

Uranium in Greenland: Risky business

Given the risks posed by uranium mining, it is only natural that the people Greenland be asked their opinion. That is why the government should stand by its pledge to do so.

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Whether the enormous rare earth elements (REEs) and uranium mining project at Kvanefjeld in, southern Greenland, can be implemented will probably be determined in the next few months.

Two years ago, Greenland's parliament, Inatsisartut, abolished its zero-tolerance policy for uranium mining, distancing itself from a quarter of a century of political support for renewable energy in the Kingdom of Denmark. During all this time, acceptance of the uranium ban was unanimous both in Inatsisartut and the Danish parliament, the Folketing.

The repeal was passed by a narrow, one-vote majority and made further development of the gigantic mining project possible. According to its owner, Australia-based [Greenland Minerals and Energy Ltd](#) (GMEL), Kvanefjeld might contain the world's second-largest uranium deposit. It has also been known for a long time that it contains by far the world's biggest thorium deposits. Thorium is considered by many to be potential alternative to uranium that can also be used for nuclear weapons. Currently, it has no commercial value.

Recently, GMEL sent a preliminary application for an exploitation license to the Greenlandic authorities and submitted documentation on the project's social and environmental impacts. The company now awaits guidance from the regulatory bodies before it submits the final application. It will then be sent to the public for consideration. At the same time, the government has withdrawn its promise of a referendum in southern Greenland on the mining project without prior public debate.

It is common knowledge that the repeal of the uranium ban and the development of the Kvanefjeld project do not reflect the wishes of Greenland's population. Instead, they are the result of a years-long lobbying campaign by a small but powerful alliance of industrialists, civil servants and lawmakers, who have set aside all consideration for democracy and good governance. Openness, neutral information and public participation have consistently been denied by the Greenlandic government, this applies not just to the Kvanefjeld project, but the whole mining sector.

The campaign itself started half a century ago, not in Greenland, but in Denmark. A brief description of its course could shed some light on present-day events that might otherwise be difficult to understand. The first phase began when the Kvanefjeld uranium deposit was discovered

in 1956 and further explored by the Danish Nuclear Energy Commission, which needed a stable uranium supply for the country's planned nuclear power program.

In 1978, after the preliminary studies, Risø National Laboratory initiated a comprehensive research project to determine the most efficient way to extract the uranium. The project was financed primarily by the Danish government, but some of the money came from the European Community. It was estimated that the Kvanefjeld deposit, then set at 43,000 tonnes of uranium, comprised 28% of the EC's uranium resources.

The criticism of the mining project then has not lost its relevance, and in many respects it is the same as today's: concerns for the project's impact on public health and the environment, doubts about its alleged economic benefits and indignation over the political decision-makers' secretiveness and the manner in which the project was promoted by stakeholders in Denmark, despite strong Greenlandic opposition.

Even amongst some of the scientists involved with the project, its consequences for health and environment were considered very serious, if not insurmountable. In particular, dust emissions from the open mine pit, waste disposal and localisation of the processing facilities were perceived as problematic: the mine pit was too close to Narsaq, a town of more than 1,500 inhabitants, and disposal of hundreds of millions of tonnes of toxic and radioactive waste in the nearby Taseq Lake was ruled out because of the lake's location high up in the Narsaq Valley's ecologically sensitive river system.

Critics were also concerned about the impacts on the town's drinking water, already plagued by high fluoride concentrations. The head of the research project even recommended that the health concerns argued for placing the extraction plant 100km from Narsaq, near the planned hydroelectric power station in the Johan Dahl Land area.

Whether the mining project had economic value for Greenlandic society was also considered doubtful: the modest returns that it might give a private investor on the premise of high and stable uranium prices – an investor exempt from taxes and dues – were more than cancelled out by the increased infrastructure expenses for Greenland. The calculations did not include clean-up costs after completion of mining operations. The pessimistic estimates were suppressed for several years by the Greenland Ministry, a fact that subsequently provoked a lot of criticism and resentment.

As the opposition grew in Greenland and Denmark against nuclear power and uranium mining, it became clear how influential the Risø research community was. Most if not all of the benefits were concentrated there: until 1984, 50 million kroner (\$8 million) were spent on the Kvanefjeld project. With the prospect of spending a similar amount before a final decision on the mining project could be made, the Folketing started to get cold feet. For a long time, the project had been the biggest item of expenditure on the Energy Ministry's research budget and many lawmakers felt that the funds should be transferred to less controversial energy research. This feeling grew stronger, when prominent legal experts casted doubt on the legal basis of the construction of Risø's pilot uranium extraction facilities.

Both leading government parties in Greenland, Siumut and Inuit Ataqatigiit (IA), were against the mining project. Underscoring the sentiment at the time, Lars-Emil Johansen, the current chairman of Inatsisartut and a former Siumut leader who served as premier from 1991 to 1997, stated that “Greenland needs neither uranium nor nuclear power stations.”

After the Danish rejection of nuclear power and the decision in 1988 by the Joint Committee on Mineral Resources in Greenland not to issue permits for uranium exploration and extraction, the Kvanefjeld project was off the political agenda in the Kingdom of Denmark for many years. However, all this changed in 2008, when Kvanefjeld’s owner, GMEL, decided, that the company wanted to mine not only REEs, but also uranium. If it did not get permission, it would abandon the mining project.

This set off the second phase of the lobbying campaign that in many respects was an extension of the first: where uranium so far had been considered the main deposit, it was now mentioned as a by-product of the REEs that GMEL wanted to exploit. Ironically, this happened the same year that the former explorations director of Geological Survey of Greenland (GGU – now GEUS) estimated the uranium deposit to be 600,000 tonnes for the whole Ilimaussaq complex, of which Kuannersuit is a part. That is 14 times more than in the 1970s and the 1980s. It was now upgraded to be the second largest deposit in the world, surpassed only by the Australian Olympic Dam uranium mine. (It should be noted that the Ilimaussaq complex is not fully explored and the resources probably are larger.)

As the estimates of the size of the deposit grew, pressure intensified in Greenland and Denmark to repeal the uranium ban. In 2008, Greenland’s Mineral Licence and Safety Authority published a report on uranium exploitation, and in 2010 a delegation of lawmakers and civil servants went on a study tour to Canada (the so-called uranium mission) to learn from the Canadian experiences in the field.

At the end of 2012, Naalakkersuisut decided to let an independent Danish working group examine the consequences of abolishing the uranium zero-tolerance policy. The intention was to bring all facts to light, so that Inatsisartut and the public could discuss the uranium ban on an objective and well-informed basis.

A few months later, the first pro-uranium government in Greenland came into power, headed by Aleqa Hammond, of Siumut. Her party had succeeded in convincing a small majority of the electorate that mining, and particularly uranium mining, would result in quick improvements of Greenland’s economy. In her inaugural address, Ms Hammond promised a consultative referendum in southern Greenland on the Kvanefjeld project.

The promise was repeated in the last speech she held in Inatsisartut, in 2014, the day before a new general election was called and subsequently led to the formation of new Siumut-led coalition. The reason given for the referendum was the close proximity of the open-pit mine to the town of Narsaq. Even though the referendum would only be consultative, the premier promised that the government would respect its result.

After the election in 2013, Naalakkersuisut tabled its proposal to repeal of the uranium ban and the working group's report was published. However, for those who expected that it would furnish Inatsisartut with an objective and neutral basis for a decision on the ban, it was clearly a disappointment. The report from Lett Law Firm, DCE – the Danish Centre for Environment and Energy and PricewaterhouseCoopers systematically ignored or underestimated the health and environmental impacts of uranium mining.

There was no mention of either the clean-up costs after the mining operations at Kvanefjeld, nor of the institutional capacity-building necessary to regulate and monitor such a large-scale mining project. The report also asserted that if only Greenland ratified a series of international treaties and conventions, extraction, production and exportation of uranium could be safe, secure and environmentally sound. Most strikingly, however, the report concluded – just like the Mineral Licence and Safety Authority's 2008 report did – that the revenue from taxes levied on the mining company would be modest and not significantly improve national finances.

The expectation that uranium could make an economic difference soon evaporated completely: at the beginning of 2014, a [study was published](#) by the University of Copenhagen and Ilisimatusarfik, the University of Greenland. It concluded that 24 concurrent large-scale mining projects would be required to zero out the financial support from Denmark. To achieve this goal within a reasonable timeframe, a new large-scale project would have to be developed and launched every other year and an unrealistically large number of mineral deposits required. The report also established that a mineral-based economy is not economically sustainable: when the mining industry started to recede, Greenland would find itself in the same situation as before, only with fewer resources. These findings have since been confirmed by other reports.

It could even be argued that the Kvanefjeld project has harmed southern Greenland's economy. For example, Narsaq has a high rate of unemployment, but Naalakkersuisut and the local council do not try proactively to create new, sustainable jobs. Instead, they gamble on implementation of the mining project. That has caused a lot of division in the local community.

It should also be noted that the Danish government's role in this matter has been disappointing. It is often said that it is neutral in the uranium question, but that is far from the case. On the contrary, at the institutional level the government has often assisted in playing down information on the health and environmental impacts of the large scale uranium projects that the former and current Greenlandic government aim to implement.

As an example, geologists from GEUS and DCE have participated in three lecture tours in southern Greenland to provide the people living there with information about the Kvanefjeld mining project. Here, much of the time was dedicated to a rebuttal of the findings of an independent Dutch expert report on the environmental impacts of the Kvanefjeld project.

The report that was published by Greenlandic and Danish NGOs concluded that the mining project is not environmentally sustainable and threatens the health of the local population. Among its findings, it noted that the mine will be the first big open-pit uranium mine in an Arctic environment

that is located on top of a mountain. This means that mining water and spills from the processing of the ore could run off the slopes and dust from the mining pit reach inhabited areas in a very short time.

The report also indicates that seepage and spills of heavily contaminated water from the residue storage facilities are unavoidable. Some 875 million tonnes of concentrator tailings and tens of millions of cubic metres of tailings from the refinery containing a number of different toxic chemicals will be placed in nearby Taseq Lake. Not least because there is much more thorium than uranium in Kvanefjeld and the thorium is discarded, the refinery tailings would be about ten times as radioactive as the ore rocks and contain radionuclides and various non-radioactive toxic elements in a soluble and very mobile form. According to the report, no uranium mining and processing site in the world has ever been rehabilitated in an acceptable way. Most of the radioactivity remains in the tailings, which will stay dangerously radioactive, as well as chemically toxic, for thousands of years and lead to contamination of food and water.

And recently, a senior researcher from the internationally recognised German think-tank, Öko-Institut, concluded that the mining project does not live up to the environmental requirements in the European Union's Mining Waste Directive. Although Greenland is not a member of EU, the directive's basic requirement that the wastes should be sustainably isolated by enclosing their toxic and radioactive constituents for as long and as completely as possible also makes sense in Greenland.

Parallel to the uranium information tours, an expert workshop was organised in 2014 in Nuuk by the Danish Institute for International Studies. It was supposed to lay down the guidelines for future legislation on extraction, production and exportation of uranium in Greenland. The workshop was closed to the public and the identity of the participants of the week-long event kept a secret. However, it later emerged that three representatives of GMEL attended, but none from Greenlandic civil-society organisations.

By any standard, it is unheard of that a mining company actively participates in secret preparations for legislative proceedings with such far-reaching consequences. At the same time, Naalakkersuisut proposed amendments to the Mineral Resources Act intended to reduce the public's access to information about not only uranium mining, but on activities in the whole mining sector as well.

Confidence in the integrity of the companies that are granted mining licenses is essential, not least in regard to uranium mining, given the severe negative impacts it could have on the environment, health and security. In November 2013, Johan Lund Olsen, a member of IA representing Greenland in the Folketing, raised the question of GMEL's ties to organised crime and its alleged owner's financing of terrorist activities in Somalia in a closed session in the Folketing's Foreign Policy Committee.

Rumours to that effect had circulated in the Australian press for several years. The objective was to get GMEL's ownership thoroughly investigated. IA's leader, Sara Olsvig, asked the same questions in Inatsisartut shortly after, but neither the Danish nor the Greenlandic government wanted to look

into GMEL. It is fair to say that if that had been the case, developments in the Kvanefjeld project might have been different.

Our conclusion is that there is an ever-increasing risk that the Kvanefjeld mine will end up as the most polluting industrial project in the history of the Kingdom of Denmark. As the mining project grows bigger, when new uranium resources are discovered in the Ilimmaasaq complex, its negative health and environmental impacts are downplayed or ignored. The only thing that could set this right is if the population in Greenland gets to vote on the matter in a referendum. That is what the government promised a long time ago.

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