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# **IN THE PURSUIT OF RAW MATERIALS INDEPENDENCE. A COMPARATIVE ANALYSIS OF DONALD TRUMP AND JOE BIDEN POLICIES TOWARDS RARE EARTH ELEMENTS**

## **INTRODUCTION**

The main objective of the article is to find similarities and differences in the approach to the strategic role of rare earth elements during the presidencies of Donald Trump and Joe Biden in the United States of America. Historically, People 's Republic of China has been the dominant producer and supplier of rare earth elements, accounting for a significant portion of global production. In 1990, the Chinese government recognized rare earth elements as protected and strategic minerals for the state's interests (Kalantzakos, 2018: 119). China currently accounts for 60% of the world's rare-earth mining output, 85% of rare-earth processing capacity, and more than 90% of high-strength magnets produced (Yao, 2022). This has raised serious concerns about the United States' overreliance on China for these critical minerals and need to establish and boost domestic production.

The article is divided into three main parts. The first one highlights the strategic role of rare earth elements focusing on their characteristic and applications. The second part takes into consideration President Donald Trump's administration approach towards these important elements. The third and final part of the article discusses Joe Biden's vision on rare earth elements. The article concludes with a recapitulation of the conducted considerations and indicates the main challenges to the US raw material policy on rare earth elements.

The article verifies the research hypothesis, which assumes that both Donald Trump's and Joe Biden's administration approach towards rare earth elements aimed at enhancing domestic production capabilities and simultaneously reduce reliance on Chinese imports. This research objective is addressed by the following research questions: what are the key policy differences between Donald Trump and Joe Biden regarding the production of rare earth elements? How did Donald Trump and Joe Biden's policies address the issue of dependence on foreign sources of rare earth elements?

In the course of the research process, the author used following research methods: comparative analysis, descriptive method and synthesis. The comparative analysis made it possible to identify similarities and differences in the approach towards rare earth elements between two analyzed administrations. The application of descriptive

method helped author to point out variability of the economic, social and political context for the studied phenomenon. Finally, synthesis made it possible to present a holistic view of Donald Trump and Joe Biden's approach towards rare earth elements.

The following analysis is embedded in theoretical approach of resource nationalism. The resource nationalism theory tends to emerge in countries with significant natural resources, where the extraction and export of these resources play a key role in the economy. It is often driven by the desire to maximize domestic benefits, protect national interests and reduce dependence on external entities, especially foreign companies or investors (Simsek, 2018: 33). Having achieved the control of natural resources within its territory, the state is able to advance political, social and economic objectives (Dubey, Howe, 2021: 310).

In the theoretical approach of resource nationalism nation-state governments are key players. They are responsible for the accumulation of geological knowledge, which they share with institutions of science (Kotilainen, 2021: 113).

## STRATEGIC ROLE OF RARE EARTH ELEMENTS

Rare earth elements (REEs) have recently emerged as vital components of various industries, ranging from advanced technologies and renewable energy to national security and defense systems. These 17 chemically similar elements – fifteen lanthanides plus scandium and yttrium play a crucial role in the production of high-performance magnets, catalysts, and electronics. One should clearly emphasize that despite their name, these metals are quite common in the earth's crust. As Frank. H. Spedding, Canadian American chemist noted, their name is not related to their rare occurrence in the earth, but in the difficulties involved in the process of their separation (Spedding, 1951: 26).

The concept of rare elements was first used in 1794 by Johann Gadolin. At that time, it was believed that they were present in the earth's crust only in small amounts (Pal, Agarwal, Sanghi, Aggarwal, 2013: 143). In-depth studies and research carried out in the twentieth century, however, proved that their occurrence is much more common. The concept of rare earth metals is therefore not a consequence of the amount of a given metal in the earth's crust, but its location only in the earth, where it forms water-insoluble oxides. An example of this can be the group of lanthanides, whose frequent occurrence in the ground has become one of the characteristics of these elements.

In the earth's crust, the abundance of a given rare metal decreases as its atomic number increases. Therefore, a division into light and heavy rare earth metals was adopted. Analyzing the known and exploited deposits of the discussed elements, they most often occur in the form of light rare earth metals. The main source of their acquisition are carbonate rocks, which make up one tenth of the earth's crust. They are most often found in continental rifts. Most rare-earth metal ores are mined by conventional open pit methods. Rocks are crushed by blasting and transported to facilities that physically separate rare-earth minerals from other elements (Anawar, 2020: 100). Then, thanks to the foam flotation method, rare earth minerals are coated with

a chemical substance and after some time collected in the form of concentrated foam (Krishnamurthy, Gupta, 2016: 244).

The largest deposits of rare earth elements are in China, the United States, Brazil, Canada, India, South Africa and Russia. Until 1948, most of the world's rare earth metals came from India and Brazil, and from the sand deposits found there. As a result of the discovery in 1949 in South Africa of significant deposits of monazites, which are a mixture of cerium phosphoric acid salts and elements from the lanthanide group, this country became the world leader in the extraction of these valuable metals (Parker, Baroch, 1971: 18; Dunlap, 2018: 48). In parallel with the period of dominance of metals from South Africa, an opencast mine of rare elements was launched in the United States, in the state of Colorado. Initially operating on a small scale, it significantly increased production in the 1960s. This was related, among others, to with the increased demand for one of the metals – europium, which was used in color television tubes (Benvenuto, 2022: 149). The Americans were able to produce about ten thousand tons of metals per year. Their dominant position, however, began to wane in the mid-1990s, until the complete closure of the mine in 2002. In the second half of the 1990s, the leading position on the rare earth elements market was won by the People's Republic of China, which took over production technologies from the Americans, predicting an increase in demand for rare earth elements in the near future. Between 1978 and 1989, China saw an average increase of 40 percent in annual production of rare earth metals. Thus, they have become the world's largest producer of precious raw materials.

The situation of dependence of global supply chains on one partner, with still insufficient number of alternative methods of obtaining rare earth metals (e.g. through recycling), creates a clear risk of liquidity of their supplies. By 2030, the use of rare-earth magnets is expected to account for around 40% of total demand. The People's Republic of China has already used its rich deposits of valuable elements several times in the local and global diplomatic game. The last such example was the impact on the American economy by imposing a 25% tariff on imports of the raw materials in question. In the recently presented five-year plan for 2021–2025, the People's Republic of China announced a reduction in exports of precious metals in order to meet internal needs resulting from achieving climate neutrality by 2060.

The contemporary advancement of civil and military technologies, along with the gradual reduction in size of gadgets, accompanied by their growing potency and effectiveness, have emphasized the significance of rare earth elements. The distinctiveness of rare earth elements arises directly from their characteristics, which encompass exceptional electrical conductivity, resistance to elevated temperatures, and a lustrous appearance. REEs find application in the automotive, ceramics, and metallurgical sectors. Moreover, they play a crucial role in the fabrication of automotive catalysts, permanent magnets, optical filters, liquid crystal displays, lasers, and phosphors (Jha, 2014: 54). Rare earth elements also hold significant importance in green technologies, as they are utilized in the construction of wind farms, photovoltaic panels, and electric motors. More recently, they have found utility in the medical and pharmaceutical industries as anti-cancer agents, in kidney dialysis, and in the production of life support machines (Morin-Crini, Lichtfouse, Crini, 2021: 41).

## **DONALD TRUMP'S NEW OPENING FOR RARE EARTH ELEMENTS**

During Donald Trump's administration, which ran from January 20, 2017, to January 20, 2021 rare earth elements were considered as one of the priorities due to their strategic importance in various industries, including national defense, technology, and energy.

One of the primary goals of Donald Trump's administration was to reduce America's reliance on foreign sources for critical minerals, including rare earth metals. Trump recognized the potential vulnerability of the supply chain and sought to strengthen domestic production.

In December 2017, President Trump issued Executive Order 13817, which declared a federal strategy to ensure the reliable supply of critical minerals, including REEs. The order emphasized the importance of reducing regulatory burdens, streamlining permitting processes, and supporting domestic mineral exploration and mining activities. The document indicated that miners and producers were limited by a lack of comprehensive data concerning topographical, geological, and geophysical surveys. Furthermore it pointed the need to increase activity at all levels of the supply chain, including exploration, mining, concentration, separation, alloying, recycling, and re-processing critical minerals and above all urgent need to identify new sources of critical minerals (U.S. Government, 2017: 1).

During Trump's tenure, much attention was paid to the Mountain Pass Mine in California. This mine, once the world's leading producer of rare earth metals, has closed due to competition from China (Mills, 2019). The Trump administration has taken steps to revive the mine and restore its production capacity. In 2019, the Department of Defense awarded the MP Materials consortium, which acquired the mine, a contract to create a national source of rare earth elements (Scheyder, 2020). The move was intended to increase national security and reduce reliance on foreign, mainly Chinese imports. Nevertheless, it required a span of three years for the organization to declare that it successfully obtained grants from the Department of Defense to back the exploration of both lightweight rare-earth elements and heavyweight rare-earth elements (Basov, 2022).

Rare earth elements were also a crucial point in a discussion during Trump's administration trade war with China. The trade war was driven primarily by the Trump administration's concerns about a large trade deficit between the US and China (Al-Bayati, 2020: 47–48). Trump argued that Chinese trade practices such as intellectual property theft, forced technology transfer, and unfair subsidies contribute to trade imbalances and hurt American businesses and workers. March 2018 Donald Trump's government announced tariffs on 60 billion \$ of Chinese imports. The goal was to fix America's economy and restore their global position as leaders in high tech (Cooper, 2019: 64). Trade war with China significantly impacted the rare earth metals industry. The Trump administration was concerned that China could use its control over rare earth elements as a weapon in the trade dispute by restricting or manipulating their export to the United States, thereby disrupting American industries. The Chinese government did not implement a full export ban on rare earth elements, but the threat alone raised concerns about the global supply chain and began discussions

about diversifying rare earth element production in the United States (Hass, Denmark, 2020).

One should also pay attention that Trump administration advocating for more domestic production of rare earth elements emphasized many environmental concerns. Especially after the Executive Order no 13771 was signed. The order required federal agencies to eliminate two existing regulations for every new regulation introduced (Baker, 2020). These rollbacks affected industries across the board, including mining and mineral extraction. Despite not being directly related to rare earth elements discussion, weakening environmental regulations might have lead to land destruction or water pollution.

To conclude this part of the article Donald Trump's presidency brought rare earth metals into the spotlight. It definitely highlighted the importance of securing a stable supply chain for these critical metals. The primary objective of Trump's approach was to revitalize domestic rare earth mining and processing capabilities. The administration sought to streamline the regulatory framework, promote investments in REE projects, and facilitate the development of advanced extraction and refining technologies. By incentivizing the growth of domestic REE production, Trump aimed to create a more resilient supply chain that would protect American industries from potential disruptions in the global market.

## **JOE BIDEN'S SMART CONTINUATION**

Under President Joe Biden's administration, which began on January 20, 2021, rare earth elements have taken center stage. They were discussed in terms of national security, climate change, and domestic industrial development. Already during his presidential campaign, Joe Biden emphasized the need to address the United States' reliance on China for critical minerals, including rare earth elements (Hunnicut, Pamuk, 2020). On February 24, 2021, President Biden sign "Executive Order on America's Supply Chains," which aimed to address vulnerabilities in the supply chains of critical goods and materials. It's goal was to boost American supply chains, restore the capacity for domestic manufacturing and preserve America's competitive advantage in research and development. It also envisaged cooperation with industry stakeholders, academia, state and local governments, and international partners to gather input, share information, and coordinate efforts to strengthen supply chains (The White House, 2021). Similar to the Trump's administration, the Executive Order aimed to increase domestic production and diversify supply chains to reduce dependence on foreign sources, especially in critical sectors. Recognizing how critical these elements are to America's economic competitiveness and technological innovation, the Biden administration has placed a renewed emphasis on diversifying the supply chain and enhancing domestic production capabilities. The document also recognized the importance of international collaboration to strengthen supply chains and promote fair trade practices. It called for engaging with international partners, allies, and organizations to secure critical goods, enhance information sharing, and coordinate efforts to address supply chain challenges (Rojas, Routh, Sherwood, Buckley, 2022).

To reduce dependence on foreign sources President Biden's administration aim to increase domestic production of rare earth elements by supporting research and development, as well as providing financial incentives for mining companies. This includes funding for exploration, extraction, processing, and recycling of rare earth elements. In April 2023 the U.S. Department of Energy announced over 16 million \$ to bring critical mineral supply chains to America and reduce reliance on competitors like China. The financial backing will provide assistance to initiatives in West Virginia and North Dakota aimed at establishing a pioneering facility for extracting and isolating rare earth elements and essential minerals (Energy.gov, 2023).

Another example of boosting domestic production is the fact that, on February 22, 2022, the Department of Defense in the United States granted \$35 million to MP Materials Corporation for the enhancement of its capabilities in separating and processing rare earth elements at its facility located in Mountain Pass, California. The intention behind this investment is to establish a reliable domestic supply of permanent magnets, which are crafted from rare earth elements (Erickson, 2022).

Simultaneously with focusing on internal production possibilities, Joe Biden's administration is promoting partnerships with allies, including Canada and Australia and European Union. Partnership with Canada involves sharing expertise, research, and technology to promote the development of a North American supply chain for rare earth elements. This collaboration encompasses several key aspects, including joint research and development projects, investment in rare earth element exploration and extraction, and the promotion of environmentally responsible practices throughout the supply chain (Panetta, 2023). Very important for both sides is strengthening cooperation between U.S. and the EU. In a joint statement by President Biden and President von der Leyen the two sides agreed to broaden the variety of essential minerals and battery supply chains and secure these chains in a robust and resilient manner. A future agreement was also announced which will aim to enable critical minerals that are extracted or processed within the European Union to fulfill the requirements for clean vehicles (European Commission, 2023).

Environmental issues in the Joe Biden administration's rare earth elements policy mark a noticeable difference compared to the previous administration. President Biden have emphasized the importance of recycling and innovation in rare earth metal management (Toto, 2021). Recycling rare earth elements is essential because it helps reduce the dependence on mining and minimizes the environmental impact associated with their extraction (Williams, 2021). Additionally, recycling can help alleviate supply constraints. Recycling technologies involve the recovery of rare earth elements from end-of-life products, such as electronic waste and discarded magnets.

To sum up this part of the article Joe Biden's approach towards rare earth elements slightly differ from that of Donald Trump. By investing in domestic production, promoting international cooperation, and advancing clean technologies, the policy of Biden's administration aims to enhance national security, economic prosperity, and environmental sustainability. Emphasizing the importance of international cooperation results in a more stable and predictable environment for industries relying on rare earth elements.



## CONCLUSION

Donald Trump and Joe Biden's rare earth elements policies have revealed different approaches and priorities when it comes to these critical resources. Both administrations have recognized the strategic importance of rare earth elements in a variety of industries, including defense, technology and renewable energy, but their strategies and visions for securing a reliable supply chain differ significantly. During his presidency, Donald Trump took steps to reduce America's dependence on foreign sources of rare earth elements and promote domestic production. On the other hand, Joe Biden's policies emphasized a more collaborative and multi-stakeholder approach to addressing rare earth supply chain issues. The Biden administration recognizes the importance of working with allies and partners to secure a diverse and resilient supply chain, rather than relying only on domestic production.

Another notable difference concerned the approach of both analyzed administrations to China as the largest producer of rare earth elements. The Trump administration pursued a trade war with China and imposed tariffs on various Chinese goods, including some of these critical minerals. The Biden administration has taken a more diplomatic approach to trade relations with China. While tariffs remain in place, there has been a shift towards multilateral cooperation to address economic challenges.

The last notable difference shown in the article refers to environmental approach by the former and current President of the United States. While Trump administration placed less emphasis on environmental and sustainability issues, Joe Biden is focusing on developing technologies for responsible extraction, such as recycling, and sustainable processing of rare earths.

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## ABSTRACT

The main aim of the presented article is to find similarities and differences in the approach to the strategic role of rare earth elements during the presidencies of Donald Trump and Joe Biden in the United States of America. Rare earth elements are the core instruments of modern technological development in many areas and fields – both civil and military. Due to their growing importance, they have been the object of political rivalry between the People's Republic of China and the United States of America for at least twenty years. The increasing global demand for rare earth elements and their strategic importance in various industries has highlighted the issue of the approach of political leaders to these critical minerals, especially when it comes to ensuring secure and sustainable supply chain. The research problem of the considerations undertaken in this article is to assess implications and effectiveness of Donald Trump and Joe Biden Policies towards rare earth elements. The research shows that while both administrations recognized the significance of rare earth elements, their approaches differed in terms of priorities, strategies, and emphasis on environmental sustainability.

**Keywords:** rare earth elements, raw materials, raw materials policy, Donald Trump, Joe Biden

## W DĄŻENIU DO NIEZALEŻNOŚCI SUROWCOWEJ. ANALIZA PORÓWNAWCZA POLITYKI DONALDA TRUMPA I JOE BIDENA WOBEC METALI ZIEM RZADKICH

### STRESZCZENIE

Celem niniejszego artykułu jest znalezienie podobieństw i różnic w podejściu do strategicznej roli metali ziem rzadkich w okresie prezydentury Donalda Trumpa i Joe Bidena w Stanach Zjednoczonych Ameryki. Metale ziem rzadkich stanowią fundament współczesnego rozwoju technologicznego w wielu dziedzinach – zarówno cywilnych, jak i wojskowych. Ze względu na rosnące znaczenie, od co najmniej dwudziestu lat są przedmiotem rywalizacji politycznej między Chińską Republiką Ludową a Stanami Zjednoczonymi Ameryki. Rosnące globalne zapotrzebowanie na pierwiastki ziem rzadkich i ich strategiczne znaczenie w różnych gałęziach przemysłu uwypukliło problematykę podejścia przywódców politycznych do tych krytycznych minerałów, zwłaszcza jeśli chodzi o zapewnienie bezpiecznego i zrównoważonego łańcucha dostaw. Problemem badawczym rozważań podjętych w niniejszym artykule jest ocena implikacji i skuteczności polityki Donalda Trumpa i Joe Bidena wobec pierwiastków ziem rzadkich. Z przeprowadzonych badań wynika, iż chociaż obie administracje uznawały kluczowe znacze-

nie metali ziem rzadkich, ich podejście różniło się pod względem priorytetów, strategii i nacisku na problematykę zrównoważenia środowiskowego.

**Słowa kluczowe:** metale ziem rzadkich, surowce, polityka surowcowa, Donald Trump, Joe Biden