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POLICY BRIEF #3

Aligning collaborative potential among the 'green defence' initiatives of the probable partners to a Canadian sponsored NATO Climate Change and Security Centre of Excellence[1]

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[1] This is the second in a series of CDSN Briefing notes introducing and examining the establishment of CCASCOE by Canada, the note "COE 101 - Why Canada is leading the NATO Climate Change and Security Centre of Excellence," by Christenson & Kimball (2023); last access on 26 May 2023, available at https://static1.squarespace.com/static/5cd08376797f742115eaa7cc/t/6488d9e21f588a409b76d123/1686690274826/PB+%231+Revised-+COEs+Anessa%3AHannah%3A+CDSN+Formatting.pdf

Aligning collaborative potential among the 'green defence' initiatives of the probable partners to a Canadian sponsored NATO Climate Change and Security Centre of Excellence

INTRODUCTION

1. What interest for these specific states to invest in greater collaboration?

Denmark, the Netherlands & Norway demonstrated a strong interest in collaborating with Canada to develop the climate change and security NATO COE as possible framework nations. Representatives from each alongside Canada offered progress reports on the state of their national level alignments with NATO's climate change and strategic security objectives (awareness, mitigation, and adaptation). Recalling to host a COE calls upon long-term financial resources and political commitment by the government as well as a capacity to mobilize relevant expertise to staff the facility and complete its Programs of Work. The focus here is on the subset of countries whose joint interest in collaborating on the establishment of CCASCOE has been identified[2] by their direct participation in the Canadian government hosted and NATO-cosponsored planning conferences and workshops.

This briefing note focuses on partner government reports published by defence policy stakeholders with 'green'/environmental and climate change aspects as a focus, i.e., the green policy documents by Canada, Denmark, the Netherlands & Norway's Ministry of Defence (MoD). Our attempt is not to be exhaustive but rather to align the commitments and strategies what these stakeholders identify as their own major defence initiatives to tackle the issues and obstacles. This analysis of green defence policies of Denmark, the Netherlands, Norway, and Canada enables us to draw some primary implications concerning the potential collaboration complementarity and possibilities for opportunities. The discussion below is organised around the themes self-identified by four allies but also those which converged among the documents. They range from shared synergies such as environmental stewardship and call to education & training, data collection & evaluation as essential awareness /outreach and information centralization tasks from NATO's Climate Action Plan including possible collaboration opportunities concerning energy efficiency & renewable energy integration (adaptation); waste management & water conservation (mitigation) to considering what a 'green' defence procurement collaborative policy might resemble.

The agenda is complex and dynamic for all states, this effort draws from dozens of pages from distinct documents to offer some possibilities and implications in an attempt to better inform the public about the connected policy agenda as well as Canada's CCASCOE initiative.

2. What are the shared synergies to develop among partners?

A. Environmental Stewardship:

Canada, Norway, and Denmark share a similar orientation toward environmental stewardship. However, Denmark and Canada distinguished themselves with strong policies focus on a specific field of expertise creating a complementary in this domain.
Denmark distinguishes itself from the others with a comparatively stricter/stronger policy of environmental preservation concerning its fauna and flora, particularly, maritime species. Its substantial tree planting planning program was implemented to create more wildlife and nature on MoD owned lands (Danish Ministry of Defence. 2021). A pilot project on military-nature guide in the establishment process ((Danish Ministry of Defence. 2021). Moreover, its Navy's marine environmental guardian scheme contributes an established network of 25,000 volunteers to report oil spills at sea and collect marine debris along Danish beaches. In 2020 alone, 400 tons of marine debris was collected (Danish Ministry of Defence. 2021). The marine environment scheme will be further developed so that it will, to an even greater extent, contribute to the monitoring and mitigating marine pollution.

Canada offers a large scale of mitigation project at contamination sites using hazardous material management practices refining its expertise in decontamination process management. In 2019, its Defence Ministry established a working group to examine per- and polyfluoroalkyl substance (PFAS) management and develop fluorine-free foam that meet industry standards, regulations, as well as Defence needs (Canada Minister of National Defence. 2020). An environmental guideline for proper use of Category B firefighting foams was issued (Canada Minister of National Defence. 2020).

[2] It is worth recalling COE negotiated cost share formulas from other COE founding documents confirm if states contribute more experts, then they contribute an increasing budget share. Croatia, Greece, Italy & Sweden could contribute as founding COE participants and signatories the establishment & operation as well as functional relationship memoranda, but none have indicated a 'framework-nation sponsor' level of interest in accepting to contribute greater financial or staff resources to a Centre (Kimball 2023).

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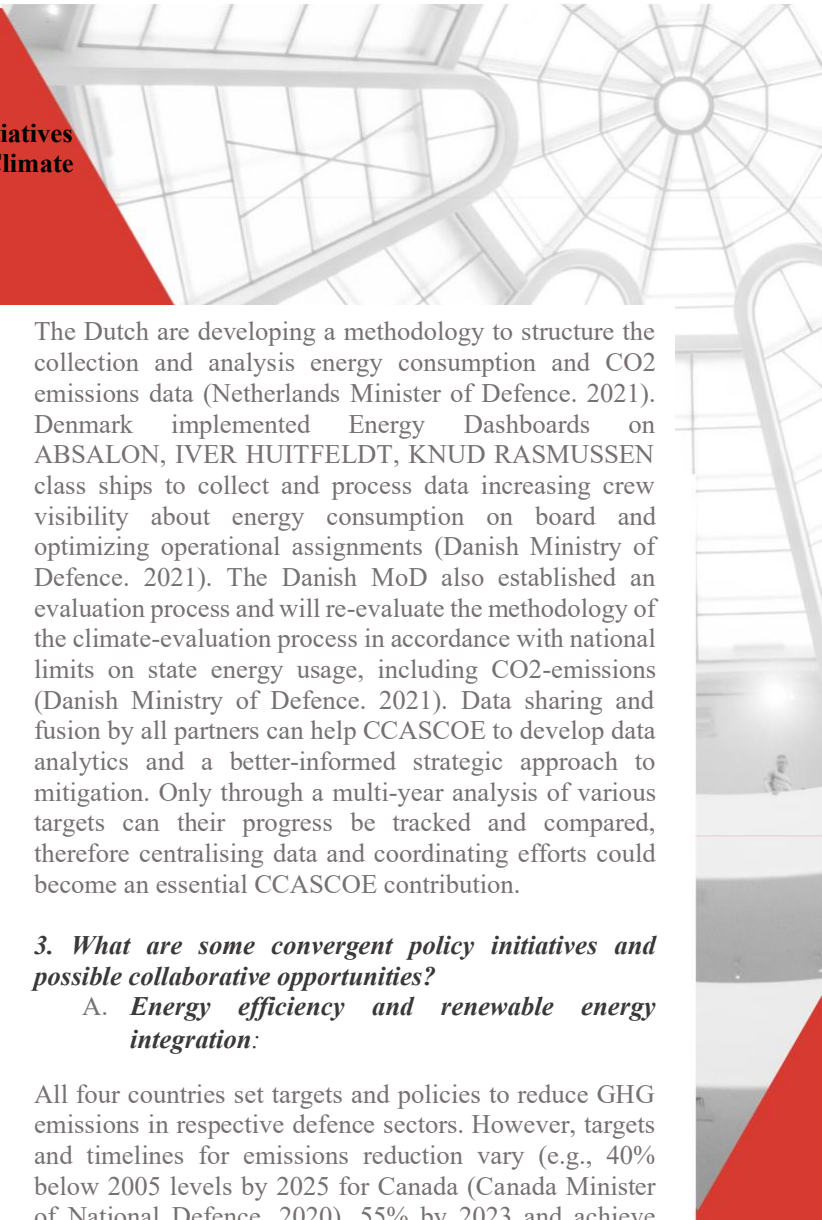

Finally, its MoD utilizes the Range and Training Area Maintenance System (RTAMS) to assess the environmental impacts of its shooting range activities (Canada Minister of National Defence. 2020). Denmark and Canada offer some specific environmental mitigation programs demonstrating commitment to stewardship but also offering opportunities for collaboration. For example, Canada could develop a similar volunteer marine stewardship program given its substantial coastal and fluvial waterways which could be linked to the Danish initiative with the intent to develop greater Allied Arctic efforts including the Indigenous and local communities. This type of collaborative initiative manages to cross the demands for action such as awareness, outreach, mitigation, and data collection.

***B. Training and awareness**:*

All countries implemented environmentally friendly practices into training and outreach policy on environmental issues. Canada implements training and awareness programs on energy conservation to reduce overall energy consumption during military activities and operations (Canada Minister of National Defence. 2020). Norway's soldiers are trained in environmentally friendly practices, waste management and biodiversity protection (Norway ministry of defence .2020). Denmark optimizes its military pilot training and education with increased use of simulators to reduce flying hours in line with the NATO standards for training (Danish Ministry of Defence. 2021). The Netherlands has gone further by designing new scenarios and simulations integrating crises such as pandemic, environmental disasters (Netherlands Minister of Defence. 2020). They have planned scenarios for the next 15 years through environmental analysis (Netherlands Minister of Defence. 2020). These efforts offer observable programs implemented by these countries to promote environmentally friendly practices into military force training and education without sacrificing capabilities or standards. Sharing the effectiveness of the different programs implemented by each country would facilitate the establishment of training programs with smaller environmental 'footprints' from which all NATO Allies could benefit. Moreover, Canada and its partners can work advance scenario and simulation projects as part of CCASCOE with the support of the Dutch developed expertise and experiences in scripting environmental disaster defence/security scenarios.

C. Data collection and evaluation:

Denmark and the Netherlands are developing interesting data collection and evaluation process to share with partners. The Dutch are developing a methodology to structure the collection and analysis energy consumption and CO2 emissions data (Netherlands Minister of Defence. 2021). Denmark implemented Energy Dashboards on ABSALON, IVER HUITFELDT, KNUD RASMUSSEN class ships to collect and process data increasing crew visibility about energy consumption on board and optimizing operational assignments (Danish Ministry of Defence. 2021). The Danish MoD also established an evaluation process and will re-evaluate the methodology of the climate-evaluation process in accordance with national limits on state energy usage, including CO2-emissions (Danish Ministry of Defence. 2021). Data sharing and fusion by all partners can help CCASCOE to develop data analytics and a better-informed strategic approach to mitigation. Only through a multi-year analysis of various targets can their progress be tracked and compared, therefore centralising data and coordinating efforts could become an essential CCASCOE contribution.

3. What are some convergent policy initiatives and possible collaborative opportunities?

A. ***Energy efficiency and renewable energy integration**:*

All four countries set targets and policies to reduce GHG emissions in respective defence sectors. However, targets and timelines for emissions reduction vary (e.g., 40% below 2005 levels by 2025 for Canada (Canada Minister of National Defence. 2020), 55% by 2023 and achieve carbon neutrality by 2050 for Norway (Norwegian Ministry of Climate and Environment. 2021)). While those differences in targets typically reflect national coalitions and bargaining games, they tend to complicate efforts and international coordination. CCASCOE could contribute by developing standardized guidelines in an effort to harmonize the many national efforts while maximizing the potential of these commitments.

Energy efficiency is a common focus, with efforts to improve the energy efficiency of military infrastructure, vehicles, and operations. This involves implementing emission-free vehicle programs, energy-saving technologies, smart green building initiatives, renovating infrastructure/buildings with environmentally friendly practices and products as well as exploring alternative energy options for defence purposes, such as hydrogen and solar power (Canada Minister of National Defence. 2020; Norwegian Ministry of Climate and Environment. 2021; Netherlands Minister of Defence. 2021; Norway ministry of defence .2020; Danish Ministry of Defence. 2021). Partners should commit to relevant research and pilot projects to test and develop new sustainable energy solutions for the defence and security sector.

APPROACH & RESULTS

Each country has its own unique focus areas and initiatives. For instance, Canada aviation fuel supply chains. This supply chain could provide alternative fuel blends that meet military fuel standards and are cost-competitive for use in the military fleet (NRCan's Sky's the Limit Challenge). Until the fuel supply chain is ready defence continues to develop a strategy for aviation fuels by modernize its aviation fuel tracking system to assess fuel use throughout the fleet (Canada Minister of National Defence. 2020). Norway emphasized its gradual transition to electric vehicles and biofuels, as well as the review of alternative energy supply options for specific (mostly remote) regions of environmental importance, e.g., Svalbard located between its mainland and the North Pole offers undisturbed Arctic wilderness requiring responsible protection and focused sustainable durable development (Norwegian Ministry of Climate and Environment. 2021). As for the Danes, they have focused efforts on vehicle emission-free replacements, carpooling policies, replacing generator by battery systems on ships, electrical charging stations at the MoD establishment and LED lighting (Danish Ministry of Defence. 2021). The Netherlands has explored the incorporation of biofuels, the establishment of solar fields, and energy-efficient barracks (Netherlands Minister of Defence. 2021). Together these offer an impressive suite of initiatives that partners could open to each other for greater collaboration and future research project development.

Moreover, each country has specific technological advancements or projects contain within its strategic action plans. For example, Canada describes testing of a hydrogen vehicle and low emission microgrids in the Extreme Arctic and designing more energy efficient camps (e.g. a "pop-up city" multistage contest) (Canada Minister of National Defence. 2020). The Netherlands notes a pilot project for mixing biofuel with kerosene for F-16 aircraft and a testing program of portable solar panels for the Marine Corps. Denmark launched research on the capacity for Power-to-X[1] at MoD establishments and developed life-cycle costing models with recommendations for large-scale implementation (Danish Ministry of Defence. 2021). Again, the sharing of knowledge, expertise, and transmission of individual partner experiences can facilitate and reduce the long-run costs of a 'green defence' transition for all NATO partners. The Canadians share with the Danes and Dutch common goals and political orientation concerning energy efficiency but have focused on the development and fostering of nationally specific niche initiatives. Therefore, there exist strong complementary opportunities in sharing technological innovations and best practices among them. Strong collaboration by Canada with Denmark, the Netherlands & Norway should permit CCASCOE to scale up the spectrum of activities/outputs on energy efficiency and renewable energy.

B. Waste management and water conservation

Norway, Denmark, and the Netherlands set up strong policies on waste management and water conservation in the defence sector while one notes a lack of specific policies in this area for Canada that is still establishing a baseline for waste reduction plan. There is an important opportunity for Canada to collaborate with others having more advanced policies and experiences in order to learn about efficient practices. The diversity of measures undertaken by potential partners enables a possible expansion of CCASCOE's scope of action.

For example, Norway promotes circular economy and recycling, while Denmark emphasizes waste reduction efforts, including waste segregation and exploring opportunities to reduce waste output (Danish Ministry of Defence. 2021). In contrast, the Netherlands focused on reuse of materials and components in the operational domain (Netherlands Minister of Defence. 2022). These are all distinct strategies but could be complementarily combined for greater efficiency, particularly as Canada has lagged substantially in developing its own politics in that area.

In the field of water management, the Netherlands has a broader initiative related to water security, river basin management and ensuring a climate-resilient drinking water supply and sanitation facilities in developing countries (Government of Netherlands. 2022). Denmark focuses on using wastewater from refrigeration systems for heating purposes (Danish Ministry of Defence. 2021). The Danes have also been testing remediation methods against PFAS pollution and increasing the exploitation of alternative products for water treatment (Danish Ministry of Defence. 2021). The complementarity of the Dutch and Danish waste management initiatives could be a tangible asset for CCASCOE to develop further. Finally, Denmark's MoD is the only country among the four implementing aspects of environmental soil and groundwater policies into its defence strategy by prohibiting the use of pesticides on defence/Crown/public lands (Danish Ministry of Defence. 2021). This offers another public policy area that could be an interesting avenue of work for CCASCOE with significant environmental impact given extent of publicly owned lands in some partner states including Canada.

C. Eco-friendly Procurement

Canada and Denmark established targets towards developing ecologically responsible procurement. While Canada concentrated its policy on sustainable packing (Canada Minister of National Defence. 2020), Denmark focuses on climate-friendly food (Danish Ministry of Defence. 2021). Canada's ministries of defence, Public Services and Procurement Canada (PSPC) collaborate creating a new Green Procurement Policy Framework (GPPF) for 2024 to provide more sustainable packaging materials and comply with other environmental and sustainable requirements (Canada Minister of National Defence. 2020). The Danish MoD has entered into dialogue with local administrations to provide more organic food options in MoD canteens/food products (Danish Ministry of Defence. 2021). These measures are aligned with the policies aimed at the development greener military camps.

[3] Power-to-X" (PtX) refers to a set of technologies converting electrical power into different forms of energy or chemical compounds.

POLICY CONSIDERATIONS & IMPLICATIONS FOR STAKEHOLDERS

4. What is the way ahead for this possible CCASCOE core quad: conjugating collaboration interests with geographic realities?

All four countries have recognized the importance of international collaboration and partnership for addressing environmental challenges and advancing green defence policies. There is a strong joint willingness to establish collaboration and incorporate both civilian and military stakeholders for improving research to bridge awareness gap and innovation. The Innovation for Defence Excellence and Security (IDEaS) program in Canada, Clingendeal (the Netherlands Institution of International Relation) (Netherlands Minister of Defence. 2021) and other national institutions can contribute to raising awareness of CCASCOE possibilities and initiatives as well as facilitative innovation development. Moreover, this review of national green defence policy documents highlighted that Canada, Norway and Denmark offer Arctic defence policies with shared and common defence and security interests into that region (Norwegian Ministries. 2021; Ministry of Foreign Affairs of Denmark. 2011; Canada Minister of National Defence. 2020). Thus, there exist multiple opportunities of collaboration to improve awareness, mitigation, and adaptation in the Arctic. Further multilateral cooperation among these states would strengthen the presence of the Alliance in that region and facilitate its collective deterrence and defence mandates aligning with each country's national defense and security needs.

Overall, the information drawn from this research describes the various commitments of those countries toward green defence in the diverse related areas. They share common political and diplomatic approaches but have invested in developing different (and some strongly complementary) areas of expertise. The potential for collaboration and practice sharing may benefit to through any mechanisms developed by CCASCOE present important opportunities for knowledge sharing and developing an 'engaged with local communities' and common approach among Denmark, the Netherlands, Norway and Canada in the sector of green defence policies, particularly in the Arctic.

5. What are the implications and conclusions for stakeholders?

By way of closing, the following salient implications for collaboration by partners can be drawn from this comparative study of the various policy documents:

- There are opportunities to exchange technological innovations and best practices related to energy-efficient infrastructure, vehicles, and operations based on the project developed by this quad of states.
- Collaborative research and pilot projects could be conducted to advance the implementation of sustainable energy solutions in the defence sector, particularly those related mobilizing hydrogen and solar power.
- Sharing R&D advancements on highly specialized technical products such as hydrogen vehicles, low-emission microgrids, and portable solar panels could further advance cooperation and contribute to total mitigation efforts.
- Canada should benefit from collaborating with Norway, Denmark and the Netherlands to learn about their solid policies and practices in waste management and water conservation. The waste management measures of the Netherlands and Denmark complement each other, offering a tangible CCASCOE product for to expand its scope of activities.
- Sharing the effectiveness of training programs and implementing environmentally friendly practices in training is an area where joint collaboration could be fruitful with an emphasis on increasing the use of scenarios and simulators, leveraging the Dutch knowledge.
- Denmark's expertise in preserving fauna and flora, tree planting, and marine environmental protection complement Canada's policies and expertise in contamination sites and hazardous material management. Collaboration and knowledge sharing in these specific technical fields of expertise can strengthen environmental stewardship efforts and have positive external spillovers into other sectors.
- Opportunities exist for sharing methodologies and processes related to data collection, analysis, and evaluation in areas such as energy consumption, CO2 emissions, and energy consumption on board ships. Collaborative efforts must be undertaken to develop data analytics and understand strategic approaches; these should be coordinated and monitored by CCASCOE.
- Exploring avenues for implementing soil and groundwater policies, similar to those undertaken by Denmark, offers an interesting and important area of contribution for CCASCOE. Developing public policy in the 'green defence' domain leveraging collaboration with key international stakeholders can contribute to strengthen environmental sustainability and mitigate climate change effects. Collaboration with institutions like the Innovation for Defence Excellence and Security (IDEaS) program in Canada and Danish, Norway and the Netherlands academic and policy research institutions can further support outreach & awareness bridging gaps between knowledge, practice, and policy while supporting innovation in the field of green defence policies.

- Collaborating across a variety of relevant issues and concerns to all four countries will lead to strengthening their collective deterrent capacity and presence in the Arctic by improving awareness, mitigation, and adaptation in this area on the frontline of climate change.

According to the NATO climate change and security strategic objective, a certain level of awareness must be established by a common recognition of climate change risks and challenges. Yet, work remains to shared commitment to mitigating and adapting national policies. Recognizing shared concerns related to the need to 'green' military training & exercises require implementing changes in a structure institution known to be resistant to cultural change. Research programs, data collection efforts and target mitigation evaluation programs require greater development as well to advance change in the sector effectively. Furthermore, the many policies and measures developed by these countries align themselves with NATO's mitigation objective's, particularly those associated with reducing greenhouse gas emissions, increasing energy efficiency, and exploring cleaner energy sources – which arise repeatedly as salient issues for all stakeholders. However, based on the review of these documents this is far less policy implementation concerning NATO objective's on adaptation; these mechanisms can be more politically costly and difficult to structurally design with self-enforcement by states themselves. It is much easier to change bad behavior than reshape behavior perceived by actors as somewhat compliant. Taken together, there is much potential for CCASCOE and Canada affect climate change and reduce the potential externalities of decades of imprudent ecological behavior defended under the socially constructed, but rationally vapid, pretense of essential defense and national security needs.

References

Canada Minister of National Defence. 2020. *Defense Energy and Environment Strategy 2020-2023*. Accessed 20 May 2023 at https://www.canada.ca/content/dam/dnd-mdn/images/dees2020/2020-23%20Defence%20Energy%20and%20Environment%20Strategy_EN%20-%20Signed.pdf

Christensen, H. & A. Kimball. 2023. "COE 101 – Why Canada is leading the NATO Climate Change and Security Centre of Excellence," *CDSN Briefing Paper #1,* https://static1.squarespace.com/static/5cd08376797f742115eaa7cc/t/64061d7d7cafe51276cf121c/1678122366205/PB+1+-+COEs_CK.pdf.

Danish Ministry of Defence. 2021. *The Danish Ministry of Defence: Green Action Plan 2021-2025*. Accessed 20 May 2023 at https://www.fmn.dk/globalassets/fmn/dokumenter/strategi/miljo/-danish-mod-green-action-plan-2021-2025-.pdf.

Government of Netherlands. 2022. *The Netherlands' Global Climate Strategy*. Accessed 20 May 2023 at https://www.government.nl/documents/publications/2022/12/22/global-climate-strategy.

Kimball, Anessa L. 2023. Beyond 2% - NATO partners, institutions & burden management: Concepts, risks & models, 247pgs, Palgrave-Macmillan, Series: Canada & International Affairs, ISBN: 9783031221576.

Ministry of Foreign Affairs of Denmark. 2011. *Kingdom of Denmark Strategy for the Arctic 2011–2020*. Accessed 20 May 2023 at https://um.dk/en/foreign-policy/the-arctic.

Netherlands Minister of Defence. 2020. Defence Vision 2035 Fighting for a safer future. Accessed 20 May 2023 at https://english.defensie.nl/downloads/publications/2020/10/15/defence-vision-2035#:~:text=The%20Defence%20Vision%202035%20'Fighting,basis%20of%20the%20best%20information.

Netherlands Minister of Defence. 2021. *Defence Energy Transition - Plan of Action. Plan of action about new energy for the Dutch Ministry of Defence.* Accessed 20 May 2023 at https://english.defensie.nl/downloads/publications/2021/07/21/defence-energy-transition-plan-of-action.

Netherlands Minister of Defence. 2022. *A stronger Netherlands, a safer Europe*. Investing in robust NATO and EU. Defence white paper. Accessed 20 May 2023 at https://english.defensie.nl/downloads/publications/2022/07/19/defence-white-paper-2022

Norway ministry of defence .2020. *Norway's Defence in Transition: Green Defence*. Accessed 15 May 2023 at https://www.regjeringen.no/en/id4/

Norwegian Ministry of Climate and Environment. 2021. *Norway's Climate Action Plan for 2021–2030.* Meld. St. 13 (2020–2021) Report to the Storting (white paper). Accessed 20 May 2023 at https://www.regjeringen.no/contentassets/a78ecf5ad2344fa5ae4a394412ef8975/en-gb/pdfs/stm202020210013000engpdfs.pdf.

Norwegian Ministries. 2021. *The Norwegian Government's Arctic Policy. People, opportunities and Norwegian interests in the Arctic*. Accessed 20 May 2023 at https://www.regjeringen.no/en/dokumenter/arctic_policy/id2830120/.