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**Research Report**

# Governing Uranium in the Danish realm

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DIIS REPORT

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Cindy Vestergaard and Gry Thomasen

# Governing Uranium in the Danish Realm

DIIS Report 2015:17

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## Contents

## Acronyms

| | |
|---|---|
| AEK | Danish Atomic Energy Commission |
| DD | Danish Decommissioning |
| DIIS | Danish Institute for International Studies |
| DMI | Danish Meteorological Institute |
| DTU | Technical University of Denmark |
| EEC | European Economic Community |
| ESA | European Supply Agency |
| EU | European Union |
| GEUS | Geological Survey for Greenland and Denmark |
| GGU | Geological Survey of Greenland |
| GME | Greenland Minerals and Energy |
| HWR | heavy water reactor |
| IA | Inuit Ataqatigiit |
| IAEA | International Atomic Energy Agency |
| INFCIRC | Information Circular |
| LILW | Low- and intermediate radioactive waste |
| LWR | light water reactor |
| MFA | Ministry of Foreign Affairs |
| NCA | nuclear cooperation agreement |
| NPT | Treaty on the Non-Proliferation of Nuclear Weapons |
| NSG | Nuclear Suppliers Group |
| SKB | Svensk Kärnbränslehantering AB |
| UNGA | United Nations General Assembly |
| UNSC | United Nations Security Council |
| UWG | Uranium Working Group |
| WMP | Waste Management Plant |

## Abstract

When the 2009 Act granting Greenland self-government was passed, giving the territory full authority over its natural resources, a complex and mixed legal system was introduced within the 'Commonwealth of the Realm', which includes Denmark, Greenland and the Faroe Islands. This system has been further complicated by Denmark's membership and Greenland's non-membership of the European Union. Much of the debate today on Greenland's uranium potential is focused on clarifying issues of competence and authority between Greenland and Denmark, the aim being to move beyond the notion of 'zero tolerance' to developing concrete legislative and regulatory measures.

## Introduction

In 2009, the Act on Greenland Self-Government, which granted Greenland authority over its natural resources, introduced a complex and mixed legal system within the Danish Kingdom, a system further complicated by Denmark's membership and Greenland's non-membership of the European Union. Much of the current debate on uranium in Greenland revolves around clarifying issues of competence and authority between it and Denmark. These two territories, along with the Faroe Islands, are linked within the 'Commonwealth of the Realm', or Rigsfællesskab, where the overseas islands enjoy autonomous authority in domestic affairs, while Denmark remains constitutionally responsible for foreign, defence and security policy.

Another challenge has been the enduring narrative of the so-called 'zero tolerance policy' in Greenland, which claims the existence of a moratorium on uranium exploration and mining and has existed for decades. The research informing this report demonstrates otherwise, as no policy statements, decisions or regulations have been issued to support this claim. Today, however, the Realm's trajectory towards uranium supplier status is breaking from the narratives of the past and moving towards a clear, legislative framework to guide the Rigsfællesskab's future approach to uranium production and trade.

This study analyses Greenland and Denmark's approach to uranium exploration and mining, its sources of supply and its legal framework. It complements research being undertaken by the *Governing Uranium* project, a global research project led by the Danish Institute for International Studies (DIIS) that is examining the governance of the front-end of the nuclear supply chain (from uranium exploration, production and trade up to the point of conversion) across fifteen countries. This report is also one of DIIS's Defence and Security Studies, which are mandated to 'carry out independent studies and projects of interest to Danish defence and security policy.' In the case of uranium in the Rigsfællesskab, the present report can assist in informing policy choices related to nuclear safeguards, nuclear security and inventory controls, which in 2015 fell under the mandate of the Ministry of Defence's Danish Emergency Management Agency (DEMA).

# 1. Denmark and Nuclear Power

In the 1950s, Denmark, along with most Western European states, contemplated developing nuclear energy. In the Danish case, U.S. President Eisenhower's Atoms for Peace policy was decisive in promoting a national nuclear program. Internationally, Eisenhower called for the creation of an international atomic energy agency where the nuclear weapons states could make joint contributions to a bank of fissile materials and natural uranium held by the agency, which in turn "could be allocated to serve the peaceful purposes of mankind."[1] While Eisenhower's aim of disarmament was not realised in the International Atomic Energy Agency (IAEA) established subsequently, the policy was enshrined in the United States' Atomic Energy Act of 1954, which opened up nuclear science and technology and permitted the privatisation of civilian uses.[2] By 1959, the United States had concluded nuclear agreements with 42 countries, including Denmark in 1955.[3]

In October 1955, Denmark noted in the United Nations General Assembly that, given its limited sources of energy, it was 'vitally interested in the solution of the power problem and the possibility of establishing atomic power stations."[4] It would also contribute by expanding the research work being carried out by the Institute of Theoretical Physics located in Copenhagen, where in 1939 nuclear fission was verified experimentally for the first time.[5] By 1956, the Danish Atomic Energy Commission (AEK) had been commissioned with the task of importing fissile material from the United States under the Atoms for Peace policy, as well as of ensuring that Denmark did not lag behind western Europe in the development of nuclear technology.[6] The

[1] David Fischer, 'The History of the International Atomic Energy Agency: The First Forty Years,' IAEA, Vienna, 1997, p. 9.

[2] Since 1973, the United States has had a bilateral agreement for peaceful nuclear cooperation with Euratom. See 'U.S. Bilateral Agreements for Peaceful Nuclear Cooperation Pursuant to Section 123 of the U.S. Atomic Energy Act of 1954, as Amended.' http://www.state.gov/t/isn/rls/fs/218361.htm. Accessed 2 December 2015.

[3] The bilateral agreement was a standard research reactor bilateral, which became effective July 25, 1955 and was amended in 1956. Foreign Relations of the United States (FRUS), 1955–1957 Volume XXVII, Western Europe and Canada, Document 176.

[4] Statement by Denmark (Mr Andersen), in United Nations General Assembly, Official records, 10th session, First Committee, 764th Meeting, 18 October 1955, p. 39.

[5] Ibid.

[6] Udenrigsministeriet (UM) til Udenrigsministeriets direktør, notits "Den fredelige udnyttelse af atomenergi", Jan. 7, 1955. Rigsarkivet (RA), Udenrigsministeriet 0002, Grupperodnede saer 1945-1972, journalnr. 89 Canada 2 – Danmark 1.a., kasse 12710; Atomenergikommissionen (AEK) til UM "Notat vedrørende den fredelige anvendelse af atomenergi og atomforskningen i Danmark", Dec. 12, 1956. RA, Udenrigsministeriet 0002, Gruppeordnede sager 1945-1972, journalnr. 89 Danmark 1.a. kasse 12711.

commission was headed by the Danish physicist and Nobel Prize winner Niels Bohr, and among its first initiatives, AEK commenced a five-year programme to explore Greenland for radioactive materials.[7]

This exploration was followed with new ones in the 1970s, resulting in 5,000 tonnes of uranium ore being transported to the Risø National Laboratory for experimental research on the separation of uranium from the unique steenstrupine mineralisation.[8] This was done in connection with Denmark's first official energy plan in 1976, which envisaged six nuclear power plants being built in 1985-1999.[9] The plan was sparked by the oil crisis in the early 1970s, which highlighted the vulnerability of all the country's energy needs being met by imports. In 1970s Elsam, the national company tasked with maintaining Denmark's energy security,[10] publicly announced its plans to develop nuclear power in Denmark, and a public debate on heavy water reactors (HWRs) and light water reactors (LWR) followed. The same year, the Act on Nuclear Installations [Act No. 244 of 1976] was adopted but never entered into force with the exception of Section 11 and the first paragraph of Section 12. Section 11 provided the Environmental Protection Agency (Miljøstyrelsen) with a mandate to follow and assess conditions for nuclear safety, while Section 12 established the Supervisory of Nuclear Installations (Tilsynet med nukleare anlæg) within the Danish Miljøstyrelsen.

However, all nuclear plans were abandoned after a Parliamentary resolution on 29 March 1985 officially excluded nuclear power from the indigenous energy grid. The resolution was in large part due to public and political opposition to nuclear power, which grew steadily after the Swedish nuclear power plant Barsebäck, which was located just 20 kms from central Copenhagen, began operations in the fall of 1975. The public protests against Barsebäck were part of a larger movement in western Europe, in particular in West Germany, against nuclear power, and in the late 1970s the so-called nuclear marches attracted thousands in Scandinavia. The Danish grassroots organisation Organisationen til Oplysning om Atomkraft (OOA) headed the Danish movement and were behind the famous 'Nuclear Power? No Thanks!' campaign.

[7] Atomenergikommissionen (AEK) til UM "Notat vedrørende den fredelige anvendelse af atomenergi og atomforskningen i Danmark", Dec. 12, 1956. RA, Udenrigsministeriet 0002, Gruppeordnede sager 1945-1972, journalnr. 89 Danmark 1.a. kasse 12711.

[8] Grønlandsministeriet: referat af møde i Ministeriet for Grønland, 10. okt 1978, Statsministeriet Grønlandsministeriet 0030 1957-1989, Journalsager, 1475 01 06, kasse 5939.

[9] 'Dansk Energipolitik 1976,' Handelsministeriet, May 1976, p. 56.

[10] A front-runner for Energinet.dk

The public protests against nuclear power in the 1970s, especially against Barsebäck, also had political backing, and the political majority for nuclear power in Denmark slowly began eroding. Shifting governments avoided approving the location of nuclear power plants, and when the Swedish Minister of Energy recognised that the siting of Barsebäck was unfortunate and in 1978 declared that the Swedish government was willing to discuss the issue, the Danish Social Democratic government did not respond. Denmark's lack of action was symptomatic of the eroding political support for nuclear power. Indeed, if the Danish government recognised that the siting of Barsebäck relatively very near to Copenhagen was somewhat problematic, how could it site nuclear power plants anywhere in more densely populated Denmark? A year later, the nuclear meltdown at Three Mile Island resulted in new public protests in Denmark and left the governing Social Democrats openly split on the question.

The erosion of support for nuclear power in Denmark resulted in two rounds of reports commissioned by parliament, all of which were intended to investigate different aspects of nuclear power. In 1982 Denmark raised the Barsebäck issue with the Swedish government after three of these reports recommended this, and a Swedish–Danish commission was established to investigate the issue further. Another round of reports in 1984 was somewhat more positive about nuclear power in Denmark, but the following debate in the parliament revealed a majority opposed. The question was resolved in 1985, when the Folketing adopted the resolution.[11] The 1976 Installations Act can therefore only enter into force if the 1985 Resolution is reversed and accompanied with a positive decision to implement a nuclear power program. Legislation enforcing the provisions of the 1976 Act would then have to be approved by Parliament.

Denmark did operate three research reactors, started up between 1957 and 1960, at the Risø National Laboratory, six kilometres north of the city of Roskilde, 35 kilometres west of Copenhagen. The DR-1, a 2kWt homogeneous unit dating from 1957, stopped operating in 2001 and was fully decommissioned in 2006 and released from regulatory control. A 5 MWt pool reactor, DR-2, closed in 1975, and a 10 MWt heavy water reactor, DR-3, in 2000. The DR-2 was fully decommissioned in 2008 and has since been rebuilt to handle nuclear waste. Decommissioning of DR-3 began in 2012. Three other nuclear facilities are also planned for decommissioning: a fuel facility, a hot cell facility and a waste management plant. Fuel fabrication for DR-2

[11] Søren Hein Rasmussen: 'Sære Alliancer. Politiske bevægelser i efterkrigstidens Danmark' Odense, 1997, pp. 124-166; Energibevægelsen OOA, The Organization for Information on Nuclear Power, 'What is the OOA?' http://www.ooa.dk/eng/engelsk.htm. Accessed 5 December 2015.

and DR-3 was closed down in 2002. The fuel facility had used highly enriched uranium powder until 1988, when this was replaced with low enriched uranium (LEU). Decommissioning of the hot cell facility began in 2008, and the Waste Management Plant (WMP) will be the last to be decommissioned, given that it is used for treating the decommissioning waste from the other facilities.[12]

According to the plan, the decommissioning project was to be concluded by 2018, but that depended on the choice of a final repository. In a 2008 decision (Beslutningsgrundlag for et dansk slutdepot for lav- og mellemaktivt affald, Ministeriet for Sundhed og Forebyggelse, 2008), three different disposal concepts were described, which were to be investigated further, specifically: 1) locating the depot on the surface and down to about 30 meters below ground; 2) location on the surface and down 30 meters below ground in combination with a drill hole 30-300 meters underground; and 3) locating the depot 30-100 meters below ground.[13] Preliminary investigations were then carried out to determine the feasibility of these three concepts for further investigation, which led to the submission of three pre-feasibility studies in May 2011.

The first study, prepared by the national decommissioning body, Dansk Dekommissionering (DD), investigated the different disposal concepts in relation to repository types, waste conditioning, safety analyses, costs and long-term impact assessments. The Danish National Institute for Radiation Protection, *Statens Institut for Strålebeskyttelse* (SIS), presented the second study on radiation doses from the transport of waste from Risø to the repository, while the third on the repository's location was prepared by GEUS. The three studies concluded that a moderately deep repository would be the most appropriate from a security standpoint, although it would be more expensive than a near-surface repository. From 22 areas suggested in preliminary studies, the reports narrowed the recommendation down to six potential sites for further study: Østermarie, in the Bornholm municipality, an island region to the east of Denmark and south of Sweden; Rødbyhavn in Lolland, another island municipality to the south of the Danish capital Copenhagen; Kertinge Mark, in the municipality of Kerteminde, on the island Funen; Hvidbjerg, in the Struer municipality, in western central Denmark; and two locations in the Skive municipality, in western central Denmark, at Thise and Sive Vest.[14]

[12] Danish Decommissioning, 'Nuclear Facilities': http://www.ddcom.dk/english/nuclear-facilities.aspx. Accessed 4 February 2015.

[13] Beslutningsgrundlag for et dansk slutdepot for lav- og mellemaktivt affald, Ministeriet for Sundhed og Forebyggelse, 2008, p. 34.

[14] 'Six sites up for Danish nuclear repository,' *World Nuclear News*, 5 May 2011.

A final decision on how Denmark should dispose of its low to medium radioactive waste was to be made at the beginning of 2015. In March of that year, Denmark's political parties decided to conduct studies leaning towards an intermediate long-term storage facility for low- and intermediate radioactive waste (LILW). According to Dansk Dekommissionering, a joint ministerial working group issued a report in early 2015 which concluded that an intermediate storage facility could be established in compliance with safety standards. Further studies regarding sites, costs and comparative safety levels for a final repository and an intermediate storage facility are still to be carried out. Until details about an intermediate long-term storage facility are provided, the final decision for a solution to Denmark's radioactive waste will be postponed.[15]

It should be noted that the lengthy process of identifying and developing a final nuclear waste repository is not unique to Denmark. On 12 November 2015, Finland announced that it had become the first country in the world to issue a construction licence for a permanent underground nuclear waste repository on the island of Olkiluoto, western Finland, after the local population accepted the plan. Once built, the repository can hold up to 6,500 tU approximately 450 metres below the surface in granite bedrock. More than forty years of research and development has been conducted leading up to the issuance of the permit.[16] Similarly, in Sweden, the research and development of a deep geological repository took almost forty years until it was announced in 2009 that the repository would be built at the Forsmark nuclear power plant. In March 2011, the Svensk Kärnbränslehantering AB (SKB) submitted its application to build the repository to Sweden's Radiation Safety Authority (*Strålsäkerhetsmyndigheten*, SSM). SSM has been publishing its preliminary findings throughout 2015 and plans to submit its opinion on SKB's overall licence application to the Land and Environment Court in Stockholm in early 2016. The regulator will deliver its comprehensive final assessment of the application to the government in 2017. SKB plans to start construction of the repository as soon as the government issues a permit, expected sometime in the early 2020s.[17]

The Risø Laboratory was incorporated into the Technical University of Denmark (DTU) in 1994 and is now known as the DTU Risø Campus, where research focuses on energy technologies that have minimal impact on the climate. Although fission

[15] Danish Decomissioning, 'Long-term solution for Danish Radioactive Waste,' http://www.dekom.dk/english/long-term-solution.aspx. Accessed 5 October 2015.

[16] 'Finland approves underground nuclear waste storage plan,' *Reuters*, 12 November 2015

[17] 'Preliminary findings positive for Swedish repository,' *World Nuclear News*, 25 June 2015.

research in Denmark has ended, nuclear research (including fusion) continues, and the Risø Hevesy Laboratory houses a cyclotron which produces radioactive isotopes for medical purposes. Risø DTU remains the home of the Danish national competence centre for nuclear technologies.

While Denmark excluded nuclear energy from being generated in the country, a portion of its electricity is made up of nuclear energy imports from Sweden and Germany. The percentage of electricity consumption from nuclear imports has been steady at around 3 percent over the past five years.[18] Before 2010, statistics on electricity consumption were broken down between East and West Denmark, with nuclear making up 7-8 percent of electricity consumption in East Denmark and zero percent in West Denmark.[19] It is not clear when nuclear imports began, and Energinet does not keep exact figures on the amount of nuclear power imported.[20] When electricity is imported from either Sweden or Germany, the source of the electricity is not fully documented, whether from nuclear power plants or from other sources of power. There is an assumption that around 50 per cent of imported energy from Sweden originates from nuclear power plants and about 40 per cent from Germany.[21] In 2014 the rest of Denmark's grid was made up primarily of wind, water and sun (47%), and coal (30%). Biofuels and waste made up 13 per cent of Denmark's electricity consumption in 2014, followed by natural gas (7%), the remainder being made up of nuclear power (3%).[22]

[18] Miljødeklarationer 2004-2014 http://www.energinet.dk/DA/KLIMA-OG-MILJOE/Miljoedeklarationer/Sider/Miljoedeklarering-af-1-kWh-el.aspx.

[19] Miljødeklaration 2004-2014, http://www.energinet.dk/DA/KLIMA-OG-MILJOE/Miljoedeklarationer/Sider/Miljoedeklarering-af-1-kWh-el.aspx. Accessed October 12, 2015.

[20] A Miljø Deklaration is an estimate of where the energy comes from, based on all domestic consumption and production, as well as the import and export of energy that takes place every hour year round. Contrary to the Miljø Deklaration, the Generel Deklaration is part of the collective EU account of how much energy comes from different energy sources in the EU, i.e. it does not say anything about the physical/actual energy that comes out of Danish sockets. According to the Generel Deklaration, 23% of Denmark's energy came from nuclear power in 2014. The difference between the actual amount (3%) and the accounted amount (23%) is caused by the so called Green Certificates. In the EU, customers buy these Green Certificates when they want to ensure the production of green energy somewhere in the EU energy grid that corresponds to the buyer's actual use of energy. Because Denmark produces a lot of green energy, Danish producers sell many of these Green Certificates abroad. So when a customer abroad buys a Green Certificate from a Danish green producer, according to the EU accounting system, the production from the Danish producer is now in the other EU country, and therefore it looks as if Denmark has less energy than is actually consumed. In turn, the other EU country looks as if it has more energy than it actually consumes. This surplus is now sent back to Denmark, and the EU account is in balance again. So if the buyers' national production of energy comes from nuclear power, a lot more nuclear power is send back to Denmark in the EU accounting system. For more on Miljø deklerartion vs. Generel Deklaration, see http://www.energinet.dk/DA/KLIMA-OG-MILJOE/Miljoedeklarationer/Sider/Hvor-kommer-stroemmen-fra.aspx Accessed Oct 12, 2015.

[21] Discussion with official from Energinet, 16 February 2015.

[22] 'Hvor kommer strømmen fra?,' Energinet.dk: http://www.energinet.dk/DA/KLIMA-OG-MILJOE/Miljoedeklarationer/Sider/Hvor-kommer-stroemmen-fra.aspx. Accessed 7 October 2015.

## 2. Uranium Exploration in Greenland

Uranium was discovered in south Greenland in 1955. In the early years, the Danish Atomic Energy Commission, chaired by Niels Bohr, supported large-scale uranium expeditions with the eventual aim of using the uranium to generate nuclear energy in Denmark. Early mapping in south Greenland was undertaken by the Atomic Energy Commission, the Geological Survey of Greenland (GGU) and the mining company Kryolitselskabet Øresund A/S. From 1970 to 1982, exploration was undertaken by GGU and the Risø National Laboratory on behalf of the Danish government, with airborne surveys conducted in Central East Greenland, West Greenland and South Greenland yielding a number of identified uranium anomalies.[23]

After the 1985 Danish Parliament resolution formally excluded nuclear energy from the indigenous energy grid, state-sponsored uranium exploration effectively ended. At the same time, companies appeared to have lost interest in exploring the Arctic island for radioactive materials. One company even withdrew its application for exploration, blaming the slow administrative process.[24] Thus, in the early 1990s, the Ministry of Energy launched a reform of the entire licencing process to make it easier and more transparent to get a licence. This process involved the creation of a new standard licence and standard licencing terms. These did not exclude exploration or the eventual extraction of uranium or other radioactive materials.[25] Nevertheless, in the 2000s the term 'zero tolerance' popped up in the Greenlandic debate over uranium exploration, a reference to a supposed moratorium on the mining and exploration of uranium or other radioactive materials in Greenland.

### Zero tolerance: a policy that never was?

Throughout history, no laws on mineral resources in Greenland have specified minerals further. Instead the practice has been that authorities have laid down the minerals that are covered in licences which in turn have been applied on a case by case basis. The only legislation in which radioactive materials are mentioned is the 1965 Law

[23] Nynke Keulen, Kristine Thrane, Bo Møller Stensgaard and Per Kalvig, 'An evaluation of the potential for uranium deposits in Greenland,' Center for Minerals and Materials Report, 2014/1, p. 8.

[24] Fællesrådet vedrørende mineralske råstoffer i Grønland: Beretning fra Fællesrådet vedrørende mineralske råstoffer i Grønland 1987-88, Aug. 29, 1988, RA, 0030 Statsministeriet Grønlandsministeriet, 1967-1989 Journalsager, 1478 05 05, kasse 5979.

[25] Gry Thomasen: Den dansk-grønlandske uranhistorie, 1945-2013. Forthcoming 2016.

on Mineral Resources in Greenland, the first mining law specific to the territory. In the details of the law, certain commodities or groups of commodities, including uranium and thorium, were not excluded but were regarded as resources that were accompanied by a range of international conventions and therefore resources of a different sort.[26] With the introduction of Greenlandic Home Rule in 1979, a new Mineral Resources Act for Greenland came into force, which was later replaced by the 1991 Mineral Resources Act. Both Acts embedded the principles of co-decision (or common veto) powers in the raw materials sector, and they made no mention of radioactive materials.

Until recently, the genesis of the moratorium or 'zero-tolerance policy' towards mining, exploration and production has mostly been a matter of speculation. In one account it was introduced around the time of Greenland's Home Rule in 1978-79, while other accounts claim it was an indirect result of the 1985 decision not to include nuclear energy as an indigenous source of power for Denmark. Then there was the Uranium Report Vol. 1 (*Uranredegørelsen bind 1*) issued by the Greenlandic Siumut Coalition Government in 2008, which stated that in 1988 the Joint Committee on Mineral Resources in Greenland under the Ministry of Greenland, and subsequently the Ministry of Energy (Fællesrådet vedr. Mineralske Råstoffer i Grønland), reached a decision in principle not to allow uranium exploration and mining in Greenland. A similar statement was made by Greenland's Parliament in August 2013.[27] The Uranium Report Vol. 1 further claimed that the decision on a moratorium was not reflected in legislation and that a new decision in principle would be necessary to allow the exploration and mining of uranium in Greenland.[28] Given the persistence of the claim that a decision on a moratorium had been taken in 1988 in the Joint Committee, this research focuses on the proceedings in the Committee in 1988 and 1989, and not on the proceedings of the entire life of the Committee (1979-2009).

Fællesrådet had no decision-making competence, being an advisory committee established in 1979 in connection with Home Rule. The Committee had five members from Greenland appointed under Home Rule and five from Denmark appointed by the Danish government; for the first ten years the Committee was headed by a Green-

[26] 'Bemærkninger til Lov om mineralske råstoffer i Grønland', 1965. Tillæg A til Folketingstidende Fremsatte Lovforslag m.v. Folketingsåret 1964-65 spalte 433-444.

[27] Government of Greenland (2013), 'Forslag til Inatsisartutbeslutning om at Inatsisartut med virkning fra EM13 tiltræder at "Nul-tolerancen" overfor brydning af uran og andre radioaktive stoffer ophører, 8 August 2013, Nuuk.

[28] Uranredegørelse bind 1. http://naalakkersuisut.gl/da/Publikationer/2008

lander. The Committee advised the government and the Home Rule authorities on raw materials issues and made recommendations regarding what licences should be issued. A mutual right of veto was established to ensure agreement between Denmark and Greenland in the decisions they would reach based on the recommendations of the Committee. Until 1998 licences were formally issued by the relevant Danish minister. Up until 1987 this was done by the Minister of Greenland and thereafter the Minister of Energy.

A closer look at the minutes of Fællesrådet meetings in 1988 reveal that no recommendation for a ban on uranium mining was formally submitted to either the Danish or the Greenlandic authorities, nor was a moratorium discussed.[29] Indeed, the minutes of a meeting of the Joint Committee in 1989 suggests that no decision in principle was taken since the Committee recommended three companies to explore jointly for radioactive elements in Sarfartoq (along with a range of other minerals) from March to December of that year. Fællesrådet's 1989 annual report covering the period from 1 July 1988 to 30 June 1989 notes that environmental, archaeological and technical issues were discussed in the Committee's January 1989 meeting, but there is no reference to a moratorium or a policy of zero tolerance on uranium mining.[30]

The position of Fællesrådet on uranium mining was not tested further, as the companies did not proceed beyond exploration at that time. While the term 'zero tolerance policy' does not show up in the archives before the 2000s, historically, various political parties have been opposed to mining uranium, and the usual practice has been to exclude uranium and thorium from standard mining licences. Indeed, in 1979-2009 only two exploration licences that involved radioactive materials were issued.[31] One was the exploration licence mentioned above, which was granted to the Hecla Mining Company, Gewerkschaft Wilhelm Bergbausgesellschaft and Nunaoil A/S to explore the Sarfartoq area jointly. The other was granted to Frölich & Klüpfel Untertagebau G.m.b.H & Co. KG in 1986 for the same deposit.[32]

[29] Fællesrådet, Minutes of Meeting in Fællesrådet January 28, 1988. Rigsarkivet (RA) 0030 Statsministeriet, Grønlandsministeriet. 1957-1989 Journalsager, 1478 05 00 28 – 05 00 33, box 5975. Minutes from the 23 September 1988 meeting are currently in Energistyrelsen's (Ministry of Energy's) custody.

[30] Fællesrådet, Beretning for perioden 1. juli 1988 til 30. juni 1989 fra Fællesrådet vedrørende mineralske råstoffer i Grønland, August 30, 1989. RA, 0030 Statsministeriet Grønlandsministeriet, 1957-1989 Journalsager 1478 05 05 box 5979.

[31] Energistyrelsen: Notat, Fællesrådet vedrørende Minieralske Råstoffer i Grønland 1979-2009 – efterforskning og udnyttelse af radioaktive grundstoffer i Grønland. J.nr. 3401/1002-0122, July 2, 2013. Accessed through public disclosure.

[32] ibid.

**Zero tolerance**

While it is clear that in 1988 the Joint Committee took no decision regarding the zero tolerance policy, there are some who still maintain that the policy formally existed. Until the Naalakkersuisut can produce a document to this effect, we cannot claim that zero tolerance was ever official policy.

In 2008, however, advanced studies in Kvanefjeld necessitated clarification of how uranium should be handled when it was considered to be a significant part of a deposit's mined product. In 2009, Greenland achieved Self-Government Status, including full authority over its natural resources. Later that year, the Greenland Parliament (Inatsisartut) issued 'Law no. 7 of 7 December 2009 on Mineral Resources and their activities', which provides for the Greenland Government (Naalakkersuisut) to issue regulations related to minerals, including exploration, exploitation, processing and export.[33] However, neither the Self-Government Act, nor the regulations on mineral resources clarified Naalakkersuisut's position on uranium exploration and mining. It was not until 2010 that Naalakkersuisut amended the standard licencing terms to allow Greenland Minerals and Energy (GME), an Australian-domiciled company in Greenland, an exemption to explore (but not exploit) beyond normal background radiation in Kvanefjeld.

It is important to note that some voices claim that a zero tolerance policy was put forward in 2010. At its annual meeting in 2010, the Greenland opposition party, Inuit Ataqatigiit (IA), issued the Qoornoq Declaration, stating that IA 'maintains zero tolerance towards uranium and other radioactive substances.' However, the Declaration was an IA party statement which was not supported by the government, since Siumut did not sign the declaration. Thus, the Qoornoq Declaration outlined a party platform which included support for a ban on uranium mining – it was not a Greenlandic policy document. It was not until 2013 that a zero tolerance policy was put to the Inatsisartut, which voted 15-14 (with two abstentions) in favour of lifting a policy that never really existed.

According to the Geological Survey of Denmark and Greenland (GEUS), nearly thirty uranium sites are known in Greenland today. Most show little exploration activity,

[33] Inatsisartutlov nr. 7 af 7. december 2009 om mineralske råstoffer og aktiviteter af betydning herfor. http://lovgivning.gl/lov?rid=%7B4F8B6CD0-3E04-4476-A332-2A814FBA35A1%7D

although some have had geological mapping or trenching performed. Drilling of uranium as a by-product or primary product has only been carried out in Kvanefjeld, while Sarfartoq has been drilled with the goal of investigating the niobium potential of the carbonatite. Niobium is a chemical element used in most alloys, particularly in the steel used in oil pipelines. South Greenland has therefore been the most heavily investigated, with a focus on Kvanefjeld in particular, since Greenland Minerals and Energy was granted permission in 2010 to include radioactive elements in its exploration phase for rare earth elements (REE). According to GME, the overall resource inventory of Kvanefjeld contains more than 10 million tonnes of REE and 575 million pounds or 260,000 tonnes of uranium ore concentrates.[34]

Notably, north-west Greenland has a very high potential as a sandstone deposit and as an unconformity deposit. The Proterozoic rocks in this area of the Thule Basin on the northern margin of the Canadian-Greenlandic shield have recently been referred to as the 'Thule Supergroup.' The area is geologically similar to Canada's Athabasca basin, where the world's highest grades of uranium are currently mined. The Thule area, however, has not been investigated intensively and therefore may form an interesting target for the future. Indeed, most of Greenland's uranium potential, like the potential for other minerals, is still to be explored and identified.

[34] Greenland Minerals and Energy (GME) homepage: http://www.ggg.gl/ Accessed 20 August 2014.

## 3. Greenland, Denmark and Uranium Regulation

When the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) was opened for signature in 1968, Denmark was the fourth country in the world to ratify it (in January 1969).[35] On 1 January 1973 – the same day Denmark joined the European Economic Community – Denmark, Greenland and the Faroe Islands all became party to the safeguards agreement between the non-nuclear weapon states of Euratom, Euratom and the IAEA (INFCIRC/193). When Denmark initially applied for EEC membership in 1961, the expected accession to Euratom somewhat challenged the Danish position on non-proliferation and disarmament. The European Supply Agency (ESA) stipulated that the Community could demand extraction of uranium from member states in cases of a shortage of supply within the Community. Contrary to IAEA safeguards, Euratom did not differentiate between peaceful and military uses. Denmark therefore had to consider whether it would be acceptable for Greenland's uranium to be used for military purposes or not.[36]

The debate in the Ministry of Foreign Affairs and between the Ministry and AEK revealed a certain difference of opinion. While AEK wanted a clause that would prevent the use of Greenlandic uranium in military programs, the Ministry argued that such a clause would work against the purpose of the European Community and therefore against official Danish policy. The Ministry also noted that it was not without importance 'which kind' of military use was intended. Indeed, should Greenlandic uranium be part of closer defence cooperation in Western Europe, as both Great Britain and France advocated, a clause on peaceful uses only would go against the basis of such cooperation.[37] In the end, Denmark did not demand a 'peaceful clause.' However, the debate reveals a certain willingness on the part of the Ministry of Foreign Affairs to set aside Denmark's non-proliferation profile during

[35] Denmark was fourth after Ireland (1 July 1968), Nigeria (27 September 1968) and the United Kingdom (27 November 1968).

[36] Politisk juridisk kontor (PJ) til Økonomisk politisk kontor (ØP): "Spørgsmål om ønskeligheden af et dansk forbehold til sikring imod militær anvendelse af Grønlands uran", Dec. 3, 1962. RA, Udenrigsministeriet 0002, Gruppeordnede sager 1945-1972, journalnr. 89 C 7.b-C 7.c., kasse 12620; ØP "Notits Danmarks tiltræden af EUROATOM. Samtale med departementschef Koch den 23 oktober 1962"Okt. 23, 1962, RA, Udenrigsministeriet 0002, Gruppeordnede sager 1945-1972, journalnr. 89 C 7.b-C 7.c., kasse 12620.

[37] Politisk juridisk kontor (PJ) til Økonomisk politisk kontor (ØP): "Spørgsmål om ønskeligheden af et dansk forbehold til sikring imod militær anvendelse af Grønlands uran", Dec. 3, 1962. RA, Udenrigsministeriet 0002, Gruppeordnede sager 1945-1972, journalnr. 89 C 7.b-C 7.c., kasse 12620.

the late 1960s. When Danish membership of the EEC and Euratom became a reality in 1972, the subject appeared to be closed.

In 1985, Greenland withdrew from the European Economic Community (including Euratom) and returned to the safeguards agreement that the Kingdom had had with the IAEA previously (INFCIRC/176). Denmark has had an Additional Protocol with the IAEA in place since 1998, but until 2013 it did not apply to Greenland. Although Denmark and Greenland have different agreements with the IAEA, both consist of comprehensive safeguards with an Additional Protocol and thus share the same reporting requirements on natural uranium. The main difference between Denmark's and Greenland's safeguarding requirements is that provisions related to the European Supply Agency do not apply to the latter. This allows the Rigsfællesskab to report on Greenlandic uranium directly to the IAEA in Vienna, rather than through Euratom in Luxembourg.[38]

The main complication of such mixed membership rests in export controls. An Executive Order of 1972 issued by the Ministry of Education under Sections 8 and 38(3) of the 1962 Nuclear Installations Act [No. 170 of 1962] stipulates that nuclear materials should not be exported from Denmark without the authorisation of the Danish Energy Authority. However, whereas Copenhagen acts in accordance with the control lists and policies from Brussels, Greenland is not bound by them. Denmark's export controls are guided in practice by EU regulation 428/2009 on setting up a Community regime for the control of exports, transfer, brokering and transit of dual-use items.[39]

The EU Regulation is in some ways more stringent than that of the Nuclear Suppliers Group (NSG), a group of 48 nuclear supplier countries (including Denmark) that seeks to contribute to the non-proliferation of nuclear weapons through the implementation of two sets of guidelines for nuclear and nuclear-related exports.[40] The EU Regulation extends controls to smaller quantities (exempting four grams or less 'contained in a sensing component of instruments') of yellowcake, whereas the NSG guidance stipulates that exports of uranium ore concentrates (UOC) for nuclear purposes that exceed 500 kilograms should be reported. NSG Guidelines also recommend prior approval from the supplier state if a recipient state wants to enrich

[38] Cindy Vestergaard,'Greenland, Denmark and the pathway to supplier status, *The Extractive Industries and Society*, Vol. 2, 2015, p. 156.

[39] Ibid.

[40] Nuclear Suppliers Group, 'About the NSG,' http://www.nuclearsuppliersgroup.org/en/about-us. Accessed 2 December 2015.

Table 1. The Kingdom's Mix of Nuclear Safety, Security and Safeguards

| *Membership/Convention* | *Denmark* | *Greenland* |
|---|---|---|
| European Union | v | Non-EU, but Overseas Country and Territory (OCT) |
| IAEA Safeguards | INFORC / 176 | INFORC / 176 |
| Additional Protocol | 193.Add.8 (additional Protokol) | (AP March 2013) |
| 1994 Convention on Nuclear Safety | v | - |
| 1987 Convention on the Physical Protection of Nuclear Material and 2005 Amendment | v | v (no amendment) |
| 1986 Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency | v | - |
| 2005 International Convention for the Suppression of Acts of Nuclear Terrorism | v | - |
| 1997 Joint Convention on the Safety of Spent fuel Management and on the Safety of Radioactive Waste Management | v | - |
| 1960 Radiation Protection Convention, Convention concerning the Protection of Workers against Ionising Radiations | v | - |

uranium beyond 20 per cent.[41] The NSG therefore does not bar the export of UOC in small quantities or even large quantities if the supplier has a reasonable assurance that the material will not be used for nuclear purposes. While the NSG does apply to Greenland and EU dual-use exports do not, it is conceivable that Greenland may in the future ship its yellowcake for conversion in the EU (i.e. France), in which case it will need to be aware of (and follow) Euratom's rules along with the EU's transport regulations (however, transhipment or transit through EU is not subject to these).

Another complication arises when looking at Denmark's ratifications of six other nuclear conventions which are not yet applicable to Greenland (or the Faroe Islands). Accordingly, nuclear safety, security and non-proliferation requirements are mixed across the Realm, creating disparities and confusion within the legal non-proliferation architecture for which Copenhagen is internationally responsible. The Danish Realm's mixture of nuclear safety, security and safeguards commitments is shown in Table 1.

[41] Cindy Vestergaard, Governing Uranium Globally, DIIS Report 2015:09, p. 60.

This mixed membership is further complicated by Greenland's status as a self-governing territory within a state in the post-2009 Realm (Rigsfællesskab). While the task is complex and layered, Greenland and Denmark have an opportunity to put together a common system to ensure that non-proliferation reporting and international safeguarding obligations are met. This will require a regulatory system of export controls and inventory management that meet their mixed – and collective – membership requirements.

## 4. Danish–Greenlandic Uranium Working Group

In February 2013, Greenland and Denmark established the Uranium Working Group (UWG) consisting of representatives from Danish and Greenlandic ministries to look at the relevant foreign, security, fiscal and legal implications of mining and exporting radioactive minerals. This included identifying which international and national obligations apply to Greenland and which only apply to Denmark, as well as what steps, if any, should be taken for international obligations to apply across the entire Realm.

In October 2013, the UWG issued a joint *Report on the extraction and export of uranium: Working Group on the consequences of lifting the zero-tolerance policy*, essentially providing a 'mapping and scoping' of what has become a relatively complicated and layered *Rigs* legal system. The 180-page report provides intermediate conclusions on how this system applies to the Danish and Greenlandic authorities, with the disclaimer that far more discussion and investigation are still required. The report identified areas related to the environment and nuclear safety as falling under the competence of Naalakkersuisut), including the storage and transport of mining products and the handling and responsibility for radioactive waste. It identified transport and emergency preparedness and response as a 'matter for the Realm' (*rigsanliggende*) and therefore a competency of Denmark, along with export controls. Radiation protection (health), security and safeguards landed in the space in between, where Greenland lacks an administrative system for dealing with them, and because radiation protection and international non-proliferation commitments are within Copenhagen's remit, the intermediate conclusion is for both to cooperate on future regulation and administration.[42]

It is important to note that the report hands transport in terms of nuclear safety to Greenland while making Denmark responsible for overall transport on roads, by sea and on land; therefore, there is an overlap regarding uranium transport that needs to be addressed. The report also stresses that safeguards are fundamental to foreign, defence and security policies, as they are the means for the IAEA to ensure that international obligations under the NPT are met and that the uranium trade does not contribute to the proliferation of weapons of mass destruction. Safeguards

[42] Cindy Vestergaard,'Greenland, Denmark and the pathway to supplier status, *The Extractive Industries and Society*, Vol. 2, 2015, p. 158.

are thus dependent on an export control system, and while export controls were identified in the report as an area under Danish authority, it also underscored the need 'for establishing a new and comprehensive export control set-up, which includes the provision of new legislation for Greenland and the building of necessary human skills and administrative systems and procedures for cooperation.'[43] The report accepts that the establishment of such a legal framework will be 'a complex and complicated task' and that 'there is no experience in Denmark in relation to the administration of these obligations,' particularly in relation to uranium exports. It therefore notes that 'there will be a need to conduct feasibility studies in order to clarify the content of the forthcoming legislation.'[44]

The UWG report included in its annexes a legal opinion by the Lett Advokatfirma, which the Inatsisartut requested in the Fall session 2012 as a response to the governing Siumut party's proposal for a parliamentary resolution on uranium production, and more specifically the proposal that Greenland should work towards the establishment of an upper limit of 0.1% for the content of uranium in exploitation licences. The Lett Advokatfirma investigated five different topics related to the possible lifting of the so-called zero tolerance policy, one of which was the division of authority in the event Greenland lifted the policy.[45]

On the division of authority, the Lett report clarified that the preamble to the Self-Government Act states that, according to international law, the Greenlandic people are a people with the right to self-determination, and that in recognition thereof, the Self-Government Act is based on a desire to enhance equality and mutual respect between Denmark and Greenland. Therefore, according to the Lett report, Denmark must not hinder or limit Greenland's competencies in the fields of responsibility which have been transferred, such as the raw materials area. If, however, a field of responsibility is connected with the Realm's foreign, defence and security policies, the Naalakkersuisut can only act in cooperation with Copenhagen.[46]

The Lett report also referred to the so-called exception rule, whereby the Self-Government Act determines situations in which Danish authority is invoked. The report

[43] Ibid.

[44] Danish and Greenlandic Governments, 'Rapport om udvinding og eksport af uran: Arbejdsgruppen om konsekvenserne af ophævelse af nul-tolerancepolitikken,' Copenhagen, October 2013.

[45] Lett Advokatfirma, DCE, PwC: "Rapport om forhold vedrørende en eventuel ophævelse eller ændring af nultolerancepolitikken for udnyttelse af uran og andre radioaktive mineraler", april 2013.

[46] Ibid., p. 13.

concluded that international agreements on the exploitation, export and sale of uranium for peaceful purposes would not bring the exception rule into play. However, should uranium be mined and exported for military purposes, the exception rule would apply. The Lett report further stated that the exception rule applies to international agreements and acts to prevent the misuse of uranium for military purposes. Therefore, the report concluded, Copenhagen and Nuuk must determine reasonable and proportional conditions for the exploitation, export and sale of uranium to limit the risk of Greenlandic material being diverted to non-peaceful uses.[47]

On the issue of an upper limit of 0.1% for the content of uranium in exploitation licences, the Lett Report concluded that there was no substantial legal difference between lifting the zero tolerance policy and amending it by establishing an 0.1% upper limit. In addition, the report concluded, there are areas in Greenland, such as Kvanefjeld, where it was not possible to amend the zero tolerance policy in ways that would differ legally from lifting the policy. The report stated that in Kvanefjeld the level of radioactivity is so high that the relevant conventions would apply in the case of any exploitation.[48]

In January 2014, Greenland published another legal assessment, this time by Ole Spiermann, a partner in the Bruun & Hjejle law firm in Copenhagen. Naalakkersuisut asked Spiermann to clarify Greenlandic and Danish competencies in foreign-policy matters regarding the exploitation and export of uranium, as well as the extent to which Denmark's competencies in foreign, defence and security policy can be used to prevent, limit or regulate the exploitation and export of Greenlandic uranium, and how this might happen.[49]

Spiermann stated that, under the Self-Government Act, Greenland has the sole jurisdiction over areas that have been transferred to it. He argued that Naalakkersuisut and the Danish government have agreed that uranium and other radioactive materials fall under the raw materials field of responsibility, and because these fields of responsibilities are clearly demarcated, uranium and other radioactive materials do not and cannot belong to the security, defence and foreign policy areas.[50] This

[47] Ibid., pp. 20-21.

[48] Lett Advokatfirma, DCE, PwC: "Rapport om forhold vedrørende en eventuel ophævelse eller ændring af nultolerancepolitikken for udnyttelse af uran og andre radioaktive mineraler", april 2013, p. 40.

[49] Ole Spiermann, 'Responsum om udenrigspolitiske beføjelser I forhold til uran og andre radioactive mineraler i Grønland,' 6 January 2014 p. 1.

[50] Ole Spiermann, 'Responsum om udenrigspolitiske beføjelser I forhold til uran og andre radioactive mineraler i Grønland,' 6 January 2014 p. 10.

means that, although Copenhagen has ratified a number international treaties on the regulation of radioactive material, it does not change Naalakkersuisut's powers vis-à-vis Copenhagen because the moment a field has been taken over, the implementation and fulfilment of international treaty obligations fall upon the party that has taken it over. Spiermann argued that, while Nuuk cannot repatriate the foreign, security and defence policy areas under the Self-Government Act, a so-called parallel competency is given by power of attorney on fields that have been transferred. While the state's foreign policy authority continues, Spiermann concludes that Naalakkersuisut has a parallel foreign policy competency in the domain of raw materials, provided that this foreign policy does not go against the Realm's foreign policy or is done in an international organization that the Kingdom is a member.'[51]

Further on the exception rule, Spiermann argued that, for the rule to apply, a matter must explicitly touch defence and security policy, which he has determined that uranium governance does not. In addition, Spiermann stated that, because Greenland has taken over the raw materials field, the implementation and fulfilment of obligations under international law concerning export controls and their administration falls exclusively under Greenland's authority. He also stated that Naalakkersuisut can conclude international agreements with states to which Greenland's uranium is exported – the so-called Nuclear Cooperation Agreements (NCAs) – and that it may conduct regular reporting and contacts with the IAEA and other international and national authorities in the context of control and safeguards.

Spiermann's legal opinion does not take into account that international practice by all major (and small) uranium suppliers is to categorise uranium-bearing ores and their concentrates as a type of strategic resource and thus require government ownership or oversight, particularly on trade. Indeed, all of the fifteen countries studied under the Governing Uranium project classify uranium as a mineral of a different sort because of its explosive potential. For long-standing uranium producers (and consumers) such as Australia, Canada and United Sates, NCAs provide federal-level assurances to ensure the highest standards in non-proliferation and nuclear safeguards.

Lastly, Spiermann concluded that the extension of international treaties to Greenland that the Realm is already a party to in so far as Denmark is concerned does not grant

[51] Ole Spiermann, 'Responsum om udenrigspolitiske beføjelser i forhold til uran og andre radioactive mineraler i Grønland,' 6 January 2014 p. 11 &28.

Naalakkersuisut any power of attorney.[52] This means that amendments to treaties remains a foreign policy competency, which remains with the Danish government.

Parts of Spiermann's legal opinion also address the conclusions of the UWG report. He states that the UWG report's statement that the IAEA safeguards system touches upon the Realm's foreign, defence and security policy does not take the Self-Government Act into consideration. He concludes that regulatory enforcement in Greenland is in essence a domestic power of authorization and that the ongoing reporting to the IAEA and other international and national authorities in the context of safeguards can be managed by Naalakkersuisut.[53]

In a press release accompanying publication of the assessment, the Greenlandic Government stated that the 'opinion removes a wide range of uncertainties and generally make it clear that the Danish government cannot exercise its foreign policy powers with the aim to reverse or limit the Greenland Self-Government legislative and executive powers in the fields of responsibility as mineral resources.'[54] For Denmark's part, Copenhagen argues that uranium not only triggers international treaties such as the NPT for which Copenhagen is internationally responsible, but also Danish non-proliferation, security and foreign policy, which constitutionally falls within Copenhagen's remit. In January 2014, the Danish Prime Minister Helle Thorning-Schmidt stated: 'It is clear that uranium is a special material, and therefore we should have a cooperation agreement in this area.'[55]

Despite the legal toing and froing, both Greenland and Denmark have accepted the need to draw up a cooperation agreement related to uranium and have extended the work of the UWG to advise on the elements that need to be emphasized in such an agreement. In the spring of 2014, the Danish parliament adopted the so-called 'Great Scale Act' (Storskalaloven). While the act does not touch upon the mining of uranium or other radioactive substances, it clarifies that REE also has foreign, security and defence policy implications.[56]

[52] Ole Spiermann, 'Responsum om udenrigspolitiske beføjelser i forhold til uran og andre radioactive mineraler i Grønland,' 6 January 2014 pp. 27-28.

[53] Ole Spiermann, 'Responsum om udenrigspolitiske beføjelser i forhold til uran og andre radioactive mineraler i Grønland,' 6 January 2014 pp. 24-25.

[54] Naalakkersuisut, 'Udenrigspolitiske beføjelser I forhold til uran og andre radioaktive mineraler I Grønland,' 7 January 2014.

[55] 'Grønland optrapper strid om uran,' *Politiken*, 8 January 2014.

[56] Lov for Grønland om udlændinges adgang til opholds- og arbejdstilladelse i anlægsfasen af et storskalaprojekt. http://www.ft.dk/samling/20131/lovforslag/l198/beh3/forhandling.htm#dok

## 5. Pathway to Supplier Status

The UWG continued its work, splitting into subgroups and focusing on how to move forward by first clarifying the locus of authority in Greenland and Denmark, and then looking at ways to implement the various treaties and international obligations involved. In the 2015 autumn session of Inatsisartut, Greenlandic parliamentarians were to discuss ratification of the six treaties that Greenland remains outside.[57] At the time of writing this report, Inatsisartut is also debating a Greenlandic Radiation Protection Act, which goes beyond uranium mining to regulate all health aspects related to radioactive substances, including those for diagnostics, medicine and other industries.[58]

The Danish-Greenlandic framework for joint governance is also under development and is expected to be approved by both governments before the end of 2015. This framework will highlight the procedures regarding uranium cooperation when it comes to respecting the foreign policy, defence and security powers framed by the constitution and the 'full authority over natural resources' granted to Greenland under the Self-Government Act. This will involve the drafting of two separate acts, one on export controls and dual-use products, and the other on safeguards. These acts will frame cooperation on export controls, which will be led by the Danish Ministry for Industry and Growth, while the act on safeguards will fall under the Danish Ministry of Foreign Affairs. In Nuuk, the Ministry of Industry, Labour and Trade and the Department of Foreign Affairs will be the coordinating authorities for Greenland respectively.[59]

Accordingly, the issue surrounding the boundaries of what distinguishes 'foreign policy' seems to be settled (for the time being) with agreements on export controls and safeguards. The two acts will need to be debated in both parliaments in spring 2016: two readings in Inatsisartut and three readings in Christiansborg. Meanwhile, GME plans to finalise and submit the Environmental Impact Assessment (EIA) and Social Impact Assessment (SIA) required for the permit to exploit Kvanefjeld. The EIA and SIA will then need to go through eight weeks of public consultation and meetings in locations near to the Kvanefjeld project.[60]

[57] Inatsisartut agenda, Fall 2015 item no. 150, 151, 152, 157, 158 and 159. http://inatsisartut.gl/samlingerhome/oversigt-over-samlinger/samling/punktliste.aspx

[58] 'Forslag til: Inatsisartutlov nr. xx af xx. xx 2015 om ioniserende stråling og strålebeskyttelse,' EM 2015/17, [21] August 2015.

[59] Discussion with Greenlandic officials, 30 September 2015.

[60] Ibid.

# 6. Conclusion

The narrative of the existence of a zero tolerance policy is an enduring one. The report does argue that a practice of zero tolerance existed, albeit on a case-by-case basis until the issue of a moratorium was put to a vote in Greenland's Parliament in 2013. Until that point, no overriding policy guided the practice – at least not one that has yet been found in the archives or provided by the Danish or Greenlandic authorities. Instead an 'ad hoc' approach was the predominant practice, with applications for exploration being evaluated on a case-by-case basis. Nuclear trade, however, requires a clear set of statements, laws and regulations to inform industry, foreign trade partners and the general public on how domestic and international obligations are to be complied with and enforced.

The most recent development regarding uranium production and supply within the Realm points to a new chapter in the Rigsfælleskab's approach to nuclear materials and trade, one that encompasses the Realm as a whole and not simply its constituent parts. This is helping to clarify legal ambiguities in the Realm's implementation of its international obligations, such as the application of the Additional Protocol, which has applied to Denmark since 1998 but was not introduced to Greenland until 2013. Inasisartut's decision in October 2013 has brought Denmark and Greenland closer to becoming a uranium supplier, potentially the world's newest western (and Arctic) supplier.

Both Greenland and Denmark have shown progress in leaving an ad-hoc approach to uranium exploration and mining behind. The work of the UWG demonstrates a joint approach to legalities and standards which will define the Realm's pathway in the years to come. At this moment in history, the outlook is positive.

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