and prioritizing environmental and public health safeguards, we can balance the demand for rare earth elements with the need for a sustainable and healthy future.

***H. Addressing Illegal Mining and Social Resistance***

8. The Committee have learned that among the many challenges faced by IREL during its mining operations, lobby of illegal miners during opening of the sector creating hindrances at every step including award of contract and undue protests from NGOs instigating locals misrepresenting factual information about its mines/plants. The Committee recommend that IREL should work with local governments and law enforcement agencies to prevent illegal operations and strengthen security and legal measures to counter unauthorized mining activities. The Company should also implement transparent community engagement programmes with NGOs and local people to counter misinformation and gain local support. The Company should also implement projects that help in local employment generation and support local economy and create awareness regarding the benefits of establishing the mines/plants in their area.

New Delhi:  
25 March, 2025  
04 Chaitra, 1947(S)

**BAIJAYANT PANDA**  
Chairperson,  
Committee on Public Undertakings

**COMMITTEE ON PUBLIC UNDERTAKINGS (2024-2025)****MINUTES OF THE FIFTH SITTING OF THE COMMITTEE**

The Committee sat on Wednesday, 25 September, 2024 from 1415 hrs. to 1530 hrs. in Committee Room '1', Extension to Parliament House Annexe, New Delhi.

**PRESENT**

**Shri Baijayant Panda - Chairperson**

**MEMBERS****LOK SABHA**

2. Shri Tariq Anwar
3. Shri R.K. Chaudhary
4. Shri Chandra Prakash Joshi
5. Smt. Kanimozhi Karunanidhi
6. Shri Kaushalendra Kumar
7. Shri Shankar Lalwani
8. Shri Mukesh Rajput
9. Shri Sukhjinder Singh Randhawa
10. Shri Kodikunnil Suresh

**RAJYA SABHA**

11. Shri Narain Dass Gupta
12. Shri Debashish Samantaray
13. Shri Arun Singh

**SECRETARIAT**

1. Shri Neeraj Semwal - Joint Secretary
2. Smt. Jyochnamayi Sinha - Director
3. Smt. Mriganka Achal - Deputy Secretary

**REPRESENTATIVES OF IREL (INDIAN) LIMITED & IREL-IDCOL LIMITED**

- |    | <b>Name</b>          | <b>-</b> | <b>Designation</b>   |
|----|----------------------|----------|----------------------|
| 1. | Dr. Deependra Singh  | -        | CMD, IREL            |
| 2. | Shri S.B. Mohanty    | -        | Director (Finance)   |
| 3. | Shri Anuttam Mishra  | -        | Director (Technical) |
| 4. | Shri Rupender Dhiman | -        | Company Secretary    |

2. At the outset, the Chairperson welcomed the Members of the Committee at the sitting convened to have a briefing by the representatives of the IREL (India) Limited and IREL-IDCOL

Limited in connection with comprehensive examination of both the subjects. The Committee Secretariat, then, made a Power Point Presentation explaining major issues relating to the subject.

*[The witnesses were, then, called in]*

3. The Chairperson welcomed the representatives of IREL and IREL-IDCOL to the sitting of the Committee and put forth the major points the Committee desired to discuss relating to the subjects. He, then, drew their attention to Direction 55(1) of the 'Directions by the Speaker' regarding maintaining confidentiality of the discussion held before the Parliamentary Committee.

4. Thereafter, the representatives of IREL made a Power Point Presentation highlighting IREL's relationship with India's atomic energy programme, location of its plants, its product profile, global scenario of rare earth deposits, physical and financial performance, major completed and ongoing projects, major achievements, details of its Joint Ventures, future expansion plan, etc. The presentation also touched upon the genesis of IREL-IDCOL Limited and its current status.

5. The Members, then, sought clarifications from the representatives of IREL on various issues related to the subject viz., livelihood and rehabilitation of project/mine affected people, delay in getting statutory clearances to start mining operation, long process of getting lease agreement to start mining, share of women employees in the Company, steps taken to achieve net zero target by 2070 and monopoly of China in rare earth material supply. The queries of the Members also related to India's lack of ecosystem of industries utilizing rare earth material, reason why China had already developed the rare earth ecosystem in the last 20-30 years, countries who are buying rare earth material from India and so on. The Committee also discussed the other issues such as CSR activities of the Company, the steps taken to contain radioactivity in the mining sites, the steps taken to protect the local people from exposure to radioactivity, current status of IREL-IDCOL Limited, etc.

6. Thereafter, the representatives of IREL responded on majority of the issues raised by the Members. In the end, the Chairperson thanked the representatives of IREL and IREL-IDCOL and directed that in respect of points for which information was not readily available or if more information were required to be furnished, written replies thereon may be furnished to the Committee Secretariat within 10 days.

***The Committee, then, adjourned.***

***A copy of verbatim proceedings of the sitting has been kept on record.***

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**COMMITTEE ON PUBLIC UNDERTAKINGS (2024-2025)**

**MINUTES OF THE NINETEENTH SITTING OF THE COMMITTEE**

The Committee sat on Monday, 16 December, 2024 from 1530 hrs. to 1700 hrs. in Committee Room '1', Extension to Parliament House Annexe, New Delhi.

**PRESENT**

**Shri Tariq Anwar - Convenor**

**MEMBERS**

**LOK SABHA**

2. Shri R.K. Chaudhary
3. Shri Kaushalendra Kumar
4. Shri Shankar Lalwani
5. Smt. Poonamben Hematbhai Maadam
6. Shri Sukhjinder Singh Randhawa
7. Shri Kodikunnil Suresh
8. Shri Prabhakar Reddy Vemireddy

**RAJYA SABHA**

9. Shri Neraj Dangi
10. Shri Narain Dass Gupta
11. Dr. Bhagwat Karad

**SECRETARIAT**

1. Shri Neeraj Semwal - Joint Secretary
2. Smt. Jyochnamayi Sinha - Director
3. Smt. Mriganka Achal - Deputy Secretary

**PART A**

2. \*\*\* \*\*

3. \*\*\* \*\*

## **PART B**

### **REPRESENTATIVES OF IREL (INDIA) LIMITED & IREL-IDCOL LIMITED**

	<b>Name</b>	<b>Designation</b>
1.	Shri S.B. Mohanty	- CMD (in-charge) & Director (Finance)
2.	Shri R.A. Khale	- Director (Marketing)
3.	Shri Anuttam Mishra	- Director (Technical)
4.	Shri Rupender Dhiman	- Company Secretary

4. At the outset, the Convenor briefed the Members about the agenda of the sitting. i.e. to take evidence of the representatives of the IREL (India) Limited and IREL-IDCOL Limited in connection with comprehensive examination of both the subjects. The Committee Secretariat, then, made a Power Point Presentation explaining major issues relating to the subject.

*[The witnesses were, then, called in]*

5. The Convenor welcomed the representatives of IREL and IREL-IDCOL to the sitting of the Committee and put forth the major points the Committee desired to discuss relating to the subjects. He, then, drew their attention to Direction 55(1) of the 'Directions by the Speaker' regarding maintaining confidentiality of the discussion held before the Parliamentary Committee.

6. Thereafter, the representatives of IREL made a Power Point Presentation highlighting IREL's contribution in India's atomic energy programme, location of IREL's plants, its product profile, physical and financial performance, major completed and ongoing projects, details of its Joint Ventures. The presentation also touched upon IREL's Make in India initiatives, operations & resource management, business strategy & market performance, corporate governance, human resources, environmental sustainability, CSR, future plan and expansion and so on.

7. The Members, then, sought clarifications from the representatives of IREL on various issues related to the subject viz., quality and quantity of our rare earths in comparison with that of other countries, such as China, mechanism and strategy to develop entire rare earth ecosystem in India, need for private investment in industries which use rare earths as raw material, lack of ample market/demand commensurate with

India's production capacity, prospect of titanium value chain, domestic and international competitors, China's dominance in International rare earth market, India's position in the International rare earths market, quantum of India's export, contribution of rare earths to global green energy missions, etc. The Committee also discussed other issues such as how rare earth mining makes an area become more fertile, details of CSR activities, ongoing Government's effort for exploring and sourcing of rare earths in friendly countries, women participation in the IREL workforce, concerns and protest/resistance from local people/NGOs at mining/project sites regarding fear of radioactivity, issues regarding compensation, rehabilitation and employment of mine/project affected people and so on.

8. Thereafter, the representatives of IREL responded on majority of the issues raised by the Members. In the end, the Convenor thanked the representatives of IREL and IREL-IDCOL and directed that in respect of points for which information was not readily available or if more information were required to be furnished, written replies thereon may be furnished to the Committee Secretariat within 10 days.

***The Committee, then, adjourned.***

***A copy of verbatim proceedings of the sitting has been kept on record.***

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**COMMITTEE ON PUBLIC UNDERTAKINGS (2024-2025)**

**MINUTES OF THE TWENTIETH SITTING OF THE COMMITTEE**

The Committee sat on Monday, 16 December, 2024 from 1700 hrs. to 1750 hrs. in Committee Room '1', Extension to Parliament House Annexe, New Delhi.

**PRESENT**

**Shri Tariq Anwar - Convenor**

**MEMBERS**

**LOK SABHA**

2. Shri R.K. Chaudhary
3. Shri Kaushalendra Kumar
4. Shri Shankar Lalwani
5. Smt. Poonamben Hematbhai Maadam
6. Shri Sukhjinder Singh Randhawa
7. Shri Kodikunnil Suresh
8. Shri Prabhakar Reddy Vemireddy

**RAJYA SABHA**

9. Shri Neeraj Dangi
10. Shri Narain Dass Gupta
11. Dr. Bhagwat Karad

**SECRETARIAT**

1. Shri Neeraj Semwal - Joint Secretary
2. Smt. Jyochnamayi Sinha - Director
3. Smt. Mriganka Achal - Deputy Secretary

**REPRESENTATIVES OF DEPARTMENT OF ATOMIC ENERGY (DAE)**

- | <b>Name</b>               | <b>Designation</b>     |
|---------------------------|------------------------|
| 1. Dr. Ajit Kumar Mohanty | - Secretary, DAE       |
| 2. Shri A.R. Sule         | - Additional Secretary |
| 3. Smt. Anjali Sinha      | - Joint Secretary      |

*[As per the schedule of the sitting, the witnesses were then, called in.]*

2. The Convenor welcomed the representatives of DAE to the sitting of the Committee and put forth the major points the Committee desired to discuss relating to the subjects. He, then, drew their attention to Direction 55(1) of the 'Directions by the Speaker' regarding maintaining confidentiality of the discussion held before the Parliamentary Committee.

3. Thereafter, the representatives of DAE made a Power Point Presentation highlighting DAE's various Units and Organisations, the three sectors of the programmes of DAE, details of seven important beach sand minerals and their end-use application, flow-sheet of DAE's operations, relationship between Atomic Energy Programme and IREL, various stages of India's Nuclear power programme, details of operating nuclear power plants in India and their performances, scenario of atomic minerals including rare earths mining in India, details of various types of nuclear reactors, various applications of radiation/radio isotopes in healthcare, agriculture, food processing and preservation, etc.

4. The Members, then, sought clarifications from the representatives of DAE on various issues related to the subject viz., role of IREL in supplying and stocking of thorium for India's third stage of nuclear power programme, India's indigenous nuclear reactors in line with Atmanirbhar Bharat mission, India's self-sufficiency in producing heavy water for nuclear power plants, comparative costs of nuclear, solar and hydro power generation, need for private investments, ppp model and joint ventures in civil nuclear power industry, etc. The Committee also discussed the other issues such measures taken to achieve net zero emissions target by 2070, idea of small modular reactors such as Bharat Small Reactors and Bharat Small Modular Reactors which can be used by industries to meet their power requirement, how barren lands become green in and around sites of nuclear plants by taking up greening activities by the Company, general paranoia regarding nuclear plants which leads to resistance/protest by locals in and around existing or proposed sites and how NGOs are helping in such protests, prevalence of illegal mining of beach sands which are radioactive which can put people in danger if not dealt with properly and so on.

5. Thereafter, the representatives of DAE responded on majority of the issues raised by the Members. In the end, the Chairperson thanked the representatives of DAE and directed that in respect of points for which information was not readily available or if more information were required to be furnished, written replies thereon may be furnished to the Committee Secretariat within 10 days.

***The Committee, then, adjourned.***

***A copy of verbatim proceedings of the sitting has been kept on record.***

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**COMMITTEE ON PUBLIC UNDERTAKINGS (2024-2025)**

**MINUTES OF THE THIRTY SECOND SITTING OF THE COMMITTEE**

The Committee sat on Monday, 24 March, 2025 from 1530 hrs. to 1705 hrs. in Committee Room '1', Extension to Parliament House Annexe, New Delhi.

**PRESENT**

**Shri Baijayant Panda - Chairperson**

**MEMBERS**

**LOK SABHA**

2. Shri C.P. Joshi
3. Shri Shankar Lalwani
4. Shri Mukesh Rajput
5. Shri Sukhjinder Singh Randhawa
6. Shri Pratap Chandra Sarangi
7. Shri Prabhakar Reddy Vemireddy

**RAJYA SABHA**

8. Shri Neeraj Dangi
9. Shri Milind Murli Deora
10. Shri Narain Dass Gupta
11. Dr. Bhagwat Karad
12. Shri Debashish Samantaray
13. Dr. Arun Singh

**SECRETARIAT**

1. Shri Anjani Kumar - Joint Secretary
2. Smt. Jyochnamayi Sinha - Director
2. Smt. Mriganka Achal - Deputy Secretary

PART – A:

2. At the outset, the Hon'ble Chairperson welcomed the Members to the sitting and briefly apprised the Members about the following draft Reports to be considered:

- (i) \*\*\* \*\*\*,
- (ii) \*\*\* \*\*\*,
- (iii) \*\*\* \*\*\*, and
- (iv) IREL (India) Limited.

3 The Committee then considered and adopted the draft Reports, without any changes/modifications. The Committee authorized the Chairperson to finalize the draft Reports on the basis of factual verification as suggested by the concerned Ministries/Departments and C&AG and present the Reports during the ongoing session of Parliament.

PART – B:

4. \*\*\* \*\*\*,

***The Committee, then, adjourned.***

***A copy of verbatim proceedings of the sitting has been kept on record.***

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