EGMONT POLICY BRIEF 286

– SEPTEMBER 2022 –

Europe's Energy and Resource Challenge
The Arctic Is Part of the Solution

Marie-Anne Coninsx and Karen van Loon

The EU's increased climate ambitions require unprecedented growth in renewable energy and a diversified supply of critical raw materials. Building long-term partnerships and investing in innovation will be vital to pave the way for a clean and secure energy future.

With energy being used as a prominent geopolitical weapon and energy prices soaring, the need for enhanced energy security and reliable resource suppliers is essential. The EU has realized it must reduce its natural resources' dependence to ensure its prosperity, safeguard its interests, and reinforce its strategic autonomy.

Especially the European Arctic region should be taken into account when considering the role it can play as a provider of renewable energy, sustainable development, and a reliable supplier of critical raw materials. Despite the specific challenges and costs associated with its cold and vulnerable climate, the region has certain advantages over parts of the world where political instability or low environmental standards are problematic. With its available resources, expertise, and technological innovations, the Arctic, which is often called an innovative testbed and a high-tech knowledge hub, can be instrumental for the EU to realize its Green Deal objectives, end its dependence on fossil fuels, strengthen its autonomy, and ensure its prosperity.

To achieve its climate ambitions, the EU wants to accelerate the use of renewable energy sources to meet its goal of reducing net greenhouse gas emissions by at least 55% by 2030.[1] To accomplish these objectives, the EU has to secure the supply of the critical raw materials (CRMs) that are needed to produce clean technologies. Yet, reliable, and unhindered access to these products is a growing concern within the EU and across the globe.

The new geopolitical and energy market realities require the EU to drastically speed up its green energy transition and increase its energy independence from unreliable suppliers and volatile fossil fuels while broadening the resilience of the EU-wide energy system and its CRM supply. The EU's industry and economy rely heavily on international markets to provide access to energy and CRMs since they are mainly produced and supplied by third countries. From this perspective, the Arctic deserves our special attention. It is important to look to the North for its know-how, to learn from its good practices, and to reap its rich resources responsibly. The Arctic offers unique opportunities in terms of the use of innovative technologies and is a frontrunner for sustainable development. Hence, it presents prospects for cooperation, business, and investments that -besides being beneficial for the region itself, can also help advance climate neutrality and the EU's strategic autonomy.

The Arctic, which covers parts of the territories of Canada, Denmark (through Greenland), Finland, Iceland, Norway, Sweden, Russia, and the United States, has traditionally been known for its rich resources. While the region has been largely defined by the export of its fossil and mineral wealth, it also has a growing role in the development of sustainable energy solutions, beyond the extractive industries. Its potential as a provider of green energy, critical raw materials, and innovative technologies

EGMONT Royal Institute for International Relations

that could accelerate the energy transition globally, is promising and could improve the EU's security and strategic autonomy by reducing dependence on imports from particularly dominant and/or problematic suppliers such as China and Russia.

SHIFTING AWAY FROM FOSSIL FUELS

The EU's increased climate ambitions require unprecedented growth in the production of renewable energy. Currently, the EU is heavily dependent on the import of oil and gas, including from the Norwegian and Russian Arctic, although the situation is different for each Member State. Russia's unprovoked and unjustified military aggression against Ukraine shows that a dependence on Russian gas and oil, which are used as economic and political weapons, is unacceptable. REPowerEU, the Joint European Action Plan for more affordable, secure, and sustainable energy, provides an opportunity to end the EU's dependency on Russian fossil fuels and to tackle the climate crisis.[2] Renewable energy makes the EU more independent from Russian gas. Indeed, as stated by Commission President von der Leyen *"Every kWh of electricity Europe generates from solar, wind, hydropower and biomass geothermal or green hydrogen, makes us less dependent on Russian gas. With REPowerEU, we will invest up to €300 billion to accelerate the green switch.[3] Last year34 GW of renewable energy capacity was added to the EU energy mix, saving about 7 bcm of natural gas. All EU countries should make efforts in this field and seize the investment opportunities of RePowerEU"*.[4]

While the decline in sea ice in the Arctic due to climate change could, technically, facilitate further exploration and development of offshore fossil fuels, politically however, this would not be in line with the increasing global shift from fossil fuels to renewable energy sources and investment in low-carbon energy technology. In other words, further fossil fuel development in the Arctic is not desirable and would be irresponsible. The EU, which is committed to ensuring that oil, coal, and gas stay in the ground, including in the Arctic, has to find a balance between importing resources from the Arctic and protecting the region from climate change.[5] For the moment, the EU will need to continue to rely partly on Norwegian fossil fuels, while at the same time, reinforce ways for alternatives in the field of renewable energy. It is in this context that the Joint EU-Norway Statement on strengthening energy cooperation of 23 June 2022, has to be understood.[6] It explicitly addresses the need to develop long term cooperation on renewable energy and a long-term energy partnership.

RENEWABLE ENERGY: ARCTIC KNOW-HOW AND INNOVATION

Renewable energy in the Arctic is not a new phenomenon. Moreover, in recent years the number of new and more ambitious projects has steadily increased. This growth is due in part to technological improvements that have reduced costs while improving reliability. The growing understanding of the impacts of climate change and the heightened sense of urgency to decarbonize economies and societies also played a role. This is particularly acute in the Arctic, where temperatures are rising four times faster than in most of the rest of the planet[7] and the effects of climate change are more easily observed.

The Arctic has great potential for renewables such as hydroelectricity, bioenergy, wind power, solar, geothermal, ocean energy, green hydrogen, and microgrids. In Greenland, for example, about 70% of the electricity comes from hydroelectric dams[8], whereas Iceland is a pioneer in the use of geothermal energy, accounting for 66% of its primary energy use.[9] The Arctic states also invest in wind energy with projects such as the Fire Island wind farm in Alaska[10] and have launched initiatives that focus on solar energy, for example in Old Crow, Canada[11], and companies such as Iceland's Mannvit are setting up green hydrogen projects.[12]

Another important element in the Arctic's shift towards renewable energy is the region's existing energy infrastructure. The high operating costs of the diesel generators that power many remote villages, particularly in the North American Arctic, mean that switching to a renewable source is relatively less expensive than

would be the case for communities connected to the grid further south. Since most remote communities source their power from their own microgrid, the region is an attractive place for companies to test new technologies before deploying them more widely elsewhere.[13] Alaska, for example, is known for its microgrid innovation.[14] In the European Arctic, green energy could also be an important economic driver for areas that otherwise struggle to attract industry.

Renewable energy in the Arctic also contributes to ensuring sustainable development or production of sometimes highly polluting industries. An example is a major project in Northern Sweden, a new plant at Svartbyn Industrial Park, to produce 5 million tons of fossil-free steel by 2030. Considering that the CO^2 emission from the EU steel industry today is equivalent to about half of all the cars in the EU, the production of green steel from the Arctic is a major stepping stone towards a green economy.[15]

The EU Renewable Energy Directive[16] established legally binding targets for the renewable energy share of final energy consumption in individual member states, including European Economic Area (EEA) countries Norway and Iceland. All the Nordic countries met or surpassed their targets two years in advance. They owe these achievements to the flexibility offered by the region's electricity markets, good starting positions relative to other countries in terms of renewables in the energy mix, and rising demand for carbon-free electricity, heating, and transport.[17]

With a growing number of companies based in the Arctic working on clean energy solutions, the region is transforming into a technological innovation hub. However, while renewable energy resources are considered abundant in the Arctic, the feasibility of harvesting these resources on a larger scale to store and transport them, is a different issue. Indeed, Arctic renewable energy is often generated for local use. Moreover, grids and technologies are not currently advanced enough to export renewable energy surpluses to the EU.

But this could change. Already now, Norway is exporting huge amounts of hydroelectric power. In 2021, it exported 25.8TWh of power, including to the Netherlands, Germany, Denmark, Sweden, and Finland. Greenland is also optimistic about future perspectives. Recently, Múte B. Egede, the Prime Minister of Greenland has indicated that *"Greenland could become a net exporter of green renewable energy in the coming decades"*.[18]

It must be stressed that creating sustainable economic benefits should be consistent with the aspirations and rights of the people living in the Arctic, including the Indigenous Peoples. While, along with advocating for ending climate change, indigenous people have been actively supporting the transition to low-carbon economies, at the same time, there is a growing resistance to some larger renewable energy projects among Indigenous communities.[19] Hence, it is important that their voices are heard. Protecting the environment and applying the highest sustainability criteria, should remain key for any project.

CRITICAL RAW MATERIALS

Securing access to raw materials is essential if the EU seeks to achieve its goal of climate neutrality, its strategic autonomy, and building a resilient green and digital economy. The EU consumes 20% of the world's mineral products while producing only 3% of them. Yet, it is currently very dependent on a few or single-source countries for many critical minerals, with China, for example, providing 98% of Rare Earth Elements and 93% of magnesium.[20]

CRMs are crucial for the green transition. They are needed for wind energy installations, batteries, catalysts, fuel cells, semiconductors, photovoltaics, fertilizers, magnets, new power grids, and modern technologies including medical applications.[21] Current mineral supply plans and investments are insufficient to transform the energy sector, increasing the risk of delayed or costly energy transitions. New and more diversified sources of supply will be vital to pave the way for a clean energy future.

Many Arctic regions have a centuries-long history of exploration and extraction of minerals, resulting in extensive regulatory frameworks, developed extractive services sectors, good knowledge, and human capital.[22] Compared to certain developing countries, environmental and social standards and administrative capacity are high. They are potentially significant suppliers of critical and other raw materials and are already engaged in important mineral extraction activities: e.g. Northern Sweden hosts nine out of twelve mines currently operating in the country. In Finland, four out of ten operating mines are located in the three northernmost regions of the country, while half of the 12 projects that are currently under development are located in these northernmost regions.[23] According to the Minerals Working group of the Northern Sparsely Populated Area Network (NSPA), the Northernmost Regions of Norway, Finland, and Sweden, have leading industries and research for sustainable extraction, refinement, and recycling of raw materials. Over half of Europe's most critical minerals and metals are found in the Nordic bedrock, with most of the deposits in the North. They consider that, because of tradition, competence, and capability throughout the whole value chain, the European Arctic has the most advanced and valuable ecosystem for the development of sustainable mining in Europe.[24]

Not only in Europe but also in North America, there is an increased awareness of the key importance of the mineral sector in the Arctic. According to U.S. Senator Murkowski, *"Alaska's mineral resources are key to both national security and the nation's economy and clean energy transition goals"*.[25] This is based on the fact that nearly all 50 of the minerals and metals on the U.S. Geological Survey's 2022 list of critical minerals are found in Alaska.[26] This case is similar to Canada, with whom the EU concluded its strategic partnership for critical minerals in 2020.[27]

Also, at the recent Arctic Circle Forum in Greenland, the Territorial Premiers from northern Canada issued a Joint Statement, saying: *"We discussed how critical minerals from northern Canada and the Arctic will play an important role in building a cleaner future. The world is looking north for the resources that will reduce global reliance on supply chains that do not support the high environment and social standards countries and consumers demand"*.[28]

Greenland has 25% of the global reserve of rare earth minerals[29], which are critical to a number of critical high-tech industries, enabling the energy transition. In 2021, Greenland joined the EU minerals group.[30] Its attitude, however, is more ambivalent when it comes to mining: while its current government has a pro-mining stance, it has passed legislation specifically banning the mining and exploration of uranium and other radioactive materials, blocking the rare earths mining project at Kuannersuit.

Besides the many benefits that the Arctic offers, its cold climate, fragile environment, long distances, sparsely populated areas, and lack of infrastructure also present specific challenges and risks, as well as high costs for exploration and activities. The need for raw materials to achieve the transition to a low-carbon economy and the risk of local environmental and social impacts associated with any extraction can lead to friction between the global and local dimensions of sustainability. Representatives of Indigenous Peoples have already expressed their concern with what some of them see as a risk of "green colonialism".[31] These points must be kept in mind when creating and implementing partnerships. Sustainable extraction of resources is key and should be in accordance with the highest environmental, social, and governance standards.

CONCLUSIONS

Renewable energy and critical raw materials are playing a fundamental role in achieving the EU's energy and climate goals.

In this regard, it is important to take the role of the Arctic into account in contributing to achieving these goals. This is why, as a major policy recommendation, we consider that the Arctic should be streamlined in all relevant internal and external EU policies and strategies, particularly those relating to climate change, notably the Green Deal, energy policies, including REPowerEU, and EU industry strategies, especially those dealing with critical minerals.

Equally important is the recommendation as reflected in the EU's Arctic Policy, that all these natural resources must be developed and extracted sustainably, with strong environmental, social, and governance standards and safeguards in place. At the same time, policymakers should take into account the potential inconsistency between global sustainability, where these resources are indispensable for a low-carbon transition, and local sustainability, where concrete local impacts occur.

In brief, the Arctic, with its know-how and resources, is part of the solution for a European resilient green economy and strategic autonomy.

Marie-Anne Coninsx is Senior Associate Fellow in the European Affairs Programme at the Egmont Institute, and Honorary Fellow of Wolfson College, Cambridge University (UK). She is also Member of the Board of Directors of the International Polar Foundation (Belgium). She was the first EU Ambassador at Large for the Arctic.

Karen van Loon is a Junior Researcher in the European Affairs Programme at the Egmont Institute. Her research interests include the Arctic, Eastern Europe, arms control and nuclear non-proliferation.

Endnotes

1 European Commission (2019). A European Green Deal. Available at: https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en.

2 European Commission (2022). REPowerEU: A plan to rapidly reduce dependence on Russian fossil fuels and fast forward the green transition. Available at: https://ec.europa.eu/commission/presscorner/detail/en/IP_22_3131.

3 Ursula von der Leyen. Speech at the Baltic Sea Energy Security Summit. (29 August, 2022). Available at: https://twitter.com/eu_commission/status/1564623261803200516?s=11&t=AcekS82IT7QTDG9CPM-hBg

4 Ursula von der Leyen (22 August, 2022). Available at: https://twitter.com/vonderleyen/status/1561616082162663425?s=11&t=LN0DJ3LyebMNjmUGXvSdCQ.

5 European Commission (2021). Joint Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions.A stronger EU engagement for a peaceful, sustainable and prosperous Arctic. Available at: https://www.eeas.europa.eu/eeas/joint-communication-stronger-eu-engagement-peaceful-sustainable-and-prosperous-arctic-0_en.

6 European Commission (23 June, 2022). Joint EU Norway Statement on strengthening energy cooperation. Available at: https://ec.europa.eu/commission/presscorner/detail/en/statement_22_3975.

7 Rantanen, M., Karpechko, A. Y., Lipponen, A., Nordling, K., Hyvärinen, O., Ruosteenoja, K., ... & Laaksonen, A. (2022). The Arctic has warmed nearly four times faster than the globe since 1979. Communications Earth & Environment, 3(1), 1-10. Available at: https://www.nature.com/articles/s43247-022-00498-3.pdf.

8 Nunatsiaq News (2020, January 27). As Greenland seeks to diversify its economy, water is shaping up as a key element. Available at: https://nunatsiaq.com/stories/article/as-greenland-seeks-to-diversify-its-economy-water-is-shaping-up-as-a-key-element/.

9 National Energy Authority of Iceland (2022). Geothermal. Available at: https://nea.is/geothermal/#:~:text=Geothermal%20sources%20announct%20for%2066,used%20for%20bathing%20and%20washing.

10 Chugach Electric Association, Inc.(2022). Fire Island Wind. Available at: https://www.chugachelectric.com/about-us/regulatory-affairs/fire-island-wind.

11 Arctic Economic Council (2021). A small, isolated village in Arctic Canada becomes a green energy producer. Available at: https://arcticeconomiccouncil.com/news/a-small-isolated-village-in-arctic-canada-becomes-a-green-energy-producer/.

12 Mannvit (2022). Green Hydrogen Production in Iceland. Available at: https://www.mannvit.com/projects/green-hydrogen-production-in-iceland/.

13 de Witt, M., Stefánsson, H., Valfells, Á., & Larsen, J. N. (2021). Availability and Feasibility of Renewable Resources for Electricity Generation in the Arctic: The Cases of Longyearbyen, Maniitsoq, and Kotzebue. *Sustainability, 13*(16), 8708.

14 Guidehouse Insights (2019). The Circumpolar Arctic Leads the World in Microgrid Innovation. Available at: https://guidehouseinsights.com/news-and-views/the-circumpolar-arctic-leads-the-world-in-microgrid-innovation.

15 Renewables now (2022, 31 August). Sweden's H2 Green Steel raises EUR 190m. Available at: https://renewablesnow.com/news/swedens-h2-green-steel-raises-eur-190m-796501/.

16 EU (2018): Revised Renewable Energy Directive. Available at: https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-directive_en#:~:text=The%20Renewable%20Energy%20Directive%20(2009,EU%27s%20energy%20consumption%20by%202030

17 Nordic Energy Research (2021). Renewable Energy in the Nordics 2021. Available at: https://pub.norden.org/nordicenergyresearch2021-03/#79198.

18 Múte B. Egede (2022, June 16). Conversation at The Wilson Center. Available at: https://www.youtube.com/watch?v=KS-EzSnbvfY .

19 R. Shah and P. Bloomer (2018, April 23). Respecting the Rights of Indigenous Peoples as Renewable Energy Grows. Available at: https://ssir.org/articles/entry/respecting_the_rights_of_indigenous_peoples_as_renewable_energy_grows

20 European Commission (2021). Joint Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. A stronger EU engagement for a peaceful, sustainable and prosperous Arctic. Available at: https://www.eeas.europa.eu/eeas/joint-communication-stronger-eu-engagement-peaceful-sustainable-and-prosperous-arctic-0_en.

21 Carrara S., Alves Dias P., Plazzotta B. & Pavel C. (2020). "Raw materials demand for wind and solar PV technologies in the transition towards a decarbonised energy system", EUR 30095 EN, Publication Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-16225-4, doi:10.2760/160859, JRC119941.

22 van Dam, K, A. Scheepstra, J. Gille, A. Stepien, & T. Koivurova (2016). "Mining in the European Arctic" (pp. 163-185). In: Stepien, A., T. Koivurova & P. Kankaanpää (eds.). The Changing Arctic and the European Union. Brill/Nijhoff.

23 EPRD Office for Economic Policy and Regional Development Ltd. (2021). Overview of EU actions in the Arctic and their impact. Available at: https://eprd.pl/wp-content/uploads/2021/06/EU-Policy-Arctic-Impact-Overview-Final-Report.pdf.

24 Northern Sparsely Populated Areas (2022). Minerals Working Group. Available at: https://www.nspa-network.eu/about-us/nspa-working-groups/minerals-wg/.

25 Lisa Murkowski (2022, August 22). Panel Discussion at Alaska's Minerals. A Strategic National Imperative. Summit at the University of Alaska Fairbanks. Available at: https://www.akminerals.alaska.edu/#:~:text=Alaska%27s%20mineral%20resources%20are%20key,actions%20to%20fulfill%20that%20potential.

26 North of 60 Mining New (2022, August 19). Alaska is Well-Positioned to Lead the Nation's Critical Minerals Industry . Available at: https://www.miningnewsnorth.com/story/2022/08/19/editorial/alaska-is-well-positioned-to-lead-the-nations-critical-minerals-industry/7501.html.

27 European Commission Directorate-General for Internal Market, Entrepreneurship and SMEs (2021). Press Release: EU and Canada set up strategic partnership on raw materials. Available at: https://single-market-economy.ec.europa.eu/news/eu-and-canada-set-strategic-partnership-raw-materials-2021-06-21_en#:~:text=The%20partnership%20will%20allow%20both,climate%2Dneutral%20and%20digitalised%20economies.

28 Territorial Premiers at the Arctic Circle Forum in Nuuk, Greenland (2022, August 29). Joint Statement. Available at https://www.gov.nt.ca/sites/flagship/files/documents/territorial_premiers_at_the_arctic_circle_forum_in_nuuk_greenland.pdf.

29 Government of Iceland. Ministry of Foreign Affairs (2020). Greenland and Iceland in the new Arctic. Available at: https://www.government.is/library/01-Ministries/Ministry-for-Foreign-Affairs/PDF-skjol/Greenland-Iceland-rafraen20-01-21.pdf .

30 Arctic Today (July 9, 2021). Greenland joins EU minerals group. Available at: https://www.arctictoday.com/greenland-joins-eu-minerals-group/.

31 EPRD Office for Economic Policy and Regional Development Ltd. (2021). Overview of EU actions in the Arctic and their impact. Available at: https://eprd.pl/wp-content/uploads/2021/06/EU-Policy-Arctic-Impact-Overview-Final-Report.pdf.

The opinions expressed in this Publication are those of the author(s) alone, and they do not necessarily reflect the views of the Egmont Institute. Founded in 1947, EGMONT – Royal Institute for International Relations is an independent and non-profit Brussels-based think tank dedicated to interdisciplinary research.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the permission of the publishers.

www.egmontinstitute.be

© Egmont Institute, September 2022
© Author(s), September 2022