

The Conflict Over Rare Earth Mining At Kvanefjeld: Global Demand Versus Greenlandic Community Values

Xaviar Thompson

*Young Innovators Research Program
Harvard College Project For Asian And International Relations
In Collaboration With Learn With Leaders*

Abstract:

This research paper examines how the global pressure to mine rare earth elements at the Kvanefjeld deposit in southern Greenland has created conflict between international strategic interests and the environmental values of Greenland's local communities. Rare earth elements are essential for many modern technologies such as renewable energy systems, electronics, and defence technologies, which has increased global demand for new deposits. However, the Kvanefjeld site also contains uranium and other radioactive materials, which have raised environmental and health concerns among residents in southern Greenland.

This study used a mixed approach, analysing academic papers, environmental reports, public opinion data, and media sources from the past five years. The results show that although global demand for rare earth elements is expected to increase significantly in the coming years, strong local opposition and environmental risks have slowed down the development of the Kvanefjeld project. Polls also suggest that while many Greenlanders support mining in general, a large majority oppose the development of the Kvanefjeld mine specifically. These findings highlight the broader global challenge of balancing the demand for critical minerals with environmental protection and the values of local communities.

Keywords: *Kvanefjeld, Rare Earth Minerals, Greenland Mining, Uranium ban, Critical Minerals.*

Date of Submission: 06-08-2026

Date of Acceptance: 16-08-2026

I. Introduction

Background

In recent years, the global demand for rare earth elements (REEs) has grown significantly due to their use and critical importance for green technologies, electronics, and other industries (IEA, 2025). The deposit at Kvanefjeld is one of the largest known deposits of rare earth elements, but it also contains uranium and other radioactive elements, which have raised serious environmental and social concerns (Mining Technology, 2021; Greenland Minerals Ltd., 2020). The conflict around Kvanefjeld reflects a broader tension between the world's strategic interests, desiring these REEs, and the Greenlandic communities' concerns for their health, environmental protection, and also their culture.

Meanwhile, many global political and economic leaders view access to these rare earth elements as essential for the next stage of technological and economic development. Greenland also currently has a uranium mining ban, which has caused a dispute because the mining area contains uranium (Hofverberg, 2022). This review will analyse already existing academic, media, and other literature on Kvanefjeld and other Arctic mining proposals.

The proposed mine at the Kvanefjeld deposit in southern Greenland has become one of the most debated mining projects, with the site containing one of the world's largest undeveloped rare earth deposits, but it also includes a large mass of uranium (Kvanefjeld Rare Earth Uranium Project, 2021; Greenland Minerals Ltd., 2020; The Kvanefjeld Project, n.d.). This has made the project controversial, as uranium extraction raises concerns about radioactive waste, environmental safety, and long-term impacts on surrounding ecosystems and communities. In recent years, rare earth elements have become more important in global politics because they are essential for renewable energy systems, advanced electronics, and defence technologies. As a result of this, governments are actively seeking new rare earth deposits to reduce dependence on existing suppliers and secure the future supply chain. This has led to the following research question: *How does the pressure to mine the rare earth elements at Kvanefjeld shape the conflict between the world's strategic interests and Greenland's community values?*

Kvanefjeld: A Brief

The history of the Kvanefjeld mine in Greenland begins with the discovery in 1956 of uranium and rare earth mineralisation at the Ilímaussaq complex by geological surveys in South Greenland with regional

radiometric work on uranium. Then, from the 1960s to the 1970s, follow-up drilling and mining tests were conducted that were specifically focused on uranium (Christiansen, 2026).

In 2007, interest in this place sparked again, and the Australian company Greenland Minerals Ltd. (which later became Energy Transition Minerals) acquired the exploration rights for Kvanefjeld, recognising the rare earth and uranium potential (The Kvanefjeld project, n.d.). In only a few years, extensive geological analysis, as well as metallurgical test work and prefeasibility studies, were expanding the interest in Greenland. Greenland also lifted a ban on uranium mining in 2013, which had obstructed progress over the years (inis.iaea.org).

From 2012 to 2015, the project was further developed with pre-feasibility studies for a large, rare-earth mine with a full feasibility study in 2015. Greenland Minerals Ltd. (2020) formally sought permits to build an open-pit mine that would produce rare earths as well as by-products such as uranium and zinc (Mining Technology, 2021).

Over the next few years, increased attention was being centred on Greenland, not only globally but also locally. Strategic investors, such as China-linked firms, took minority stakes in the project, which initially drew substantial early global attention to Kvanefjeld's large, rare-earth resource (Mining Technology, 2021; Christiansen, 2026). In April of 2021, things started to turn politically with the pro-environment & anti-uranium party Inuit Ataqatigiit winning the majority of the votes in Greenland's parliament on a platform opposing Kvanefjeld. In November, the parliament had passed legislation banning all uranium mining and the exploitation of ores with > 100 ppm uranium, halting the project since Kvanefjeld's ores contained around ~300 ppm (Hofverberg, 2022). This law change reflected strong local opposition based on environmental, health, and cultural values, even though the resource was seen as such a gem worldwide (Collins, 2026).

Since 2022, there have been a lot of legal, geopolitical, and strategic clashes. In March 2022, Greenland Minerals Ltd. (2020) initiated arbitration proceedings against the Governments of Greenland and Denmark, where they argued the uranium ban unfairly stole their investment, and they sought ~\$11.5 billion in compensation (Mining Technology, 2021; Greenland Minerals Ltd., 2020). Throughout 2023 and 2024, the dispute became a focus point for debate over Greenland's regulatory clarity, foreign investment risk, and local versus international expectations (Collins, 2026). In early 2025, the international race for rare earth supplies (with the U.S., EU, and China, who were all focused on supply chain security) had pushed Kvanefjeld further into strategic discourse, where the project still remained stalled due to uranium content restrictions, even as other Greenland rare earth projects like Tanbreez advance (Brewer, 2025).

As of now, no mine has been built, and the project's future depends on legal outcomes, political shifts within Greenland's government, and whether community values or external strategic pressures shape the regulatory environment. This ongoing dispute highlights how the project at Kvanefjeld has become more than a mining project, now representing a wider conflict between global demand for critical minerals and the environmental and cultural values of the Greenlandic community.

II. Literature Review

This review analysed examples from diverse sources about the proposed Kvanefjeld mine. These REEs are used for all key technologies ranging from smartphones to green technologies and even missiles (IEA, 2025; USGS, 2025). There are also large traces of uranium and thorium, which help explain why many people aim to seek control of this land, as these minerals are strategically important for defence technologies and national security infrastructure. Studies such as Meredith (2025) agree that the importance of these minerals is only going to grow in the coming years, with the global powers shifting due to China's current reliance on these rare earths decreasing (USGS, 2025).

China is known as one of the biggest suppliers of a wide range of products and services, from industrial equipment to furniture and children's toys, and with China losing its lead in major supply lines of REEs, this would decrease the circulation of money going in and out of China. Countries want to diversify their resources and do not want to rely on one dominant producer. This has become increasingly more important in global politics recently, as many governments now view rare earth supply chains as a matter of economic and strategic security. Due to this, new mining projects outside traditional production regions are receiving a larger amount of attention across the world. However, if this mine were to proceed, a source (Henriques et al., 2025) explains how global REE extraction harms local/indigenous communities in Greenland and elsewhere, with it, creating an ecological and unequal exchange. Local communities will suffer from the social and environmental costs.

Gajendra et al. (2025) suggested ways to minimise the impact on the land and community, including safer and more sustainable ways to extract the minerals through mining at Kvanefjeld to maintain Greenland's community. While some researchers are emphasising the strategic importance of developing these new rare earth mines, others are focusing on the environmental and social impacts of extraction. These contrasting perspectives highlight the broader global debate between securing the mineral supply chains and protecting the local community and its ecosystems. The separation between these demonstrates that the debate around Kvanefjeld is

not simply about resource extraction, but how the global transition to greener technologies may shift environmental and social costs onto smaller or Indigenous communities.

III. Methodology

This study employed a qualitative secondary research design to investigate the conflict surrounding the proposed rare earth mine at Kvanefjeld in southern Greenland. A secondary approach was selected because primary data collection within Greenlandic communities would require travel, ethical clearance, and language capability in Greenlandic and Danish, none of which were available within the scope of this study. A substantial body of published material already exists, including a full Environmental Impact Assessment, government legal records, national polling data, and international market analysis.

Sources were identified through Google Scholar, government and intergovernmental publications, and reputable news outlets, and were restricted to material published between 2018 and 2026 to ensure relevance to the current dispute. Four categories of source were analysed: peer-reviewed academic research on Greenlandic mineral exploration and rare earth extraction; official documents including the Kvanefjeld Environmental Impact Assessment and Greenlandic legislative records; quantitative market data from the International Energy Agency and the United States Geological Survey; and media reporting and public opinion polling documenting Greenlandic community perspectives.

The collected material was analysed thematically. Rather than examining each source individually, findings were grouped into four recurring themes: environmental and radiological risk, economic opportunity, geopolitical and strategic interest, and community and cultural values. These themes were then compared across stakeholder groups to identify where international and local perspectives converge and diverge. This comparative structure allows the central tension of the research question to be examined directly.

Quantitative data are presented in a table and a comparative chart. Environmental risk data are drawn primarily from the Environmental Impact Assessment prepared for the Kvanefjeld project, which identifies radioactive waste, water contamination, and land disturbance as principal hazards. Supply and demand data are drawn from International Energy Agency and United States Geological Survey publications. Community perspectives are drawn from published polling data, media interviews, and statements by community organisations, rather than from interviews conducted by the author.

IV. Results

In 2021, a poll was conducted that found that while 52% of people surveyed across Greenland were in favour of mining in general, 71% of people denied the development of the Kvanefjeld mine across Greenland, while 86% of southern Greenland (where the mine is located) denied the mine, which can be seen in Table 1 below.

Table 1: Opposition to the proposed Kvanefjeld mine in Greenland

Group	% Who Opposed Kvanefjeld's Mine
Greenland Overall	71%
Southern Greenland	86%

Source: KNR (2021)

Figure 1 below compares the current supply and demand for REEs and the expected mine supply from announced projects. Global demand for the rare earth elements is expected to grow significantly due to the increase in renewable green technologies, electric vehicles, and defence industries. According to the International Energy Agency, the demand for rare earth elements is expected to increase by around 60% over the next 15 years (IEA, 2025). Environmental studies of the Kvanefjeld project show that the ore contains rare earth elements as well as uranium, thorium, and naturally occurring radioactive materials. The Environmental Impact Assessment notes that the improper management of mining waste could lead to contamination of nearby water systems through soluble radionuclides and heavy metals (Greenland Minerals, 2020).

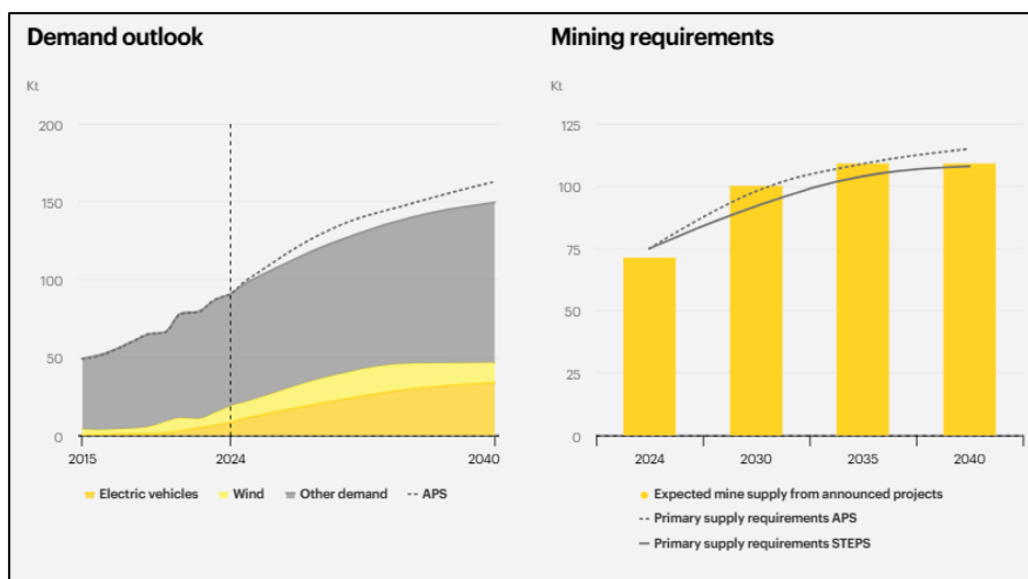


Figure 1: REE Demand VS mining requirements

Source: IEA (2025)

Current rare earth production is concentrated geographically. According to global mineral production statistics, China dominates the processing and supply of rare earth elements, which creates supply chain risks for other countries (IEA, 2025). The increasing geopolitical interest in Arctic mineral deposits has led to increased attention on Greenland's rare earth reserves. Several reports highlight that Greenland hosts some of the world's largest undeveloped rare earth deposits outside of China (Meredith, 2025). According to the International Energy Agency, the demand for rare earth elements is expected to increase significantly as renewable energy technologies such as wind turbines and electric vehicles continue to expand across the world (IEA, 2025).

V. Discussion

Geopolitical views

Global competition for rare earth minerals has also influenced some international political discussions. At the Critical Minerals Ministerial hosted by the United States of America, countries discussed strategies to reduce reliance on China for rare earth processing (Meredith, 2025). China did not attend the meeting, which reflects the ongoing geopolitical tensions surrounding the critical mineral supply chains. Greenland and Denmark were also absent despite Greenland holding one of the largest rare earth deposits in the Western world. This highlights the complex political relationship between Greenland's environmental concerns and international strategic interests in its mineral resources.

Greenland's Community Views

Many people who live near the Kvanefjeld deposit oppose the large-scale mining operations for rare earth and uranium. They are worried the waste could get into the water, soil, and air, and impact the ways that people in Greenland have always made a living, like fishing and raising sheep. Many people in Narsaq do not want mining to happen (Greenland Minerals Ltd., 2020; Kvanefjeld, 2026). Table 1 shows the results of a poll conducted in 2021 on the proposed mine. Opposition reached 71% across Greenland as a whole and 86% in southern Greenland, where the deposit is located (KNR, 2021). Opposition to the mine was the main reason behind the election win of the Inuit Ataqatigiit party - they said they would stop uranium mining, and they did. As of 2026, the ban on uranium mining is in place, which is what many Greenlanders want. Many residents emphasise environmental protection and the preservation of traditional livelihoods such as fishing and sheep farming.

Activists like Mariane Paviassen have been opposing uranium mining in southern Greenland. She was part of a group called *Urani Naamik*, which translates as 'Uranium? No Thanks.' Paviassen has argued that the mine's proximity to residential areas means that any environmental incident would be borne primarily by local residents rather than by the project's investors. (*Urani Naamik* in Narsaq, 2018). Some residents argue that mining could benefit Greenland's economy, and the Greenlandic government has actively sought international investment in mineral development. Its opposition is directed specifically at uranium extraction rather than at mining in general, as reflected in the 2021 legislation setting a 100 ppm uranium threshold rather than a blanket prohibition. The government has encouraged investment from the United States and Europe, in part to avoid Chinese control

over Greenlandic rare earth supply. For many Greenlanders, however, the issue extends beyond economics to environmental stewardship, the preservation of traditional livelihoods, and self-determination over decisions affecting their territory.

Interpretations

The results demonstrate that the conflict around the Kvanefjeld project is primarily centred around two priorities. On one side, the global demand for rare earth elements is continuing to increase as countries attempt to expand renewable energy infrastructure and advanced technologies. On the other side of this, the local communities in Greenland are prioritising environmental protection and the preservation of traditional life. The poll results show that although many Greenlanders support mining in general, there is a large opposition towards the Kvanefjeld project specifically. This suggests that the environmental risks of uranium and radioactive materials play an important role in shaping public opinion.

Limitations

This research has some limitations: Firstly, this study relies primarily on secondary sources such as academic papers, media reports, and data rather than conducting original research within Greenland communities. Another limitation is that public opinion data available for the Kvanefjeld is limited, and this study relies on only one poll to shape Greenland's public viewpoint of the mine. The environmental impacts are also based on projected assessments rather than real mining outcomes, since the project has not been developed.

Recommendations

Future research could explore how local communities in Greenland perceive resource development through direct interviews or community polls. Additional research could also include employing new mining technologies, which could reduce environmental risks with rare earth extraction. As the global demand for critical minerals continues to increase, understanding how governments balance the economic opportunities with the environmental and cultural concerns will be an important area of study.

VI. Conclusion

This research examined how the pressure to develop a rare earth mine at Kvanefjeld has created conflict between the world's strategic interests and the environmental values of Greenland's community. The results show that while global demand for rare earth elements continues to become more and more demanding due to technological and energy transitions, local opposition and environmental concerns towards the project have significantly slowed the development of the project. Kvanefjeld illustrates a wider global challenge where the need to balance the need for critical minerals required for green technologies and the environmental values of Greenland's community. As other countries seek to diversify the rare earth supply chains away from the current dominant producers, similar conflicts could arise in other resource-rich areas. Future policy decisions in Greenland will likely determine whether resource development can proceed in a way that balances economic opportunity with environmental sustainability and community values.

Reference List

- [1]. Brewer, K. (2025). Rare Earth Minerals – Part 2: Enter Greenland's Global Significance. GGI Global Alliance AG. <https://www.ggi.com/news/general-interest/rare-earth-minerals-part-2-enter-greenland's-global-significance>
- [2]. Christiansen, F. G. (2026). Greenland Mineral Exploration History. Mineral Economics. Miner Econ 39, 467–495. <https://doi.org/10.1007/s13563-022-00350-2>
- [3]. Collins, L. (2026). Wood Mackenzie: Greenland's Underdeveloped Rare Earth Sector. Mining Digital. <https://miningdigital.com/news/wood-mackenzie-greenland's-underdeveloped-rare-earth-sector>
- [4]. Greenland Minerals Ltd. (2020). Environmental Impact Assessment: Kvanefjeld Project. https://etransmin.com/wp-content/uploads/2026/05/20201213-EIA_GML-2020-EN_Final30068214064.1.Pdf
- [5]. Henriques, I., Böhm, S. (2022) The Perils Of Ecologically Unequal Exchange: Contesting Rare-Earth Mining In Greenland, Journal Of Cleaner Production, Volume 349, 131378, ISSN 0959-6526, <https://doi.org/10.1016/j.jclepro.2022.131378>.
- [6]. Hofverberg, E. (2022, January 2). Greenland: Ban On Uranium Mining Enters Into Force. Library Of Congress. <https://www.loc.gov/item/global-legal-monitor/2022-01-02/greenland-ban-on-uranium-mining-enters-into-force/>
- [7]. International Atomic Energy Agency. (N.D.). The Kvanefjeld Project. International Nuclear Information System. <https://inis.iaea.org/records/nf5ka-A5b20>
- [8]. International Energy Agency. (2025, May 21). Rare Earth Elements. <https://www.iea.org/reports/rare-earth-elements-2>
- [9]. KNR. (2021). Meningsmåling Om Kuannersuit: 71 Procent Er Imod [Opinion Poll On Kuannersuit: 71 Percent Are Opposed]. <https://knr.gl/da/nyheder/meningsmaaling-om-kuannersuit-71-procent-er-imod>
- [10]. Meredith, S. (2025, November 20). A Cold Gold Rush? The Race For The Arctic's Critical Minerals Is Heating Up. CNBC. <https://www.cnbc.com/2025/11/20/rare-earths-the-race-for-the-arctic's-critical-minerals-is-heating-up.html>
- [11]. Mining Technology. (2021, April 29). Kvanefjeld Rare Earth–Uranium Project. <https://www.mining-technology.com/projects/kvanefjeld-rare-earth-uranium-project/>
- [12]. Textoris, S. D. (2025). Global Maps Of Critical Mineral Production In 2023 (Fact Sheet 2025-3038). U.S. Geological Survey. <https://pubs.usgs.gov/publication/fs20253038/full>
- [13]. Urani Naamik In Narsaq. (2018). Kvanefjeld Mining Project Endangers UNESCO World Heritage Site. NOAH. <https://noah.dk/node/1109>