

RARE EARTH METALS: Date:

AS NEW GLOBAL BATTLEFIELDS

OUTLINE:

1) Introduction:

Rare Earth metals have emerged as new global battlefield because of their utility as a tool of economic coercion and their importance in manufacturing weapons, developing AI models and transitioning to renewables. Contemporary developments like, US-Ukraine mineral deal and supply of ammunition to Ukraine, the race among global powers to secure Greenland's mineral reserves and re-formation of alliances to achieve mineral security, underscore how control over these resources is reshaping the geopolitical order of the 21st century.

2) How rare Earth metals act as new global battlefields

(a) Rare Earth metals act as a tool of economic coercion.

(b) Importance of ^{the} rare Earth metals in national security because of their role in weapons manufacturing.

- (c) Importance of rare Earth metals in technological advancement.
- (d) Importance of the metals in switching to renewables from fossils to ensure energy security and adapting climate change
- (e) Significance of rare Earth metals in developing AI models
- (f) US-Ukraine mineral deal and supply of ammunition to the Ukraine
- (g) Tug of War between the USA and the China to lock mineral deal with Greenland and Greenland's interest to gain independence
- (h) Growing strategic partnership between the China and Russia to counter the US hegemony
- (i) Formation of alliances to achieve rare metals security.
- (j) Control on the rare Earth metal supply chain means control on the entire world.

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(3) Conclusion.

THE ESSAY

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They do not glitter like gold. They do not flow like oil. Buried thousands of kilometers under the Earth Crust, they hold the power to change the world order. They possess significant economic value that can make under-developed country's GDP to compete with developed countries' GDP. They are called as the rare Earth metals. Rare Earth metals are group of 17 elements with atomic number 21, 39 and 57 to 71 on the periodic table. They are called rare not because of their paucity but due to their seldom presence in pure and concentrated form. They are mixed with other substances and refining them is highly specialized and energy intensive process. Only few countries have expertise in refining them. The dominant name among these is of the China. In the contemporary world, these metals have emerged as the new battlefields. From a gadget in our hands to the nuclear weapon that ensures the national security, these metals play a crucial role in the

manufacturing process. Global powers are vying to diversify these metals supply chains to excel in the field of AI and advanced technology. Therefore, these metals act as new global battlefields because of their significance in various sectors and the quest of global powers to gain control of the global supply chain of these metals.

Rare Earth metals act as new battlefields because they can be used as a tool of economic coercion. US and China have been engaged in trade war for years. However, the arrival of Trump in the Oval office has intensified this war. The USA has imposed tariffs on Chinese imports. As a result, the China has also imposed tariffs in the USA imports in retaliation. Besides, China has also halted the supply of seven rare Earth metals to the USA. These metals are heavy rare Earth metals that are difficult to process and they are the cornerstone of defence sector. A US Geological reports say that between 2020 to 2023,

The US relied upon the China for 70% of its rare Earth metals import. The supply of these metals is the achilles heel of the USA of which the China has taken advantage of. This halt in supply of mineral has brought both the countries on negotiations that resulted in lowering of tariffs on the Chinese imports and China, in return, ensures smooth supply of these minerals. Therefore, these metals serve as an instrument of economic pressure.

Moreover, these metals serve as the guardian of national security because of their importance in weapons manufacturing. The recent years are harbinger of the fact that international law and order are on its last leg. National security is vulnerable to external attacks. Powerful nations are employing force to bend less powerful nation to bow before their interests. Nuclear armed nations are attacking non-nuclear countries to achieve their interest. For example, Israel attack on Iran, Lebanon, Syria,

Kemur and Palestine, Russia attack on Ukraine and USA attack on Iran. These current happenings have increased the importance of weapons. Rare Earth metals play an instrumental role in the manufacturing of weapons. Samarium-Cobalt magnets are used in radar, missiles and fighter jets. Gadolinium is used in nuclear reactor shielding and night vision goggles. These uses are only a tip of the iceberg. Therefore, rare Earth metals are considered as a saviour of national sovereignty.

Furthermore, the importance of rare Earth metals in technological advancement is undeniable. World is advancing in the field of technology day by day. Every day a new discovery is made that makes previous one obsolete. World is making technological advancement to make their life easy and efficient. Rare Earth metals are crucial for these advancements. They are used to make tiny chips that can power range of instruments from pocket size gadget to large missiles. Neodymium are used to make strong permanent

magnets in smartphones, laptops and headphones. Yttrium and Erbium are utilized in fiber optics cable and laser communication which is used in internet and telecommunication systems. Thus, technological advancements are dependent on the availability of the rare Earth metals.

Besides, these metals play crucial role in switching to renewables from fossils to ensure energy security and climate adaption. Fossil fuels were considered to be the only source of energy in the past. However, due to their abnormal and continual usage, the sources of fossil fuels are depleting. Moreover, geopolitical factors have also made the fossils as unreliable source of energy as evident from the Russia's halting of gas supply to Europe because of its war in Ukraine. Fossils also have negative environmental implications. All these factors urge countries to switch to renewables. Rare Earth metals play instrumental role in this transition. They are used to develop wind turbines that are used to harness wind energy.

According to US Geological Survey factsheet, around 1 MWh of wind energy requires about 200 kg of the rare metals. They are also used in developing electric vehicles, storage batteries, solar panels, inverters and sensors. Thus, these metals are crucial to achieve energy security in time of climate crisis.

Moreover, these metals are also used in developing AI models. World is heading towards the AI. Kai-Fu Lee, CEO of Sinovation Ventures says "AI is going to change the world more than anything in the history of humanity, more than electricity". Companies are employing AI for automation. AI has doubled the pace of advancements. Rare Earth metals play significant role in the development. Ttitanium used in semiconductors enhances the stability of certain materials critical for high speed computing, which is required for training AI algorithms. Praseodymium, with high melting and boiling points, is used in hard disk drive to withstand the temperature generated by AI data processing. Hence, strides in AI development can only

be made in the presence of the rare Earth metals.

In addition to that, contemporary happenings have also made rare Earth metals as emerging global field. Ukraine is critical site for rare

Earth metal reserves. World Economic Forum says that Ukraine has praseodymium, lanthanum, neodymium, beryllium and etc. They around 5% of global rare

Earth metal reserve (**Rare Earths and Strategic Minerals in Ukraine, UN**).

Ukraine is plunged into war with Russia. Ukraine needs the West's support in its war. On April 30, 2025, the USA and Ukraine have signed the mineral deal in which the USA has gained access to Ukraine mineral reserves in return to economical and military assistance to Ukraine. This deal would further fan the flames of war. Therefore, rare Earth metals are indeed the emerging the battlefields.

Furthermore, there is ongoing tug of war between the USA and China to lock mineral deal with Greenland. Greenland is also a hub of rare Earth metals. According to European Commission Survey 2023, there are around 25 to 34

minerals defined as 'critical raw materials' exist in the Greenland. The USA and China are vying to grab a control of these resources.

The USA has urged Australian mining companies to avoid selling Greenland's rare Earth metals project to Chinese companies. President Trump has also showed intentions to annex Greenland. On the other hand, Greenland's leaders consider mining revenue as a path to reduce dependence on Danish subsidies. This could eventually help to achieve independence. Thus, this conflict of interest can lead to war. Therefore, rare Earth metals are the emerging battlefields.

Moreover, there is growing partnership between the China and Russia to counter US hegemony. The China and Russia are emerging global powers. Both of them aim to counter US interest. After the Ukraine invasion by Russia, the USA has imposed sanctions on Russia to weaken its economy. Russia has re-directed its exports and markets to the China. Russia supplies metals, mineral ores and fossils to China and earn money. China then converts them into finished product and export.

them. This helps the China to expand its exports and earn profit. In this way, both are countering the USA objective of isolating the Russia internationally. In 2023, Russia exported \$248bn of mineral products, making it second largest exporter of mineral product out of 224. Therefore, strategic partnership between the Russia and China in the mineral sector has many geopolitical implications which make rare Earth metals as potential battlegrounds.

Besides, countries are forming alliances to achieve rare metals security. The aim of these alliances is to diversify the metals supply chain to ensure their smooth flow of exports. Currently, the China is controlling the supply chain which is death knell for the West. According to International Energy Agency, China accounts for 61% of rare Earth metals production and 92% of their processing. The Pakistan and USA warming of ties is also seen as path for USA to gain access to Pakistan's mineral wealth. Japan, Australia and USA have also invested heavily

in Lynas Corporation, one of the few global non-Chinese rare Earth metals producers. European Union is also signing strategic partnership with Chile, Congo, Canada, Namibia and Kazakhstan in the mineral sector. These alliances are mostly supervised by the USA to reduce Chinese hold on rare Earth metal sector. Therefore, the rare Earth metals are sparking the conflicts by forming alliances.

Moreover, control on rare Earth metal's supply chain means control on whole world. Firstly, rare Earth metals are the source of huge revenues that can make any country economically powerful. Secondly, they are used as precursor in weapons manufacturing that can save the national sovereignty from external attacks. The recent wars have proved that powerful rule the world. Thirdly, these metals are imperative for making technological advancement and for developing AI models which has potential to rule the world. Fourthly, they are used to ensure energy security. The control on these four fields will ultimately guarantee

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the control of the world. All the above four fields are associated with rare Earth metals. Thus, the control on rare Earth metals supply chain is tantamount to control on entire world. Hence, rare Earth metals are the emerging battlefields.

In a nutshell, rare Earth metals hold huge importance in today's world. The late Chinese leader, Deng Xiaoping, has rightly said in 1992, "The Middle East has oil and China has rare Earths". They are used in the manufacturing of small magnets to lethal atomic bombs. Global powers are vying to control these metals to maintain their hegemony in the world. Global powers are making alliances to dominate their names in the mineral sector. World has witnessed many revolutionary discoveries and inventions. Each of them has created intense competition and rivalries in the beginning. However, with the passage of time, the fervor surrounding them is pacified and give rise to international and institutions to prevent conflicts.

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For example, the discovery of nuclear energy, space exploration, invention of AI and recovery of oil and Energy resources. In the same way, the world needs to create the regulatory bodies to eliminate destructive competition and to protect the environment from harmful effects of mineral exploration.