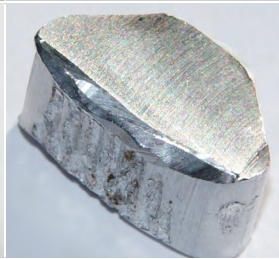
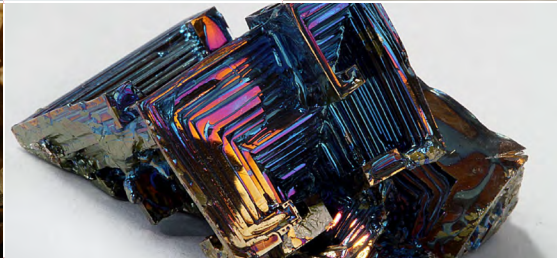
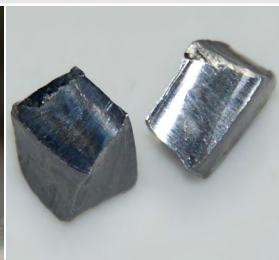


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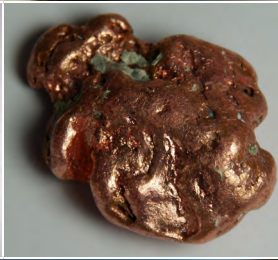
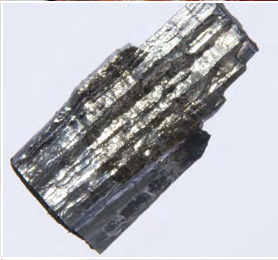
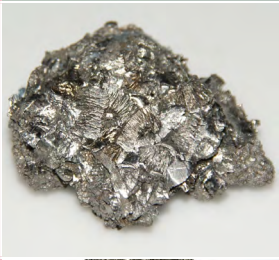
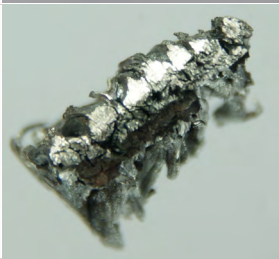


**Assessing the Criticality  
of Minerals for India: 2023**

**Addendum:  
Mineral Factsheets**

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**RAJESH CHADHA, GANESH SIVAMANI & KARTHIK BANSAL**



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# **Assessing the Criticality of Minerals for India: 2023**

## **Addendum: Mineral Factsheets**

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The Addendum provides a summary of each mineral that has been assessed in this study. The mentioned details include the main use cases, the origin of extraction, India's mineral inventory, economic importance and supply risk for India, and the criticality comparison with the cut-off values.


The authors thank Anuj Rajawat for the research assistance provided and CSEP colleagues for their insightful comments and suggestions. We also received valuable comments during the CSEP webinar held on this subject. We sincerely thank Rakesh Mohan and Bishwanath Goldar for their valuable comments and suggestions on the earlier drafts of this paper.

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## Antimony Factsheet

### Key Data

Chemical symbol	Sb	
Atomic number	51	
Main uses – overall	Flame Retardants; Alloying Material; Lead-Acid Batteries	
Main use – India (% used by sector)	Electrical equipment (59%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	China; Tajikistan; Russia
Indian inventory	Reserves
Production	-
Reserves	7503 tonnes of ore
Remaining resources	11180 tonnes of ore
Total resources	18683 tonnes of ore

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.66%	21
Substitutability	0.95	13
GVA Multiplier	Lower	38
Cross-cutting Index	Lower	17

### Supply risks


Indicator	Score	Rank (/43)
HHI-WGI of global supply	21.04	Processing 17
HHI-WGI of Indian sourcing	46.25	Extraction 1
Import reliance	100%	1
End-of-life recycling rate	Almost no recycling	9
Substitutability	0.98	20
Self-sufficiency index	No self-sufficiency	1

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	7.20	21
Supply risks	32.98	3
Quadrant – 0.25 cut-off	Relatively high in both axes	

## Barium Factsheet

### Key Data

Chemical symbol	Ba	
Atomic number	56	
Main uses – overall	Drilling of Oil and Gas; Rubbers, Plastic and Paints	
Main use – India (% used by sector)	Chemicals and chemical products (48%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	India; China; Morocco
Indian inventory	Production
Production	2738934 tonnes of baryte
Reserves	Information not available
Remaining resources	Information not available
Total resources	Information not available

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.40%	30
Substitutability	0.92	18
GVA Multiplier	Moderate	7
Cross-cutting Index	Moderate	6

### Supply risks


Indicator	Score	Rank (/43)
HHI-WGI of global supply	12.12	Extraction 33
HHI-WGI of Indian sourcing	21.04	Extraction 9
Import reliance	5%	39
End-of-life recycling rate	Almost no recycling	9
Substitutability	0.98	19
Self-sufficiency index	Very high self-sufficiency	39

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	4.68	31
Supply risks	12.64	23
Quadrant – 0.25 cut-off	Relatively high in both axes	

## Bauxite Factsheet

### Key Data

Chemical symbol	Al	
Atomic number	13	
Main uses – overall	Aluminium Production; Cement	
Main use – India (% used by sector)	Basic metals (40%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	Australia; Guinea; China
Indian inventory	Production
Production	21825227 tonnes of bauxite
Reserves	646493 kilotonnes
Remaining resources	4311754 kilotonnes
Total resources	4958247 kilotonnes

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.99%	14
Substitutability	0.73	41
GVA Multiplier	Moderate	7
Cross-cutting Index	Moderate	6

### Supply risks

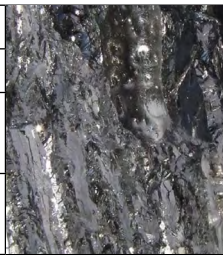
Indicator	Score	Rank (/43)
HHI-WGI of global supply	7.99	Extraction 37
HHI-WGI of Indian sourcing	12.71	Extraction 22
Import reliance	9%	37
End-of-life recycling rate	Some recycling	2
Substitutability	0.97	24
Self-sufficiency index	Very high self-sufficiency	37

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	10.03	15
Supply risks	7.59	35
Quadrant – 0.25 cut-off	Not relatively high in either axis	

## Beryllium Factsheet

### Key Data

Chemical symbol	Be	
Atomic number	4	
Main uses – overall	Automotive components: Transport and Defence; Manufacturing of Machinery.	
Main use – India (% used by sector)	Textiles (43%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	United States; China; Madagascar
Indian inventory	N/A
Production	-
Reserves	-
Remaining resources	-
Total resources	-

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.39%	31
Substitutability	0.97	9
GVA Multiplier	Moderate	7
Cross-cutting Index	Moderate	6

### Supply risks

Indicator	Score	Rank (/43)
HHI-WGI of global supply	18.52	Extraction 22
HHI-WGI of Indian sourcing	17.47	Processing 13
Import reliance	100%	1
End-of-life recycling rate	Almost no recycling	9
Substitutability	0.99	15
Self-sufficiency index	No self-sufficiency	1


### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	5.28	28
Supply risks	17.87	11
Quadrant – 0.25 cut-off	Relatively high in both axes	



## Bismuth Factsheet

### Key Data

Chemical symbol	Bi	
Atomic number	83	
Main uses – overall	Pharmaceuticals; Casting of Iron	
Main use – India (% used by sector)	Electrical equipment (83%)	

### Mining Situation

Extraction type	By-product
Main extracting countries	China; Vietnam; Japan
Indian inventory	N/A
Production	-
Reserves	-
Remaining resources	-
Total resources	-

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.15%	43
Substitutability	0.87	26
GVA Multiplier	Lower	38
Cross-cutting Index	Lower	17

### Supply risks


Indicator	Score	Rank (/43)
HHI-WGI of global supply	34.94	Extraction 8
HHI-WGI of Indian sourcing	40.57	Processing 2
Import reliance	100%	1
End-of-life recycling rate	Almost no recycling	9
Substitutability	0.94	36
Self-sufficiency index	No self-sufficiency	1

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	1.55	43
Supply risks	35.36	1
Quadrant – 0.25 cut-off	Relatively high supply risk only	

## Boron Factsheet

### Key Data

Chemical symbol	B	
Atomic number	5	
Main uses – overall	Fertilisers; Glass and Ceramics	
Main use – India (% used by sector)	Chemicals and chemical products (60%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	Turkey; United States; Chile
Indian inventory	Resources
Production	-
Reserves	- tonnes of borax
Remaining resources	74204 tonnes of borax
Total resources	74204 tonnes of borax

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	1.26%	8
Substitutability	1.00	5
GVA Multiplier	Moderate	7
Cross-cutting Index	Lower	17

### Supply risks

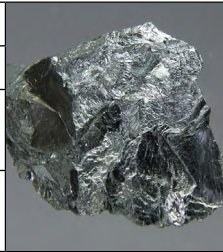
Indicator	Score	Rank (/43)	
HHI-WGI of global supply	16.33	Processing	24
HHI-WGI of Indian sourcing	9.56	Processing	27
Import reliance	100%		1
End-of-life recycling rate	Almost no recycling		9
Substitutability	1.00		8
Self-sufficiency index	No self-sufficiency		1

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	15.90	3
Supply risks	12.94	20
Quadrant – 0.25 cut-off	Relatively high in both axes	

## Chromium Factsheet

### Key Data

Chemical symbol	Cr	
Atomic number	24	
Main uses – overall	Stainless Steel and Alloy Steel; Dyes and Pigments	
Main use – India (% used by sector)	Basic metals (83%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	South Africa; Kazakhstan; India
Indian inventory	Production
Production	3929260 tonnes of chromite
Reserves	78535 kilotonnes of chromite
Remaining resources	253150 kilotonnes of chromite
Total resources	331685 kilotonnes of chromite

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	1.51%	3
Substitutability	0.71	43
GVA Multiplier	Higher	1
Cross-cutting Index	Lower	17

### Supply risks


Indicator	Score	Rank (/43)	
HHI-WGI of global supply	15.32	Processing	26
HHI-WGI of Indian sourcing	26.09	Extraction	4
Import reliance	0%		40
End-of-life recycling rate	Almost no recycling		9
Substitutability	1.00		12
Self-sufficiency index	Very high self-sufficiency		40

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	14.80	8
Supply risks	15.59	14
Quadrant – 0.25 cut-off	Relatively high in both axes	

## Cobalt Factsheet

### Key Data

Chemical symbol	Co	
Atomic number	27	
Main uses – overall	Li-ion batteries; Pigments and Dyes	
Main use – India (% used by sector)	Chemicals and chemical products (26%)	

### Mining Situation

Extraction type	By-/Co-product
Main extracting countries	Congo, D.R.; Russia; Australia
Indian inventory	Resources
Production	-
Reserves	- million tonnes of ore
Remaining resources	45 million tonnes of ore
Total resources	45 million tonnes of ore

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.55%	26
Substitutability	0.85	31
GVA Multiplier	Moderate	7
Cross-cutting Index	Higher	1

### Supply risks

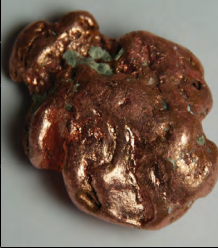
Indicator	Score	Rank (/43)
HHI-WGI of global supply	36.91	Extraction 7
HHI-WGI of Indian sourcing	24.39	Extraction 7
Import reliance	100%	1
End-of-life recycling rate	Almost no recycling	9
Substitutability	0.95	34
Self-sufficiency index	No self-sufficiency	1

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	7.16	22
Supply risks	29.14	5
Quadrant – 0.25 cut-off	Relatively high in both axes	

## Copper Factsheet

### Key Data

Chemical symbol	Cu	
Atomic number	29	
Main uses – overall	Electronic Components; Automotive industry	
Main use – India (% used by sector)	Basic metals (45%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	Chile; Peru; China
Indian inventory	Production
Production	3952472 tonnes of ore
Reserves	163891 kilotonnes of ore
Remaining resources	1496979 kilotonnes of ore
Total resources	1660870 kilotonnes of ore

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.46%	28
Substitutability	0.85	30
GVA Multiplier	Moderate	7
Cross-cutting Index	Moderate	6

### Supply risks

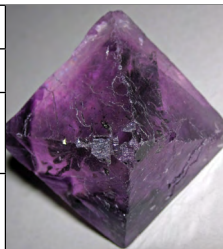
Indicator	Score	Rank (/43)	
HHI-WGI of global supply	7.97	Processing	38
HHI-WGI of Indian sourcing	7.48	Extraction	32
Import reliance	57%		31
End-of-life recycling rate	Some recycling		2
Substitutability	0.98		23
Self-sufficiency index	Moderately low self-sufficiency		31

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	4.97	29
Supply risks	6.03	38
Quadrant – 0.25 cut-off	Not relatively high in either axis	

## Fluorine Factsheet

### Key Data

Chemical symbol	F	
Atomic number	9	
Main uses – overall	Refrigerators and Air Conditioners; Aluminium Production	
Main use – India (% used by sector)	Basic metals (51%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	China; Mexico; Mongolia
Indian inventory	Production
Production	1315 tonnes of fluorite (graded)
Reserves	404241 tonnes of fluorite
Remaining resources	20588239 tonnes of fluorite
Total resources	20992480 tonnes of fluorite

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	1.21%	9
Substitutability	0.89	22
GVA Multiplier	Moderate	7
Cross-cutting Index	Lower	17

### Supply risks

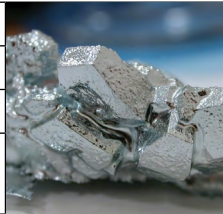
Indicator	Score	Rank (/43)
HHI-WGI of global supply	20.84	Extraction 18
HHI-WGI of Indian sourcing	0.00	Processing 37
Import reliance	100%	26
End-of-life recycling rate	Almost no recycling	9
Substitutability	0.97	25
Self-sufficiency index	Very low self-sufficiency	26

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	13.62	9
Supply risks	10.10	32
Quadrant – 0.25 cut-off	Relatively high in both axes	

## Gallium Factsheet

### Key Data

Chemical symbol	Ga	
Atomic number	31	
Main uses – overall	Integrated Circuits; LEDs	
Main use – India (% used by sector)	Textiles (49%)	

### Mining Situation

Extraction type	By-product
Main extracting countries	China; Russia; Ukraine
Indian inventory	Potential
Production	-
Reserves	-
Remaining resources	-
Total resources	-

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.38%	33
Substitutability	0.99	7
GVA Multiplier	Moderate	7
Cross-cutting Index	Lower	17

### Supply risks


Indicator	Score	Rank (/43)
HHI-WGI of global supply	50.09	Extraction 1
HHI-WGI of Indian sourcing	16.37	Processing 14
Import reliance	100%	1
End-of-life recycling rate	Almost no recycling	9
Substitutability	1.00	1
Self-sufficiency index	No self-sufficiency	1

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	4.71	30
Supply risks	33.23	2
Quadrant – 0.25 cut-off	Relatively high in both axes	

## Germanium Factsheet

### Key Data

Chemical symbol	Ge	
Atomic number	32	
Main uses – overall	Fibre and infrared optics; Solar Cells	
Main use – India (% used by sector)	Basic metals (45%)	

### Mining Situation

Extraction type	By-product
Main extracting countries	China; Russia; Japan
Indian inventory	N/A
Production	-
Reserves	-
Remaining resources	-
Total resources	-

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.22%	41
Substitutability	0.93	17
GVA Multiplier	Moderate	7
Cross-cutting Index	Moderate	6

### Supply risks

Indicator	Score	Rank (/43)
HHI-WGI of global supply	44.35	Extraction 4
HHI-WGI of Indian sourcing	11.03	Processing 24
Import reliance	100%	1
End-of-life recycling rate	Almost no recycling	9
Substitutability	0.97	28
Self-sufficiency index	No self-sufficiency	1


### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	2.62	41
Supply risks	26.86	6
Quadrant – 0.25 cut-off	Relatively high supply risk only	



## Graphite Factsheet

### Key Data

Chemical symbol	C	
Atomic number	6	
Main uses – overall	Lubricants; Batteries	
Main use – India (% used by sector)	Other non-metallic mineral products (26%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	China; Brazil; Madagascar
Indian inventory	Production
Production	34674 tonnes of graphite (R.O.M)
Reserves	8563411 tonnes of graphite
Remaining resources	203060176 tonnes of graphite
Total resources	211623587 tonnes of graphite

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.70%	20
Substitutability	0.78	37
GVA Multiplier	Lower	38
Cross-cutting Index	Higher	1

### Supply risks


Indicator	Score	Rank (/43)
HHI-WGI of global supply	28.26	Extraction 12
HHI-WGI of Indian sourcing	19.05	Extraction 10
Import reliance	28%	35
End-of-life recycling rate	Almost no recycling	9
Substitutability	0.95	35
Self-sufficiency index	Moderately high self-sufficiency	35

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	7.55	19
Supply risks	13.76	17
Quadrant – 0.25 cut-off	Relatively high in both axes	

## Hafnium Factsheet

### Key Data

Chemical symbol	Hf	
Atomic number	72	
Main uses – overall	Nuclear reactors; Alloying agent	
Main use – India (% used by sector)	Basic metals (61%)	

### Mining Situation

Extraction type	By-/Co-product
Main extracting countries	France; United States; Russia; Ukraine
Indian inventory	N/A
Production	-
Reserves	-
Remaining resources	-
Total resources	-

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	1.02%	12
Substitutability	0.80	36
GVA Multiplier	Moderate	7
Cross-cutting Index	Lower	17

### Supply risks

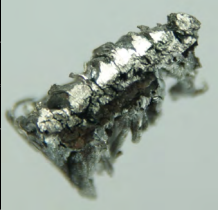
Indicator	Score	Rank (/43)
HHI-WGI of global supply	13.28	Processing 31
HHI-WGI of Indian sourcing	16.37	Processing 14
Import reliance	100%	1
End-of-life recycling rate	Almost no recycling	9
Substitutability	0.90	41
Self-sufficiency index	No self-sufficiency	1

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	10.22	14
Supply risks	13.36	19
Quadrant – 0.25 cut-off	Relatively high in both axes	

## Heavy Rare Earths Factsheet

### Key Data

Chemical symbol	Y, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu	
Atomic number	0	
Main uses – overall	Electrical equipment; Alloying agents	
Main use – India (% used by sector)	Basic metals (80%)	

### Mining Situation

Extraction type	Primary; Co-product
Main extracting countries	Myanmar; Australia; Russia
Indian inventory	Some resources
Production	-
Reserves	- tonnes of REE
Remaining resources	459727 tonnes of REE
Total resources	459727 tonnes of REE

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.31%	36
Substitutability	1.00	2
GVA Multiplier	Higher	1
Cross-cutting Index	Lower	17

### Supply risks


Indicator	Score	Rank (/43)
HHI-WGI of global supply	22.98	Extraction 14
HHI-WGI of Indian sourcing	0.00	Processing 37
Import reliance	100%	1
End-of-life recycling rate	Almost no recycling	9
Substitutability	1.00	3
Self-sufficiency index	No self-sufficiency	1

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	4.27	35
Supply risks	11.49	26
Quadrant – 0.25 cut-off	Relatively high supply risk only	

## Indium Factsheet

### Key Data

Chemical symbol	In	
Atomic number	49	
Main uses – overall	Electrical components and semiconductors	
Main use – India (% used by sector)	Computer, electronic and optical products (67%)	

### Mining Situation

Extraction type	By-product
Main extracting countries	China; South Korea; Japan
Indian inventory	N/A
Production	-
Reserves	-
Remaining resources	-
Total resources	-

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.28%	38
Substitutability	0.87	27
GVA Multiplier	Moderate	7
Cross-cutting Index	Higher	1

### Supply risks


Indicator	Score	Rank (/43)
HHI-WGI of global supply	18.97	Extraction 21
HHI-WGI of Indian sourcing	16.37	Processing 14
Import reliance	100%	1
End-of-life recycling rate	Almost no recycling	9
Substitutability	0.85	43
Self-sufficiency index	No self-sufficiency	1

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	3.07	38
Supply risks	15.07	15
Quadrant – 0.25 cut-off	Relatively high supply risk only	

## Iron Factsheet

### Key Data

Chemical symbol	Fe	
Atomic number	26	
Main uses – overall	Construction; Automotive industry	
Main use – India (% used by sector)	Basic metals (59%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	Australia; Brazil; China
Indian inventory	Production
Production	244083 tonnes of ore
Reserves	6411857 kilotonnes of ore
Remaining resources	28873661 kilotonnes of ore
Total resources	35285518 kilotonnes of ore

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	1.34%	6
Substitutability	0.92	19
GVA Multiplier	Moderate	7
Cross-cutting Index	Lower	17

### Supply risks


Indicator	Score	Rank (/43)
HHI-WGI of global supply	17.69	Processing 23
HHI-WGI of Indian sourcing	18.81	Extraction 12
Import reliance	0%	40
End-of-life recycling rate	Some recycling	2
Substitutability	0.99	14
Self-sufficiency index	Very high self-sufficiency	40

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	15.55	5
Supply risks	10.99	28
Quadrant – 0.25 cut-off	Relatively high in both axes	

## Lead Factsheet

### Key Data

Chemical symbol	Pb	
Atomic number	82	
Main uses – overall	Batteries; Defence	
Main use – India (% used by sector)	Electrical equipment (47%)	

### Mining Situation

Extraction type	Co-product
Main extracting countries	China; Australia; Mexico
Indian inventory	Production
Production	351746 tonnes of concentrate
Reserves	1900 kilotonnes of metal
Remaining resources	10970 kilotonnes of metal
Total resources	12870 kilotonnes of metal

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.41%	29
Substitutability	0.81	35
GVA Multiplier	Moderate	7
Cross-cutting Index	Lower	17

### Supply risks

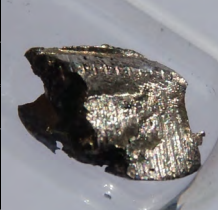
Indicator	Score	Rank (/43)
HHI-WGI of global supply	13.72	Processing 30
HHI-WGI of Indian sourcing	12.37	Extraction 23
Import reliance	57%	31
End-of-life recycling rate	Mostly recycled	1
Substitutability	0.88	42
Self-sufficiency index	Moderately low self-sufficiency	31

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	4.18	36
Supply risks	8.89	34
Quadrant – 0.25 cut-off	Relatively high economic importance only	

## Light Rare Earths Factsheet

### Key Data

Chemical symbol	La, Ce, Pr, Pm, Sm, Eu	
Atomic number	0	
Main uses – overall	Electronic appliances; Pharmaceuticals	
Main use – India (% used by sector)	Basic metals (80%)	

### Mining Situation

Extraction type	Primary; Co-product
Main extracting countries	China; United States; Myanmar
Indian inventory	Some Resources
Production	-
Reserves	- tonnes of REE
Remaining resources	459727 tonnes of REE
Total resources	459727 tonnes of REE

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.31%	35
Substitutability	1.00	2
GVA Multiplier	Higher	1
Cross-cutting Index	Lower	17

### Supply risks

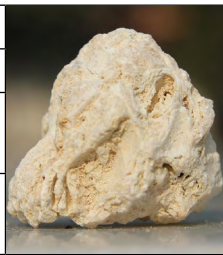
Indicator	Score	Rank (/43)
HHI-WGI of global supply	22.98	Extraction 14
HHI-WGI of Indian sourcing	0.00	Processing 37
Import reliance	100%	1
End-of-life recycling rate	Almost no recycling	9
Substitutability	1.00	3
Self-sufficiency index	No self-sufficiency	1

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	4.31	34
Supply risks	11.49	26
Quadrant – 0.25 cut-off	Relatively high supply risk only	

## Limestone Factsheet

### Key Data

Chemical symbol	CaCO <sub>3</sub>	
Atomic number	0	
Main uses – overall	Cement and Concrete; Paper, Plastics and Rubber	
Main use – India (% used by sector)	Other non-metallic mineral products (60%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	China; United States; India
Indian inventory	Production
Production	359464 tonnes of limestone
Reserves	19028470 kilotonnes of metal
Remaining resources	208560789 kilotonnes of metal
Total resources	227589259 kilotonnes of metal

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	1.38%	4
Substitutability	0.88	23
GVA Multiplier	Moderate	7
Cross-cutting Index	Lower	17

### Supply risks

Indicator	Score	Rank (/43)
HHI-WGI of global supply	0.31	Extraction 43
HHI-WGI of Indian sourcing	24.52	Extraction 6
Import reliance	0%	40
End-of-life recycling rate	Almost no recycling	9
Substitutability	1.00	3
Self-sufficiency index	Very high self-sufficiency	40


### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	15.27	7
Supply risks	14.71	16
Quadrant – 0.25 cut-off	Relatively high in both axes	



## Lithium Factsheet

### Key Data

Chemical symbol	Li	
Atomic number	3	
Main uses – overall	Batteries; Lubricant	
Main use – India (% used by sector)	Pharmaceuticals, medicinal chemicals and botanical products (39%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	Australia; Chile; China
Indian inventory	Potential
Production	-
Reserves	-
Remaining resources	5.9 million tonnes
Total resources	5.9 million tonnes

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	1.53%	2
Substitutability	0.89	21
GVA Multiplier	Lower	38
Cross-cutting Index	Lower	17

### Supply risks


Indicator	Score	Rank (/43)	
HHI-WGI of global supply	16.09	Processing	25
HHI-WGI of Indian sourcing	4.97	Processing	34
Import reliance	100%		1
End-of-life recycling rate	Almost no recycling		9
Substitutability	0.97		26
Self-sufficiency index	No self-sufficiency		1

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	15.72	4
Supply risks	10.25	31
Quadrant – 0.25 cut-off	Relatively high in both axes	

## Magnesium Factsheet

### Key Data

Chemical symbol	Mg	
Atomic number	12	
Main uses – overall	Aluminium alloys; Automotive industry	
Main use – India (% used by sector)	Chemicals and chemical products (52%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	China; Turkey; Brazil
Indian inventory	Production
Production	102554 tonnes of magnesite
Reserves	66070 kilotonnes of magnesite
Remaining resources	393047 kilotonnes of magnesite
Total resources	459117 kilotonnes of magnesite

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	1.29%	7
Substitutability	0.96	11
GVA Multiplier	Moderate	7
Cross-cutting Index	Moderate	6

### Supply risks


Indicator	Score	Rank (/43)
HHI-WGI of global supply	39.65	Processing 5
HHI-WGI of Indian sourcing	32.26	Processing 3
Import reliance	46%	33
End-of-life recycling rate	Almost no recycling	9
Substitutability	0.99	16
Self-sufficiency index	Moderately high self-sufficiency	33

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	15.54	6
Supply risks	26.39	7
Quadrant – 0.25 cut-off	Relatively high in both axes	

## Manganese Factsheet

### Key Data

Chemical symbol	Mn	
Atomic number	25	
Main uses – overall	Alloyed in steel and aluminium; Batteries	
Main use – India (% used by sector)	Basic metals (82%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	South Africa; Gabon; Australia
Indian inventory	Production
Production	2910186 tonnes of ore
Reserves	75041 kilotonnes of ore
Remaining resources	428583 kilotonnes of ore
Total resources	503624 kilotonnes of ore

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.95%	15
Substitutability	0.98	8
GVA Multiplier	Higher	1
Cross-cutting Index	Lower	17

### Supply risks

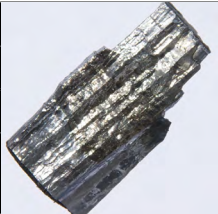
Indicator	Score	Rank (/43)
HHI-WGI of global supply	20.20	Processing 20
HHI-WGI of Indian sourcing	21.31	Processing 8
Import reliance	58%	30
End-of-life recycling rate	Almost no recycling	9
Substitutability	1.00	10
Self-sufficiency index	Moderately low self-sufficiency	30

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	12.80	11
Supply risks	17.43	12
Quadrant – 0.25 cut-off	Relatively high in both axes	

## Molybdenum Factsheet

### Key Data

Chemical symbol	Mo	
Atomic number	42	
Main uses – overall	Alloys of steel; Pigment and Dyes	
Main use – India (% used by sector)	Basic metals (55%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	China; Chile; United States
Indian inventory	Production
Production	527 tonnes of ferromolybdenum
Reserves	- tonnes of ore
Remaining resources	27203398 tonnes of ore
Total resources	27203398 tonnes of ore

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	1.06%	11
Substitutability	0.84	32
GVA Multiplier	Moderate	7
Cross-cutting Index	Lower	17

### Supply risks


Indicator	Score	Rank (/43)
HHI-WGI of global supply	9.93	Extraction 35
HHI-WGI of Indian sourcing	10.87	Extraction 25
Import reliance	100%	1
End-of-life recycling rate	Almost no recycling	9
Substitutability	0.92	37
Self-sufficiency index	No self-sufficiency	1

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	11.19	13
Supply risks	9.61	33
Quadrant – 0.25 cut-off	Not relatively high in either axis	

## Neodymium Factsheet

### Key Data

Chemical symbol	Nd	
Atomic number	60	
Main uses – overall	Magnets; Glass	
Main use – India (% used by sector)	Computer, electronic and optical products (62%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	China; United States; Myanmar
Indian inventory	N/A
Production	-
Reserves	-
Remaining resources	-
Total resources	-

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.22%	42
Substitutability	0.97	10
GVA Multiplier	Higher	1
Cross-cutting Index	Lower	17

### Supply risks


Indicator	Score	Rank (/43)
HHI-WGI of global supply	22.98	Extraction 14
HHI-WGI of Indian sourcing	0.00	Processing 37
Import reliance	100%	1
End-of-life recycling rate	Almost no recycling	9
Substitutability	0.95	32
Self-sufficiency index	No self-sufficiency	1

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	2.95	39
Supply risks	10.96	30
Quadrant – 0.25 cut-off	Relatively high supply risk only	

## Nickel Factsheet

### Key Data

Chemical symbol	Ni	
Atomic number	28	
Main uses – overall	Construction; Automotive industry	
Main use – India (% used by sector)	Basic metals (46%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	Indonesia; Philippines; Russia
Indian inventory	Resources
Production	-
Reserves	-
Remaining resources	189 million tonnes of ore
Total resources	189 million tonnes of ore

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	1.11%	10
Substitutability	0.94	15
GVA Multiplier	Moderate	7
Cross-cutting Index	Moderate	6

### Supply risks

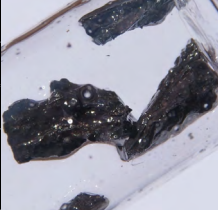
Indicator	Score	Rank (/43)
HHI-WGI of global supply	7.67	Extraction 39
HHI-WGI of Indian sourcing	19.00	Extraction 11
Import reliance	100%	1
End-of-life recycling rate	Almost no recycling	9
Substitutability	0.97	29
Self-sufficiency index	No self-sufficiency	1

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	13.14	10
Supply risks	12.93	21
Quadrant – 0.25 cut-off	Relatively high in both axes	

## Niobium Factsheet

### Key Data

Chemical symbol	Nb	
Atomic number	41	
Main uses – overall	Construction; Automotive	
Main use – India (% used by sector)	Basic metals (64%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	Brazil; Canada; Russia
Indian inventory	N/A
Production	-
Reserves	-
Remaining resources	-
Total resources	-

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	1.00%	13
Substitutability	1.00	2
GVA Multiplier	Moderate	7
Cross-cutting Index	Lower	17

### Supply risks


Indicator	Score	Rank (/43)	
HHI-WGI of global supply	46.78	Processing	2
HHI-WGI of Indian sourcing	12.74	Extraction	19
Import reliance	100%		1
End-of-life recycling rate	Almost no recycling		9
Substitutability	1.00		3
Self-sufficiency index	No self-sufficiency		1

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	12.61	12
Supply risks	29.76	4
Quadrant – 0.25 cut-off	Relatively high in both axes	

## Phosphorus Factsheet

### Key Data

Chemical symbol	P	
Atomic number	15	
Main uses – overall	Animal Feed; Fertilisers	
Main use – India (% used by sector)	Chemicals and chemical products (90%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	China; Morocco; United States
Indian inventory	Production
Production	1400189 tonnes of phosphorite
Reserves	30876093 tonnes of rock phosphate
Remaining resources	280377392 tonnes of rock phosphate
Total resources	311253485 tonnes of rock phosphate

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.62%	24
Substitutability	1.00	1
GVA Multiplier	Moderate	7
Cross-cutting Index	Lower	17

### Supply risks

Indicator	Score	Rank (/43)
HHI-WGI of global supply	31.23	Processing 9
HHI-WGI of Indian sourcing	0.00	Processing 37
Import reliance	85%	28
End-of-life recycling rate	Almost no recycling	9
Substitutability	1.00	2
Self-sufficiency index	Very low self-sufficiency	28


### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	7.81	18
Supply risks	12.48	24
Quadrant – 0.25 cut-off	Relatively high in both axes	



## Platinum Factsheet

### Key Data

Chemical symbol	Pt	
Atomic number	78	
Main uses – overall	Automotive catalysts; Jewellery	
Main use – India (% used by sector)	Other manufacturing (39%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	South Africa; Russia; Zimbabwe
Indian inventory	Resources
Production	-
Reserves	- tonnes of metal contained
Remaining resources	21 tonnes of metal contained
Total resources	21 tonnes of metal contained

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.86%	16
Substitutability	0.87	25
GVA Multiplier	Moderate	7
Cross-cutting Index	Lower	17

### Supply risks


Indicator	Score	Rank (/43)
HHI-WGI of global supply	30.03	Processing 10
HHI-WGI of Indian sourcing	4.67	Processing 35
Import reliance	100%	1
End-of-life recycling rate	Some recycling	2
Substitutability	0.98	22
Self-sufficiency index	No self-sufficiency	1

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	9.54	16
Supply risks	16.64	13
Quadrant – 0.25 cut-off	Relatively high in both axes	

## Potassium Factsheet

### Key Data

Chemical symbol	K	
Atomic number	19	
Main uses – overall	Fertilisers; Water softener	
Main use – India (% used by sector)	Chemicals and chemical products (64%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	Canada; Russia; Belarus
Indian inventory	Resources
Production	-
Reserves	- million tonnes of potash
Remaining resources	23091 million tonnes of potash
Total resources	23091 million tonnes of potash

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	1.37%	5
Substitutability	1.00	6
GVA Multiplier	Moderate	7
Cross-cutting Index	Lower	17

### Supply risks


Indicator	Score	Rank (/43)
HHI-WGI of global supply	7.09	Extraction 40
HHI-WGI of Indian sourcing	0.00	Processing 37
Import reliance	100%	1
End-of-life recycling rate	Almost no recycling	9
Substitutability	1.00	7
Self-sufficiency index	No self-sufficiency	1

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	17.23	2
Supply risks	3.54	43
Quadrant – 0.25 cut-off	Not relatively high in either axis	

## Rhenium Factsheet

### Key Data

Chemical symbol	Re	
Atomic number	75	
Main uses – overall	Superalloys; Aerospace	
Main use – India (% used by sector)	Textiles (49%)	

### Mining Situation

Extraction type	By-product
Main extracting countries	Chile; United States; Poland
Indian inventory	N/A
Production	-
Reserves	-
Remaining resources	-
Total resources	-

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.37%	34
Substitutability	0.94	14
GVA Multiplier	Moderate	7
Cross-cutting Index	Lower	17

### Supply risks

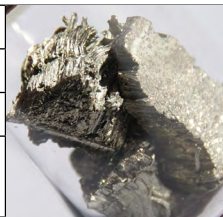
Indicator	Score	Rank (/43)
HHI-WGI of global supply	10.99	34
HHI-WGI of Indian sourcing	16.37	14
Import reliance	100%	1
End-of-life recycling rate	Almost no recycling	9
Substitutability	0.98	17
Self-sufficiency index	No self-sufficiency	1

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	4.45	33
Supply risks	13.46	18
Quadrant – 0.25 cut-off	Relatively high supply risk only	

## Scandium Factsheet

### Key Data

Chemical symbol	Sc	
Atomic number	21	
Main uses – overall	Alloys; Electronics	
Main use – India (% used by sector)	Basic metals (80%)	

### Mining Situation

Extraction type	Primary; By-product
Main extracting countries	China; Russia; United States
Indian inventory	N/A
Production	-
Reserves	-
Remaining resources	-
Total resources	-

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.31%	36
Substitutability	0.76	39
GVA Multiplier	Higher	1
Cross-cutting Index	Lower	17

### Supply risks


Indicator	Score	Rank (/43)
HHI-WGI of global supply	45.20	Extraction 3
HHI-WGI of Indian sourcing	10.53	Processing 26
Import reliance	100%	1
End-of-life recycling rate	Almost no recycling	9
Substitutability	0.92	38
Self-sufficiency index	No self-sufficiency	1

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	3.24	37
Supply risks	25.62	9
Quadrant – 0.25 cut-off	Relatively high supply risk only	

## Selenium Factsheet

### Key Data

Chemical symbol	Se	
Atomic number	34	
Main uses – overall	Electrolytic manganese; Glass	
Main use – India (% used by sector)	Chemicals and chemical products (37%)	

### Mining Situation

Extraction type	By-product
Main extracting countries	China; Japan; Germany
Indian inventory	N/A
Production	720 tonnes as a by-product of copper
Reserves	-
Remaining resources	-
Total resources	-

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.62%	25
Substitutability	0.73	42
GVA Multiplier	Moderate	7
Cross-cutting Index	Lower	17

### Supply risks


Indicator	Score	Rank (/43)
HHI-WGI of global supply	8.09	Extraction 36
HHI-WGI of Indian sourcing	0.00	Processing 37
Import reliance	100%	1
End-of-life recycling rate	Almost no recycling	9
Substitutability	0.90	40
Self-sufficiency index	No self-sufficiency	1

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	5.64	25
Supply risks	3.64	41
Quadrant – 0.25 cut-off	Not relatively high in either axis	

## Silicon Factsheet

### Key Data

Chemical symbol	Si	
Atomic number	14	
Main uses – overall	Paints; Aluminium alloys	
Main use – India (% used by sector)	Other non-metallic mineral products (38%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	China; Russia; Brazil
Indian inventory	Production
Production	19367 tonnes of siliceous
Reserves	-
Remaining resources	-
Total resources	-

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.64%	22
Substitutability	0.86	29
GVA Multiplier	Moderate	7
Cross-cutting Index	Higher	1

### Supply risks


Indicator	Score	Rank (/43)
HHI-WGI of global supply	28.73	Extraction 11
HHI-WGI of Indian sourcing	8.74	Processing 28
Import reliance	10%	36
End-of-life recycling rate	Almost no recycling	9
Substitutability	1.00	9
Self-sufficiency index	Very high self-sufficiency	36

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	6.96	24
Supply risks	6.27	37
Quadrant – 0.25 cut-off	Not relatively high in either axis	

## Silver Factsheet

### Key Data

Chemical symbol	Ag	
Atomic number	47	
Main uses – overall	Jewellery; Paints	
Main use – India (% used by sector)	Other manufacturing (49%)	

### Mining Situation

Extraction type	By-product
Main extracting countries	Mexico; China; Peru
Indian inventory	Production
Production	609340 tonnes of silver
Reserves	170446020 tonnes of ore
Remaining resources	398197732 tonnes of ore
Total resources	568643752 tonnes of ore

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.63%	23
Substitutability	0.75	40
GVA Multiplier	Lower	38
Cross-cutting Index	Lower	17

### Supply risks


Indicator	Score	Rank (/43)
HHI-WGI of global supply	7.09	Extraction 41
HHI-WGI of Indian sourcing	4.49	Processing 36
Import reliance	93%	27
End-of-life recycling rate	Some recycling	2
Substitutability	0.91	39
Self-sufficiency index	Very low self-sufficiency	27

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	5.45	26
Supply risks	4.93	39
Quadrant – 0.25 cut-off	Not relatively high in either axis	

## Strontium Factsheet

### Key Data

Chemical symbol	Sr	
Atomic number	38	
Main uses – overall	Magnets; Pyrotechnic application	
Main use – India (% used by sector)	Basic metals (59%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	Spain; Iran; China
Indian inventory	N/A
Production	-
Reserves	-
Remaining resources	-
Total resources	-

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	1.89%	1
Substitutability	0.88	24
GVA Multiplier	Moderate	7
Cross-cutting Index	Lower	17

### Supply risks

Indicator	Score	Rank (/43)
HHI-WGI of global supply	14.14	Extraction 29
HHI-WGI of Indian sourcing	7.93	Extraction 31
Import reliance	100%	1
End-of-life recycling rate	Almost no recycling	9
Substitutability	1.00	11
Self-sufficiency index	No self-sufficiency	1


### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	20.87	1
Supply risks	10.99	29
Quadrant – 0.25 cut-off	Relatively high in both axes	



## Tantalum Factsheet

### Key Data

Chemical symbol	Ta	
Atomic number	73	
Main uses – overall	Electronic micro-capacitors; Medical technology	
Main use – India (% used by sector)	Machinery and equipment not elsewhere classified (36%)	

### Mining Situation

Extraction type	Primary; Co-product
Main extracting countries	Congo, D.R.; Brazil; Rwanda
Indian inventory	N/A
Production	-
Reserves	-
Remaining resources	-
Total resources	-

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.23%	40
Substitutability	0.87	28
GVA Multiplier	Moderate	7
Cross-cutting Index	Moderate	6

### Supply risks


Indicator	Score	Rank (/43)
HHI-WGI of global supply	14.25	Extraction 28
HHI-WGI of Indian sourcing	12.74	Extraction 19
Import reliance	100%	1
End-of-life recycling rate	Almost no recycling	9
Substitutability	0.95	33
Self-sufficiency index	No self-sufficiency	1

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	2.54	42
Supply risks	12.83	22
Quadrant – 0.25 cut-off	Relatively high supply risk only	

## Tin Factsheet

### Key Data

Chemical symbol	Sn	
Atomic number	50	
Main uses – overall	Solders; Metal Packaging	
Main use – India (% used by sector)	Basic metals (50%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	China; Indonesia; Myanmar
Indian inventory	Production
Production	15530 tonnes of concentrate
Reserves	2101 tonnes of ore
Remaining resources	83720794 tonnes of ore
Total resources	83722895 tonnes of ore

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.72%	17
Substitutability	0.78	38
GVA Multiplier	Moderate	7
Cross-cutting Index	Moderate	6

### Supply risks


Indicator	Score	Rank (/43)
HHI-WGI of global supply	15.20	Processing 27
HHI-WGI of Indian sourcing	25.13	Extraction 5
Import reliance	100%	25
End-of-life recycling rate	Some recycling	2
Substitutability	0.97	27
Self-sufficiency index	Very low self-sufficiency	25

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	7.05	23
Supply risks	19.18	10
Quadrant – 0.25 cut-off	Relatively high in both axes	

## Titanium Factsheet

### Key Data

Chemical symbol	Ti	
Atomic number	22	
Main uses – overall	Paints; Polymers	
Main use – India (% used by sector)	Chemicals and chemical products (62%)	

### Mining Situation

Extraction type	Primary; Co-product
Main extracting countries	China; South Africa; Mozambique
Indian inventory	Production
Production	13000 tonnes of rutile
Reserves	15998625 tonnes of titanium
Remaining resources	411108526 tonnes of titanium
Total resources	427107151 tonnes of titanium

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.71%	18
Substitutability	0.82	34
GVA Multiplier	Moderate	7
Cross-cutting Index	Lower	17

### Supply risks


Indicator	Score	Rank (/43)
HHI-WGI of global supply	20.26	Processing 19
HHI-WGI of Indian sourcing	8.42	Extraction 30
Import reliance	0%	40
End-of-life recycling rate	Almost no recycling	9
Substitutability	0.96	31
Self-sufficiency index	Very high self-sufficiency	40

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	7.30	20
Supply risks	4.84	40
Quadrant – 0.25 cut-off	Not relatively high in either axis	

## Tungsten Factsheet

### Key Data

Chemical symbol	W	
Atomic number	74	
Main uses – overall	Construction; Aeronautics	
Main use – India (% used by sector)	Machinery and equipment not elsewhere classified (22%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	China; Vietnam; Russia
Indian inventory	Resources
Production	-
Reserves	- tonnes of ore
Remaining resources	89432464 tonnes of ore
Total resources	89432464 tonnes of ore

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.47%	27
Substitutability	0.82	33
GVA Multiplier	Moderate	7
Cross-cutting Index	Moderate	6

### Supply risks


Indicator	Score	Rank (/43)
HHI-WGI of global supply	37.23	6
HHI-WGI of Indian sourcing	15.22	18
Import reliance	100%	1
End-of-life recycling rate	Almost no recycling	9
Substitutability	0.98	18
Self-sufficiency index	No self-sufficiency	1

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	5.36	27
Supply risks	25.76	8
Quadrant – 0.25 cut-off	Relatively high in both axes	

## Vanadium Factsheet

### Key Data

Chemical symbol	V	
Atomic number	23	
Main uses – overall	Alloy in iron and steel; Batteries	
Main use – India (% used by sector)	Textiles (45%)	

### Mining Situation

Extraction type	Co-product
Main extracting countries	China; Russia; South Africa
Indian inventory	Resources
Production	-
Reserves	24633855
Remaining resources	24633855
Total resources	tonnes of ore

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.39%	32
Substitutability	0.91	20
GVA Multiplier	Moderate	7
Cross-cutting Index	Lower	17

### Supply risks


Indicator	Score	Rank (/43)
HHI-WGI of global supply	26.86	Extraction 13
HHI-WGI of Indian sourcing	12.74	Extraction 19
Import reliance	46%	34
End-of-life recycling rate	Almost no recycling	9
Substitutability	0.96	30
Self-sufficiency index	Moderately high self-sufficiency	34

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	4.45	32
Supply risks	12.01	25
Quadrant – 0.25 cut-off	Relatively high supply risk only	

## Zinc Factsheet

### Key Data

Chemical symbol	Zn	
Atomic number	30	
Main uses – overall	Zinc Galvanising; Alloy Casting	
Main use – India (% used by sector)	Basic metals (49%)	

### Mining Situation

Extraction type	Co-product
Main extracting countries	China; Peru; Australia
Indian inventory	Production
Production	1446824 tonnes of concentrate
Reserves	7438 kilotonnes of metal
Remaining resources	25732 kilotonnes of metal
Total resources	33170 kilotonnes of metal

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.71%	19
Substitutability	0.93	16
GVA Multiplier	Moderate	7
Cross-cutting Index	Higher	1

### Supply risks

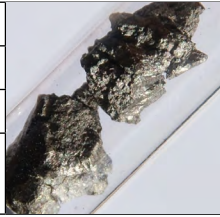
Indicator	Score	Rank (/43)
HHI-WGI of global supply	12.49	Processing 32
HHI-WGI of Indian sourcing	5.73	Processing 33
Import reliance	7%	38
End-of-life recycling rate	Some recycling	2
Substitutability	0.98	21
Self-sufficiency index	Very high self-sufficiency	38

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	8.27	17
Supply risks	3.59	42
Quadrant – 0.25 cut-off	Not relatively high in either axis	

## Zirconium Factsheet

### Key Data

Chemical symbol	Zr	
Atomic number	40	
Main uses – overall	Nuclear reactor fuels; Ceramics industry	
Main use – India (% used by sector)	Other non-metallic mineral products (68%)	

### Mining Situation

Extraction type	Primary
Main extracting countries	Australia; South Africa; China
Indian inventory	Production
Production	15600 tonnes of zircon ore
Reserves	669466 tonnes of zircon
Remaining resources	1674435 tonnes of zircon
Total resources	2343901 tonnes of zircon

### Economic Importance

Indicator	Score	Rank (/43)
Disruption potential	0.24%	39
Substitutability	0.96	12
GVA Multiplier	Lower	38
Cross-cutting Index	Lower	17

### Supply risks

Indicator	Score	Rank (/43)
HHI-WGI of global supply	6.72	Extraction 42
HHI-WGI of Indian sourcing	8.64	Processing 29
Import reliance	78%	29
End-of-life recycling rate	Almost no recycling	9
Substitutability	0.99	13
Self-sufficiency index	Very low self-sufficiency	29

### Criticality comparison

Indicator	Score	Rank (/43)
Economic importance	2.68	40
Supply risks	7.16	36
Quadrant – 0.25 cut-off	Relatively high economic importance only	

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