



Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic
Kyrgyz Geological Survey



Investment proposal for the development of rare earth metals on the basis of the Ak-Tyuz tailing dumps and the Kutessai-II deposit





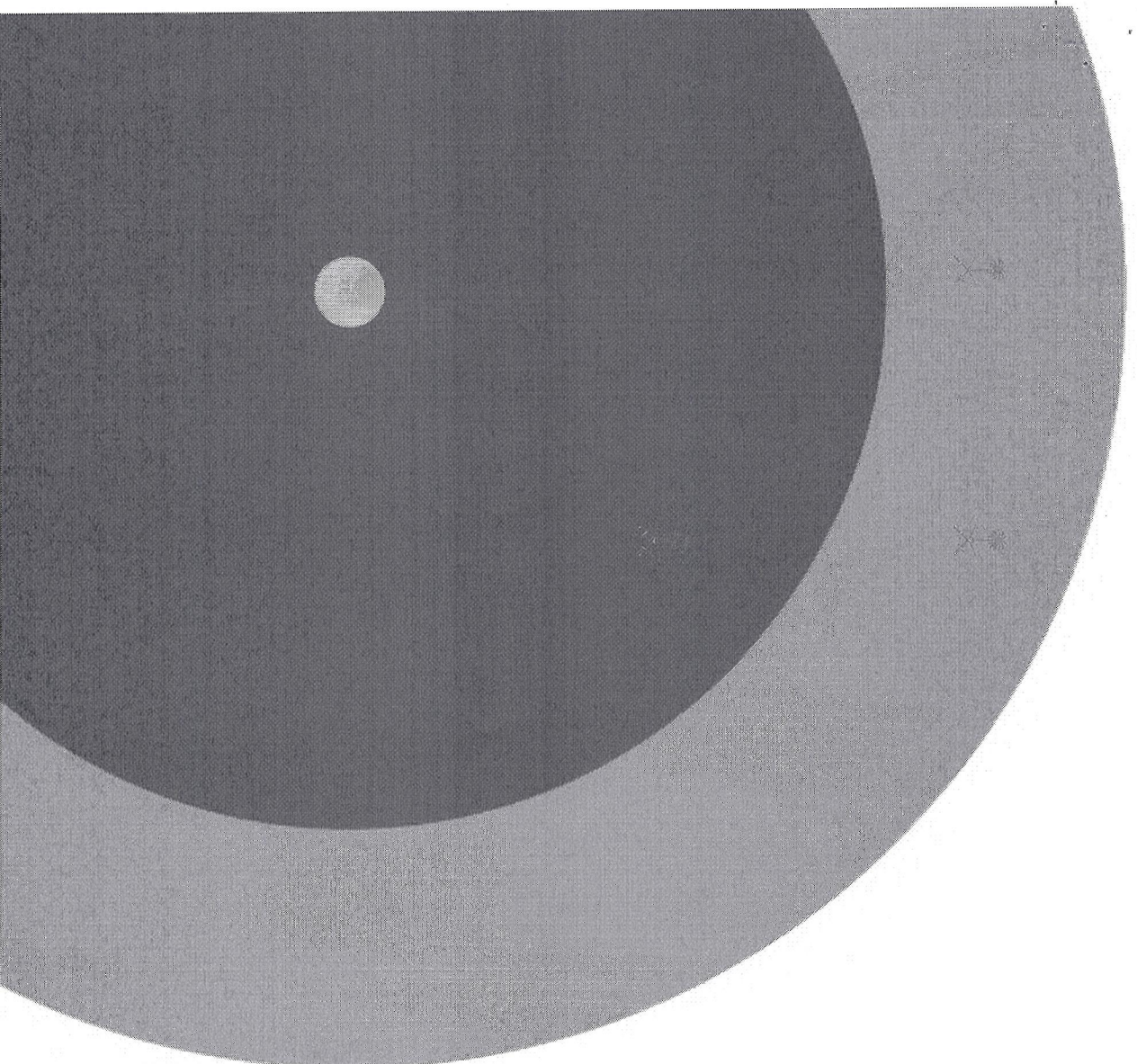
In the Kyrgyz Republic

Rare earth me

Rare earth metals (REM) are a group of 16 elements.

REM is widely used in various technological industries, such as the production of high-power magnets, catalysts, lasers, nuclear power, fiber optics, electronics and other high-tech sectors.

Due to their strategic importance for various industries, the extraction and processing of rare earth metals is a significant industrial activity.



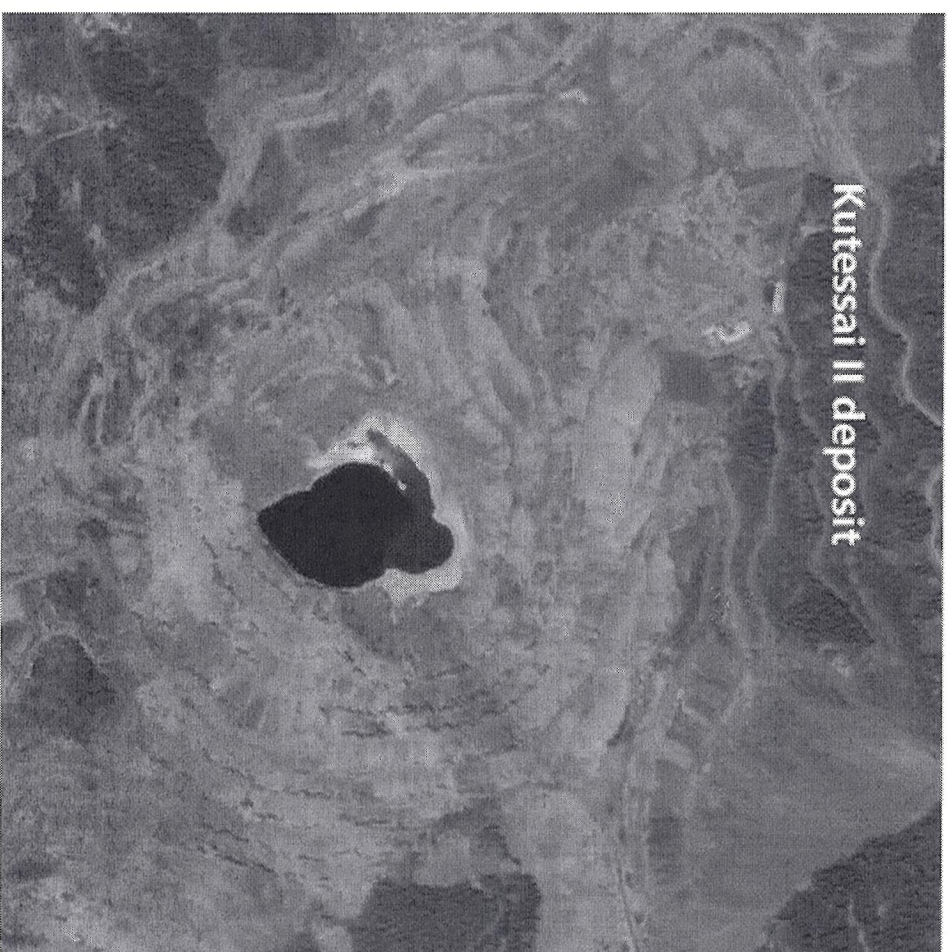
Reserves of the Kutessai II deposit

Kutessai II is located on the territory of the Keminsky district of the Chui region. It is orographically located on the slope of the Tasa-Keminsky ridge, which is the watershed of the Maly and Bolshoy Kemin rivers. Geographical coordinates: 42° 10' N, 76° 07' E. The deposit area is 760,070,270 sq. m. and 420,510,320 sq. d.

<p>By category A+B+C1</p> <p>Ore</p> <p>16,763,000 tons</p> <p>✓ $\Sigma \text{TR}_2\text{O}_3$ - 44 300 tons</p> <p>✓ Content</p> <p>2,642,72 g/ton</p>	<p>Off-balance sheet</p> <p>Ore</p> <p>16,409,000 tons</p> <p>✓ $\Sigma \text{TR}_2\text{O}_3$ - 11 800 tons</p> <p>✓ Content</p> <p>719,1 g/ton</p>	<p>By category C₂</p> <p>Ore</p> <p>3,465,000 tons</p> <p>✓ $\Sigma \text{TR}_2\text{O}_3$ - 7 200 tons</p> <p>✓ Content</p> <p>2 077,9 g/ton</p>	<p>Σ A+B+C</p> <p>Ore</p> <p>20,228,000 tons</p> <p>✓ $\Sigma \text{TR}_2\text{O}_3$ - 63 300 tons</p> <p>✓ Content</p> <p>2 545,1 g/ton</p>
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Data on tailings dumps

As a result of the production activities of JSC KHMZ (1942-1995), 5 tailings dumps were formed. Four tailings dumps are located in the area of Ak-Tyuz settlement, the fifth The Boordun tailing dump is located 3.8 km south of the city of Orlovka.



The weighted average particle size is 0.138 mm, the average density is 1.60 g/cm³

Total volumes for tailings dumps No. 1, 2, 3 – 3.1 million tons

Volumes of the Buurdinsky tailings dump 5.1 million tons

Audit work for economic is carried out at 4 tailings

✓ Buurdinskoye tailing volume is 3.2 million. million tons

✓ Tailing dump No. 1TF 370.6 thousand. m³ = thousand tons

✓ Tailing dump No. 2vc thousand. m³ = 800 tons

✓ Tailing dump No. 3TF 1050 thousand. m³ = thousand tons

Technical and economic calculation

No	Name	Amount in US\$ (Per year)
1	Mining and technical costs.	6,500,000
2	Mining and processing costs. Operational and depreciation expenses.	17,500,000
3	Chemical and metallurgical plant. Operational and depreciation expenses.	13,666,000
Total:		37,666,000
Profit before tax.		418,000,000
Net profit.		380,334,000
Production capacity.		1 million tons

Economic indicators

Mining costs:

№	In an open way	Underground way	Total of US\$ (Over 18 years)	Annua
1	✖ 48,000,000	✖ 65,000,000	48,000,000 + 65,000,000 = 113,000,000	113/18 years =
	Total:		113,000,000	6,5

Mining and processing costs:

№	Capital expenditures	Operating costs (over 18 years)	Total of US\$ (Over 18 years)	Annua
1	✖ 45,000,000	✖ 270,000,000	45,000,000 + 270,000,000 = 315,000,000	270/18 years \$,
	Total:		315,000,000	17,5

Chemical and Metallurgical plant:

№	Капитальные затраты	Operating costs (over 18 years)	Total of US\$ (Over 18 years)	Annua
1	30,000,000	216,000,000	30,000,000 + 216,000,000 = 246,000,000	246/18 years \$,
	Total:		246,000,000	13,€
	All:		674,000,000	37,€

Total costs



Mining and technical costs:

48 million

65 million

Equal to: 113 million – mining.

113/18 years = \$ 6.5 million/year

Mining and processing costs:

45 million - Capital expenditures

15 million - Operating costs

15 million × 18 years = 270 million \$

270 million \$ + 45 million \$ = 315 million \$/over 18 years

315 /18 years = \$17,500 million/year

Chemical and Metallurgical costs:

30 million - Capital expenditures

12 million - Operating costs

12 million × 18 years
\$ 216 million + \$ 30 million/over 18 years

246 /18 years = \$ 13 million/year

Cost price

Recycling

Processing – 1,000,000 million tons × 2,545.97 g/t STR203 - 2,545.97 tons of iron in ore/year of extracti
1,900 tons/year of metal

Concentrate yield – 5% total: 50,000 tons of concentrate per year

The content in the concentrate is STR203 - 38 189.55 g/ton = 3.8% of the concentrate



For the extraction of 1 million tons of ore = \$ 6.7 million

Depreciation funds (annual) – \$4.1 million/year

Operating costs – \$ 27 million/year

Total: 1 ton of concentrate = \$ 757.32 (cost) = 34,370.5 grams = \$ 22.03 per kilogram of metal

Ongoing work at the Buurdinsky tailings dump

Geological tasks

1. Carrying out search and evaluation work on the entire area of work.
2. Carrying out a complex of exploration works for polymetals, in order to calculate reserves and allocate an area for industrial development.
3. Conducting technological studies of tailings and determining the possibility of obtaining commercial concentrates from them using modern equipment and the latest enrichment methods.

The tasks are solved by the following types of work:

Generalization and analysis of geological materials;

- Conducting search and filming operations;
- Core drilling and sampling;
- Geophysical and technological research;
- Topo-surveying service of mining operations
- Construction and restoration of access road
- Analytical research and reporting.

№	Types of work	Unit of measurement
1	Core drilling of wells	P.M. (square)
2	Topographic and geophysical work on the surface	ha
3	Spectral analysis	probe
4	Assay for gold and silver	probe
5	Chemical analysis for Pb, Zn, Au, Ag, Cu, In, TR, etc.	probe
6	Laboratory technological research	probe
7	Hydrogeochemical studies	probe
8	Preparation of the report	squad/day

Reserves of the Kutessai II deposit

As of 01.01.1992, in the author's figures in the following amount (Protocol No. 445 of October 31, 1995.)

Counting elements	Balance sheets				Off-balance sh	
	Inventory category		Inventory category		Inventory categ	
1	B	C ₁	C ₂	B	C ₁	6
2	3	4	5			
Ore reserves, thousand tons	15147,4	1797,5	3464,7	-	-	-
The amount of TR ₂ O ₃ , t	40950,5	3892,8	7250,3	-	-	-
Lead, t	19500	700	1400	-	-	-
Molybdenum, t	1984,3	117,6	327,8	-	-	-
Bismuth, t	-	2185,1	104,5	-	-	-
Zinc, t	-	16500	-	-	-	-
Silver, t	-	52,95	8,19	-	-	-
Including: 1. In the outline of a project career						
Ore reserves, thousand tons	10885,0	830,1	-	2001,5	241,5	
The amount of TR ₂ O ₃ , t	32355,6	1971,1	-	3928,4	460,4	
Свинец, т	13800	200	-	1640	100	
Молибденум, т	1546,9	45,4	-	201,9	7,4	
Бисмут, т	-	1757,3	-	-	307,8	
Цинк, т	-	-	-	-	11900	
Серебро, т	-	38,07	-	-	7,3	
2. Behind the contour of a project career without a balance sheet						
Ore reserves, thousand tons	2260,9	725,9	3464,7			
The amount of TR ₂ O ₃ , t	4666,5	1461,3	7250,3			
Свинец, т	4100	400	1400			
Молибденум, т	235,5	64,8	327,8			
Бисмут, т	-	120,1	104,5			
Цинк, т	-	4600	-			
Серебро, т	-	7,58	8,19			

Thanks for your attention