LA COMUNITÀ INTERNAZIONALE

Rivista Trimestrale della Società Italiana per l'Organizzazione Internazionale

QUADERNO 28

SIOI

ARCTIC CONNECTIONS

Arctic and Mediterranean: New Assets for Energy Security and Strategic Balances

The Italian and Norwegian Perspectives

(a cura di)
Aldo Pigoli, Andreas Østhagen, Andreas Raspotnik
Marco Dordoni, Giacomo Di Capua

EDITORIALE SCIENTIFICA
Napoli

LA COMUNITÀ INTERNAZIONALE

RIVISTA TRIMESTRALE DELLA

SOCIETÀ ITALIANA PER L'ORGANIZZAZIONE INTERNAZIONALE

QUADERNI (Nuova Serie)

28

SOCIETÀ ITALIANA PER L'ORGANIZZAZIONE INTERNAZIONALE

ARCTIC AND MEDITERRANEAN:

NEW ASSETS FOR ENERGY SECURITY AND STRATEGIC BALANCES

THE ITALIAN AND NORWEGIAN PERSPECTIVES

(a cura di)

Aldo Pigoli, Andreas Østhagen, Andreas Raspotnik
Marco Dordoni, Giacomo Di Capua

EDITORIALE SCIENTIFICA
Napoli

Il presente Report è stato realizzato con il contributo dell'Unità di Analisi, Programmazione, Statistica e Documentazione Storica – Direzione Generale per la diplomazia pubblica e culturale del Ministero degli Affari Esteri e della Cooperazione Internazionale (MAECI), ai sensi dell'art. 23 *bis* del d.P.R. 18/1967.

Via San Biagio dei Librai, 39
89138 - Napoli
ISBN 979-12-5976-874-2

SUMMARY

INTRODUCTION

The Mediterranean region and the Arctic region are two areas located far away from each other. Nevertheless, they have many elements in common and both regions influence wider geopolitical, geo-economic and geo-strategic dynamics. Both predominantly maritime theaters surrounded by land, both regions share the uniqueness of connecting three different continents, being "bridges" among areas very different to each other but strongly interdependent.

The interdependence between the Mediterranean and the Arctic is not always evident, nor even perceived by the majority of the public opinion, nor by the decision-makers in the respective regions. However, recent evolutions related to climate change in both regions and the geopolitical dynamics we have been experiencing, have brought to the need for a broader and deeper understanding of the links and interconnections between these two areas. From this point of view, it should not be surprising that three Mediterranean countries (France, Italy and Spain) are observers in the Arctic Council - the Arctic region's most prominent intergovernmental forum - and that the European Union (EU) is reflecting on how to combine its Northern and Southern shores from a strategic point of view. Furthermore, for some Arctic actors, the Mediterranean is an area of both historic and more recently growing interest. This is the case of Norway, a country that despite not being part of the EU, shares strong political and economic ties with the Union and many EU Member States. Norway is also a founding NATO member and a key actor in the attempt to bring awareness of the North to face possible Russian aggression, while at the same time participating in political and military policies in the Mediterranean and the Red Sea. Last but not least, as a relevant natural gas producer and exporter, Norway has been increasing its share in the European countries' energy supplies and looks at the Mediterranean basin energy evolutions in terms of both competition and cooperation.

The Mediterranean Sea is highly strategic for both NATO and EU security. Despite covering only about 1% of the global maritime surface, the Mediterranean Sea hosts four of the nine chokepoints,

through which 80% of the world maritime traffic flows[1]. The Mediterranean Sea serves as the gateway to the Atlantic Ocean via the Strait of Gibraltar. It acts as a bridge connecting Europe to North Africa and the Middle East and provides access to the Indian Ocean through the Suez Canal. Another strategically vital location for European countries' security is the Dardanelles Strait, linking Europe and Asia and serving as the primary entrance to the Black Sea. This interconnection, on the one hand, has led to economic prosperity and facilitated cultural exchange between Europe and different regions. On the other hand, it has also exposed European countries to international crises.

One of the intergovernmental organizations related to the Mediterranean is the "Union for the Mediterranean". This organization consists of 43 members, including, among the 27 EU member states, non-Mediterranean states such as Germany and Poland and two Arctic countries: Sweden and Finland.

The Mediterranean seabed hosts crucial communication routes to and from the backbone of the European Union. Another reason is that the Mediterranean acts as a barometer for crises in the Middle East and the MENA region. Additionally, it is a basin where significant partners, such as Turkey and Israel, have access.

The defence and security of non-Mediterranean states depends also on the stability of the Mediterranean Sea.

Compared to the Mediterranean, the Arctic covers a vaster area that in fact comprises several sub-regions, like the European Arctic / the High North, the Bering Strait region, the Siberian Arctic, and the Canadian Arctic. Still, interconnectedness across this vast – and to some extent frozen – land and seascape, is rapidly changing, driven by the apparent effects of climate change, economic opportunities, and the Arctic's relative increase in importance for global politics. In the Arctic region, in fact, there is a growing presence and interaction of the so-called Great and Medium Powers, including the Arctic actors Russia and the United States, the EU, the Nordic countries and non-Arctic states such as China and India. Even non-EU Mediterranean

[1] M.Bressan "Le sfide multidimensionali alla sicurezza marittima nell'area del Mediterraneo allargato: la tutela degli interessi marittimi nazionali e la catena di valore marittima" in *Le sfide multidimensionali ed emergenti del Mediterraneo allargato: quale ruolo dell'Italia"* Rivista Trimestrale della Società Italiana per l'Organizzazione Internazionale, Q. 26, 2023, p. 8-9.

countries, as in the case of Turkey, are looking at the opportunities that emerge from the developments in this area.

Although there is no resource or territorial race in the Arctic, the region – or parts of it – are increasingly important for security interactions with Russia and China. The increasing importance of Arctic research and scientific presence is juxtaposed with these tensions. Moreover, its economic potential leads not only to economic development and investments, but also fears of geo-economics, sabotage and hybrid activity. As with the Mediterranean, the Arctic is crucial not only for the activity that takes place there, but also for global satellite services and infrastructure related to energy and communications. Finally, some of the global interest to the Arctic is based on status seeking and the perceived need by actors to engage in a new 'hot topic' – sometimes with limited knowledge of Arctic specifics, local and indigenous conditions, and the nuances of a region that is as complex as any other maritime domain surrounded by states.

From a European perspective, the linkages between what happens in the *European* Arctic (i.e. the Nordic states) to wider developments for the continent in terms of security, infrastructure, energy and raw materials have become apparent over the last two decades - as exemplified with Italy's increased attention to Arctic issues. Especially in terms of security, perceiving the Russian challenge to European security and stability as a continuum has thus become central to policy-makers in Oslo, Brussels and Rome. This challenge starts in the Barents Sea and along the 197km Russian-Norwegian border in the North, continuing along the new 1346km Finnish-NATO-Russia border into the Baltic Sea and to the Baltic states, and then onto Poland, Ukraine and finally ending in the Black Sea and subsequently the Mediterranean. Moreover, the increasingly apparent Sino-Russian collaboration in the Arctic, but also writ large, links the Arctic two wider geopolitical considerations, prompting Western and European concern over these trends.

Considering developments in both the Arctic and the Mediterranean, the EU seeks to promote a "comprehensive approach" to security, encompassing not only traditional defense and military responses to security threats, but also energy supply, climate change management, humanitarian security and aspects related to economic and commercial continuity. These challenges are multidimensional and complex, covering both known and completely new issues.

In order to understand the existing relationships between the Arctic and the Mediterranean region, we decided to analyze three priority research areas:

- climate change and its impact on regional systems, including the related socio-economic implications;
- the energy issue, considering the dynamics of the hydrocarbon market, the prospects in terms of decarbonization and the broader issue of energy transition through renewable energy sources;
- key aspects related to security and defence, encompassing the specific challenges at regional level, and the current geopolitical context's implications on the two quadrants being analyzed.

Although through different approaches and tools, the EU system is directly involved in both regions and, at least according to the authors' perspective, European institutions need a strategic and global approach in the development of political, economic and social initiatives related to the Arctic and the Mediterranean.

For this reason it was decided to dedicate a specific chapter to the ways in which the EU intervenes in the regions under analysis, trying to highlight through which perspective Brussels implements (or should implement) its action directly or through its members regarding the evolution of the northern and southern borders of the Union.

Finally, we focused on two strategic regional players: Italy and Norway. Both share a significant interest in all three main areas of analysis defined above in the region to which they belong. At the same time, they are focusing on the Arctic (Italy) and on the Mediterranean (Norway) from different perspectives but with some common grounds.

The structure of the research is based on five main chapters, plus two sections dedicated to the identification of forecast scenarios and the development of recommendations for the decision maker.

The methodology applied in this work is analytical and based on an approach aimed at supporting decision-making processes, providing keys to understanding and food for thought. Despite this, there is ample reference to the literature available on the different topics covered, both from a geographical and thematic point of view. Furthermore, the authors have made available their knowledge and direct experience in the regions analysed, the result of years of research, analysis and reflection, supported by numerous publications

and active participation in research programs, conferences, and workshops at an international level.

CLIMATE CHANGE AND ENERGY SECURITY IN THE ARCTIC AND THE MEDITERRANEAN

ALDO PIGOLI – GIACOMO DI CAPUA

THE ARCTIC

The Arctic biophysical system is undergoing unprecedented change, with environmental implications that transcend the regional boundaries. Such changes are multi-dimensional and complex, including warming sea surface and surface air temperatures, diminishing snow cover and sea ice, continued mass loss from the Greenland Ice Sheet, and climate change-supercharged weather and climate events with devastating effects for both human settlements and Arctic ecosystems[1]. At the root of shifts in the Arctic biome is the changing global climate system, which is influencing the bio-geophysical energy exchange and transport within the Arctic, with increasing evidence of the "clear linkages" and cascading effects between climate indicators and changes in Arctic biophysical system[2]. In particular, historical stocks of organic carbon in the Arctic (especially permafrost and peatlands) are releasing carbon dioxide (CO_2) back into the atmosphere, altering the role of the Arctic in global carbon cycling[3].

Moreover, due to the phenomenon of 'Arctic amplification', climate change continues to impact the above-mentioned dynamics in the region (identified as located between 60ºN and 90ºN) more markedly than outside the circumpolar regions, while the role of anthropic emissions in these dynamics in increasingly evident[4]. Arctic amplification itself is a response to *climate forcing*, i.e. changes in the anthropogenic drivers of climate change such as increased atmospheric concentrations of CO_2, and evidence indicates that the

---

[1] R.L. Thoman, T.A. Moon, M.L. Druckenmiller, "Executive Summary", in R. L. Thoman, T. A. Moon, and M. L. Druckenmiller (eds.), *Arctic Report Card 2023*, 2023, p. 4-8.

[2] J.E. Box, W.T. Colgan, T.R. Christensen, N.M. Schmidt, M. Lund, F.J.W. Parmentier, R. Brown, U.S. Bhatt, E.S. Euskirchen, V.E. Romanovsky, J.E. Walsh, "Key indicators of Arctic climate change: 1971–2017" *Environmental Research Letters*, 14"4, 2019, p. 13.

[3] Idem.

[4] R.L. Thoman, T.A. Moon, M.L. Druckenmiller, *Executive Summary*, op. cit., p. 4.

strength of Arctic Amplification depends on the state of the climate system[5]. Feedback loops that have been identified in tropospheric and surface warming further exacerbate the rate of environmental degradation associated with climate forcing[6]. Ascribable to anthropogenic greenhouse gas emissions is also at least half the decline in Arctic Sea extent since the 1950s[7], which has been directly linked to atmospheric CO_2 concentration[8], although other factors such as intrusion of warm Atlantic inflow, reduced surface albedo due to longer sea-ice melting seasons, and increased solar absorption have been found to contribute to changes in sea ice thickness and volume[9,10,11,12]. The resulting and compounding effects of the above-mentioned phenomena are meaningfully altering decadal and centennial energy and biophysical balances, the long-term impacts of which are yet to be fully understood.

These shifting biophysical dynamics can be articulated and identified across air, land, and ocean, as observational data from 2023 unmistakably epitomizes.

First, significant changes in both precipitation and air temperatures in the Arctic region have been observed. In the period 1971–2017, air temperatures have increased over twice the rate of the Northern Hemisphere, with an average rise of 2.7ºC[13]. In line with this

---

[5] M. Previdi, K.L. Smith, L.M. Polvani, "Arctic amplification of climate change: a review of underlying mechanisms", *Environmental Research Letters*, 16:9, 2021, p. 093003.

[6] Idem

[7] Q. Ding, A. Schweiger, M. L'Heureux, D.S. Battisti, S. Po-Chedley, N.C. Johnson, E. Blanchard-Wrigglesworth, K. Harnos, Q. Zhang, R. Eastman, E.J. Steig, "Influence of high-latitude atmospheric circulation changes on summertime Arctic Sea ice", *Nature Climate Change*, 7, 2017, p. 289–295.

[8] J.C. Stroeve, D. Notz, "Changing state of Arctic Sea ice across all seasons", *Environmental Research Letters*", 13, 2018.

[9] L. Field, D. Ivanova, S. Bhattacharyya, V. Mlaker, A. Sholtz, R. Decca, A. Manzara, D. Johnson, E. Christodoulou, p. Walter, K. Katuri, "Increasing Arctic Sea ice albedo using localized reversible geoengineering", *Earth's Future*, 6:6, 2018, pp.882-901.

[10] D.K. Perovich, C. Polashenski, "Albedo evolution of seasonal Arctic Sea ice", *Geophysical Research Letters,* 39:9, 2012.

[11] I.V. Polyakov, A.V. Pnyushkov, M.B. Alkire, I.M. Ashik, T.M. Baumann, E.C. Carmack, I. Goszczko I, J. Guthrie, V.V. Ivanov, T. Kanzow, R. Krishfield, "Greater role for Atlantic inflows on sea-ice loss in the Eurasian Basin of the Arctic Ocean", *Science*, 356:6335, 2017, p. 285-91.

[12] B. Hwang, Y. Aksenov, E. Blockley, M. Tsamados, T. Brown, J. Landy, D. Stevens, J. Wilkinson, "Impacts of climate change on Arctic Sea ice", *MCCIP Science Review*, 2020, p. 208-227.

[13] J.E. Box, W.T. Colgan, T.R. Christensen, N.M. Schmidt, M. Lund, F.J.W. Parmentier, R. Brown, U.S. Bhatt, E.s. Euskirchen, V.E. Romanovsky, J.E. Walsh, *Key indicators…*, op.cit., p. 1-18.

trend, the warmest summer air temperature on record was observed in the region last year, with a yearly anomaly of 0.76-0.77ºC, making 2023 the sixth warmest year since 1900[14,15]. Furthermore, detrimental biophysical impacts in the Arctic, such as coastal erosion due to thaw, have been associated with more frequent extreme air temperature events within the Arctic. Analogously, the 2022/23 water year featured the sixth-highest mean precipitation across the Arctic, with observed instances of extreme precipitation at various observation locations across the region and above-average seasonal precipitations compared to the previous 30 years[16].

Second, significant changes in hydroclimatology, Arctic Ocean sea-ice extent and volume, and marine productivity have been detected and continued their long-term shifts in 2023. Observations from multiple stations indeed suggest a large-scale increase in humidity, low-level clouds, precipitation, rainfall, and river discharge, among other controlling factors for both the terrestrial and the marine Arctic ecosystems[17]. In particular, Arctic Sea-surface temperatures – an "essential indicator of the role of the ice-albedo feedback cycle in any given summer sea ice melt season" — touched extreme values in 2023, continuing the warming trends observed in the 1982-2022 period across the quasi-totality of regions in the Arctic Ocean that experience total ice melting in August[18]. Consequent decreases in both the extent and volume of sea ice in the Arctic Ocean are occurring, with a record-low extent detected in 2012 and devastating impacts on biodiversity loss in sea-ice habitats[19]. Between 1981 and 2010, the

[14] R.L. Thoman, T.A. Moon, M.L. Druckenmiller, *Executive Summary*, op. cit., p. 5.

[15] T. J. Ballinger, S. Bigaalke, J.E. Walsh, B. Brettschneider, R.L. Thoman, U.S. Bhatt, E. Hanna, I. Hanssen-Bauer, S.J. Kim, J.E. Overland, M. Wang, "Surface Air Temperature", in R. L. Thoman, T. A. Moon, and M. L. Druckenmiller (eds.), *Arctic Report Card 2023*, 2023, pp.9-14

[16] J.E. Walsh, S. Bigalke, S.A. McAfee, R. Lader, M.C. Serreze, and T.J. Ballinger, "Precipitation", in R. L. Thoman, T. A. Moon, and M. L. Druckenmiller (eds.), *Arctic Report Card 2023*, 2023, p. 22-29.

[17] J.E. Box, W.T. Colgan, T.R. Christensen, N.M. Schmidt, M. Lund, F.J.W. Parmentier, R. Brown, U.S. Bhatt, E.s. Euskirchen, V.E. Romanovsky, J.E. Walsh, *Key indicators…*, op.cit., p. 1-18.

[18] M.L. Timmermans, Z. Labe, "Sea Surface Temperature", in R. L. Thoman, T. A. Moon, and M. L. Druckenmiller (eds.), *Arctic Report Card 2023*, 2023, p. 49-54

[19] J.E. Box, W.T. Colgan, T.R. Christensen, N.M. Schmidt, M. Lund, F.J.W. Parmentier, R. Brown, U.S. Bhatt, E.s. Euskirchen, V.E. Romanovsky, J.E. Walsh, *Key indicators…*, op.cit., p. 1-18.

September ice extent has shrunk by 13% per decade[20] – albeit not uniformly across the Arctic Ocean – while the area of thick multiyear ice surviving at least one summer significantly reduced as well[21,22,23]. With the loss of sea ice also comes the reduction of snow cover, which has a "strong effect on the thermophysical and optical properties of the underlying ice" and the accumulation of which plays a key ecological function due to the role of deep snow as habitat for megafauna[24]. As widely observed, a seasonally ice-free Arctic can affect marine production and wildlife, whilst reductions in Arctic Sea ice cover have been observed to influence weather and climate also in non-Arctic regions[25,26]. The mass and area changes of ice cover in the region is further influencing commercial transportation, resource extraction, and national security. In late August 2023, open water was found through the entire Northern Sea Route, whereas the Northwest Passage through the Canadian Archipelago was not fully navigable despite the summer 2023 ice extent in the Passage being among the lowest observed in the satellite record[27,28]. Finally, fish stock abundances and marine productivity are responding to changes in hydrologic cycles in the Arctic Ocean with severe economic and cultural impacts on Arctic communities due to extreme returns and changing patterns for local ichthyic stocks. In 2023, ocean primary productivity increased across most observed areas, in line with

[20] M.C. Serreze, W.N. Meier, "The Arctic's sea ice cover: trends, variability, predictability, and comparisons to the Antarctic", *Annals of the New York Academy of Sciences*, 2018.

[21] R. Lindsay, A. Schweiger, "Arctic Sea ice thickness loss determined using subsurface, aircraft, and satellite observations", *The Cryosphere*, 9, 2015, p. 269–283.

[22] R. Kwok, D.A. Rothrock, "Decline in Arctic Sea ice thickness from submarine and ICESat records: 1958–2008", *Geophysical Research Letters*, 36:15, 2009.

[23] B. Hwang, Y. Aksenov, E. Blockley, M. Tsamados, T. Brown, J. Landy, D. Stevens, J. Wilkinson, *Impacts of climate*…, op. cit., p. 208-227.

[24] Perovich, D.K., Jones, K.F., Light, B., Eicken, H. *et al*. (2011) Solar partitioning in a changing Arctic Sea-ice cover. *Annals of Glaciology,* 52(57), 192–196, doi:10.1029/2018EF000820, p. 211

[25] D.K. Perovich, C. Polashenski, *Albedo evolution …,* op. cit.

[26] J.A. Francis, S.J. Vavrus, J. Cohen, "Amplified Arctic warming and mid-latitude weather: new perspectives on emerging connections", *WIREs Climate Change*, p. e474, 2017.

[27] Arctic Sea Ice News & Analysis, "Late summer heat wave avoids central Arctic", *National Snow and Ice Data Center*, 2023, https://nsidc.org/arcticseaicenews/2023/09/late-summer-heat-wave-arctic.

[28] W.N. Meier, A. Petty, S. Hendricks, L. Kaleschke, D. Divine, S. Farrell, S. Gerland, D. Perovich, R. Ricker, X. Tian-Kunze, M. Webster, "Sea Ice", in R. L. Thoman, T. A. Moon, and M. L. Druckenmiller (eds.), *Arctic Report Card 2023*, 2023, p. 39.

positive decadal trends in the Arctic Ocean[29]. The impacts thereof span from carbon sequestration to altered nutrient dynamics in marine ecosystems, leading to depressed abundances – especially of salmon[30,31].

Third, increasing rates of wildfires, extending permafrost thaw, declining snow cover, and alterations to regional ecosystems such as tundra and peatlands are irreversibly changing Arctic lands. Sustained climate change led to high-impact events like worsened national wildfire seasons in Northwest Territories, and two-thirds of residents were displaced as a result throughout the summer of 2023.[32] More widely, the extent and intensity of wildfires, which is integral to the ecosystem in the Arctic and boreal forest, have changed partly due to human activities and variations in wildfire management practices, engendering "dramatic short-term changes" in both ecosystem function and local vegetation in addition to generating feedback between increases in maximum air temperatures, greater fire risk, and increased likelihood of lighting ignition for both boreal forests and peatlands[33]. The latter, which represent the most carbon-dense ecosystems on Earth, store their majority of carbon along the Arctic Circle and the risk that peatlands in the High North "could eventually shift from being a net sink from carbon to a net source" is material[34]. In the summer of 2020 alone, the blazes emitted over 240 megatons of CO_2 throughout fire season[35]. Other effects of higher air temperatures include an observed greening of the Arctic tundra in the past three

[29] K.E. Frey, J.C. Comiso, L.W. Cooper, C. Garcia, J.M. Grebmeier, L.V. Stock, "Arctic Ocean Primary Productivity: The Response of Marine Algae to Climate Warming and Sea Ice Decline", in R. L. Thoman, T. A. Moon, and M. L. Druckenmiller (eds.), *Arctic Report Card 2023*, 2023, p. 55-65.

[30] M. Manizza, "Carbon streams into the deep Arctic Ocean", *Natural* Geoscience, 16, 2023, p. 6-7.

[31] E.R. Schoen, K.G. Howard, J.M. Murphy, D.E. Schindler, p. A.H. Westley, V.R. von Biela, "Divergent Responses of Western Alaska Salmon to a Changing Climate", in R. L. Thoman, T. A. Moon, and M. L. Druckenmiller (eds.), *Arctic Report Card 2023*, 2023, p. 102

[32] R.L. Thoman, T.A. Moon, M.L. Druckenmiller, *Executive Summary*, op. cit., p. 5.

[33] J.E. Box, W.T. Colgan, T.R. Christensen, N.M. Schmidt, M. Lund, F.J.W. Parmentier, R. Brown, U.S. Bhatt, E.s. Euskirchen, V.E. Romanovsky, J.E. Walsh, *Key indicators…*, op.cit., p. 1-18.

[34] G. Hugelius, J. Loisel, S. Chadburn, R.B. Jackson, M. Jones, G. MacDonald, M. Marushchak, D. Olefeldt, M. Packalen, M.B. Siewert, C. Treat, "Large stocks of peatland carbon and nitrogen are vulnerable to permafrost thaw", *Proceedings of the National Academy of Sciences*, 117:34, 2020, p. 20438-20446.

[35] A. Witze, "Why Arctic fires are bad news for climate change", *Nature*, 585:7825, 2020, p. 336-337.

decades[36,37], permafrost thaw (the non-linear decline of which has already engendered meaningful economic effect of climate change due to the amplifying feedback between permafrost thaw and warmer climate and albedo feedback due to ice and snow melt)[38], and loss of terrestrial snow cover, land ice, and mass in the Greenland Ice Sheet[39,40,41]. The observed effects of these land changes are particularly meaningful for human systems as they are conducive to both rising sea levels and increased greenhouse gas emissions[42]. Nonetheless, adaptation to climate and environmental changes has been scarce. Reported adaptation activity in the Arctic has been limited and is widely considered to be in its infancy, albeit major assessment efforts are already underway (e.g., through the Arctic Monitoring and Assessment Program at the Arctic Council)[43,44].

The above-mentioned dynamics related to Arctic warming, especially permafrost thaw and sea- and land-ice melting, have meaningfully altered the prospects for energy development in the region. The US Geological Survey of 2008 estimated the presence in the Arctic region of the largest untapped and technically recoverable stock of energy sources at the global level, with 13% of oil reserves, 30% of natural gas stock, and further the presence of minerals, metals and Rare Earth Elements (REE), which are expected to play a pivotal

[36] J.E. Box, W.T. Colgan, T.R. Christensen, N.M. Schmidt, M. Lund, F.J.W. Parmentier, R. Brown, U.S. Bhatt, E.s. Euskirchen, V.E. Romanovsky, J.E. Walsh, *Key indicators…*, op.cit., p. 1-18.

[37] G.V. Frost, M.J. Macander, U.S. Bhatt, L.T. Berner, J.W. Bjerke, H.E. Epstein, B.C. Forbes, M.J. Lara, R.Í. Magnússon, P. M. Montesano, G.K. Phoenix, S.P. Serbin, H. Tømmervik, C. Waigl, D.A. Walker, D. Yang, "Tundra Greenness", in R. L. Thoman, T. A. Moon, and M. L. Druckenmiller (eds.), *Arctic Report Card 2023*, 2023, p. 67-74

[38] D. Yumashev, C. Hope, K. Schaefer, K. Riemann-Campe, F. Iglesias-Suarez, E. Jafarov, E.J. Burke, P. J. Young, Y. Elshorbany, G. Whiteman, "Climate policy implications of nonlinear decline of Arctic land permafrost and other cryosphere elements", *Nature communications*, 10:1, 2019, p. 1-11.

[39] J.E. Box, W.T. Colgan, T.R. Christensen, N.M. Schmidt, M. Lund, F.J.W. Parmentier, R. Brown, U.S. Bhatt, E.s. Euskirchen, V.E. Romanovsky, J.E. Walsh, *Key indicators…*, op.cit., p. 1-18.

[40] L.R. Mudryk, A. Elias Chereque, C. Derksen, K. Luojus, B. Decharme, "Terrestrial Snow Cover", in R. L. Thoman, T. A. Moon, and M. L. Druckenmiller (eds.), *Arctic Report Card 2023*, 2023, pp.15-21

[41] K. Poinar, K.D. Mankoff, R.S. Fausto, X. Fettweis, B.D. Loomis, A. Wehrlé, C.D. Jensen, M. Tedesco, J.E. Box, T.L. Mote, "Greenland Ice Sheet", in R. L. Thoman, T. A. Moon, and M. L. Druckenmiller (eds.), *Arctic Report Card 2023*, 2023, p. 30-38

[42] Idem.

[43] J.D. Ford, G. McDowell, J. Jones, "The state of climate change adaptation in the Arctic", *Environmental Research Letters*, 9:10, 2014. p.104005.

[44] Idem.

role in the geopolitical economy of Arctic and global energy due to their role in developing renewable energy technologies[45]. A vast majority of such resources are increasingly reachable thanks to continued sea-ice mass loss as they are to be found offshore, and, albeit substantial petroleum production in the region dates to the 1960s, such an untapped Arctic wealth acquires today novel geopolitical significance.

As of 2023, oil and gas extraction remains a primary driver of energy dynamics in the Arctic region. Exploration activities for oil and gas resources continue, with most progress being made in the Norwegian Continental Shelf, whilst a third of all offshore investments (as of 2016) remain concentrated in the Barents Sea[46]. Notwithstanding exploration being in its early stages and regional barriers to further development (e.g., price volatility, capital expenditures, and lack of infrastructure), the latter has been considered the most promising oil and gas province in the region, with 69 newly issued licenses in 2019 and 17 new discoveries following 57 exploratory wells in Norwegian sea as of 2021[47]. Only 19 were active licenses in the Beaufort Sea as of 2021[48], while limited exploration activity, high operative costs, and environmentally sensitive areas in Greenland's unspoiled ecological systems make the likelihood of significant oil and gas production in Greenlandic territories "remote"[49]. Analogously, the 2016 moratorium on new offshore oil and gas licensing in Arctic Canadian waters halted major extractive activities, as some new framework and regulatory restrictions on drilling and explorations have been established in Norwegian waters[50,51]. Nonetheless, exploration licenses in the Norwegian Arctic continue to be issued in 2023 (2 additional ones in the Barents Sea)

[45] K.J. Bird, R.R. Charpentier, D.L. Gautier, D.W. Houseknecht, T.R. Klett, J.K. Pitman, T.E. Moore, C.J. Schenk, M.E. Tennyson, C.R. Wandrey, "*Circum-Arctic resource appraisal: Estimates of undiscovered oil and gas north of the Arctic Circle*", *US Geological Survey*, 2008.

[46] J. Henderson, J. Loe, "The prospects and challenges for Artic oil development", *The Oxford Institute for Energy Studies*, November 2014.

[47] Protection of the Arctic Marine Environment (PAME), "Status of Offshore Oil and Gas Activities in the Arctic", *Arctic Council*, November 2021, https://pame.is/document-library/pame-reports-new/pame-ministerial-deliverables/2021-12th-arctic-council-ministerial-meeting-reykjavik-iceland/797-status-report-on-offshore-oil-and-gas-activities-and-regulatory-frameworks-in-the-arctic/file, p. 23.

[48] Idem

[49] J. Henderson, J. Loe, *The prospects*…, op. cit.

[50] PAME, *Status of Offshore*, op.cit., p. 21

[51] J. Henderson, J. Loe, *The prospects*…, op. cit.

and early 2024, especially considering the strategic importance of novel hydrocarbon resources with its recent rise as a leading gas provider for EU countries following Russia's invasion of Ukraine[52,53]. Within the regional extractive activities, the emergent Sino-Russia "Gas Bridge" constitutes a pivotal development in Arctic energy governance. Russia possesses by far the largest share of Arctic oil and gas resources (approx. 58%), followed by Alaska (18%) and Greenland, and a wide array of trade incentives, including tax breaks and joint ventures with Russian national oil companies, have been utilized to incentivize an involvement of international oil companies (IOCs) in exploration, extraction, and production activities[54]. IOCs have played a central role in the Russian Arctic by providing project management and finance capacity that Russian companies historically lacked in large-scale oil and gas extraction[55]. In this scenario, intensifying Sino-Russian cooperation served a dual purpose: on the one hand, through the 3 projects already in operation (POS I for piped gas; Yamal LNG 1 and LNG 2 in the Yamal area) and the two further projects planned (Payakha oilfield project and POS II in Siberia), national companies like Gazprom could benefit from extensive financing and logistical support by government-backed Chinese financial institutions and companies, whilst on the other hand catering to Chinese gas needs satisfied a need to pivot away from European partners following the Russian invasion of Ukraine of 2022 and the consequent sharp drop in European imports of Russian-traded gas[56,57,58].

The Arctic region also features autochthonous energy systems serving Arctic communities that are experiencing unique evolutions, ranging from security of supply and sustainability in energy produc-

[52] N. Adomaitis, N. Buli, "Norway boosts oil, gas drilling, including in Arctic", *Reuters*, 16 January 2024, https://www.reuters.com/business/energy/norway-increases-number-new-oil-gas-drilling-permits-including-arctic-2024-01-16/.

[53] N. Adomaitis, N. Buli, "Norway awards 47 oil and gas exploration permits", *ArcticToday*, 10 January 2023, https://www.arctictoday.com/norway-awards-47-oil-and-gas-exploration-permits/.

[54] J. Henderson, J. Loe, The prospects…, op. cit.

[55] Idem

[56] P. Nore, "'Gas Bridges' and Geo-Economics of the Arctic", *Global Development in the Arctic: International Cooperation for the Future*, 2022, p. 38.

[57] Z. Chun, "China's "Arctic Silk Road"", *The Maritime Executive*, 10 January 2020, https://www.maritime-executive.com/editorials/china-s-arctic-silk-road.

[58] W.C. Hsiung, "China and Arctic energy: drivers and limitations", *The Polar Journal*, 6:2, 2016, p. 243-258.

tion to feasibility of energy transmission. The Circumpolar Arctic remains today reliant on a discontinuous electric grid infrastructure due to both geographical distribution and dependency on imported fossil fuels (mainly diesel, coal, and natural gas), largely used for local heating and power generation at the municipal or local level and transmitted via microgrids[59]. The Russian Arctic continues to represent an emblematically inefficient energy system, with domestically used energy sources being imported from the mainland whilst locally extracted resources continue to be exported[60]. Price volatility and intermittent provision of much-needed fuels for heating and power generation, however, supports an ongoing shift towards Renawable Energy Resources (RES) in the region, which "can be regarded as a leader in renewable energy development" considering how the average Arctic energy mix features double the percentage of power generated from RES compared to the global average[61].

In particular, RES development in *indigenous communities* prominently features as an emergent energy trend in the pursuit of the security of autochthonous, sustainable supply as well as resource justice within the region. In the Arctic energy transition, RES deployment and development have emerged in response to the struggle to secure affordable and reliable energy, especially in remote Indigenous communities, albeit new, large-scale RES projects have been observed to potentially undermine Indigenous land rights and traditional livelihoods[62]. That is particularly the case in utility-scale projects on traditional territories, which are oftentimes opposed by local communities and threaten Indigenous rights under national legislation and international frameworks such as the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). The examples of the Site C Dam (Canada), the Fossen project (Norway), and the Markbygden project (Sweden) exemplify what has been observed as the lack of "adequate [Indigenous] participation" in the

[59] United States Department of Energy, "Arctic Energy Office: About Energy in the Arctic", September 2020. https://energy.gov/arctic.

[60] M.O. Morgunova, D.A. Solovyev, L.V. Nefedova, T.S. Gabderakhmanova, "Renewable energy in the Russian Arctic: Environmental challenges, opportunities and risks", *Journal of Physics: Conference Series*, 1565:1, 2020, p. 012086.

[61] United States Department of Energy, *Arctic Energy*…, op. cit.

[62] D. Cambou, G. Poelzer, "Enhancing energy justice in the Arctic: An appraisal of the participation of Arctic indigenous peoples in the transition to renewable energy. Renewable economies in the Arctic", in D.C. Natcher, T. Koivurova (eds.), *Renewable economies in the Arctic*, Taylor & Francis, 2022, p. 304.

development of RES infrastructure[63]. Among other persistent challenges in the energy transition of Indigenous Arctic communities, which already possess features conducive to RES introduction (e.g., micro-grid and stand-alone energy systems), region-wide reviews of RES project development have identified a deficiency in direct access to funding for community-scale RES projects and more "aggressive" RES financial policies[64,65], continued fossil fuel subsidies for energy generation, and the belief that remote communities are not yet equipped to divert away from fossil-fuel energy generation[66]. Utility-scale RES projects with indigenous ownership or co-ownership and community-scale projects driven by public entities or local communities have been observed to more adequately guarantee the participation of indigenous communities in RES development, as the case of the Canadian Arctic indicates[67]. RES initiatives with such features have been indeed found to be supportive of sovereignty and local decision-making processes of Indigenous nations[68], with RES development further addressing Indigenous peoples' desire to attain novel levels of autonomy and self-determination through energy security and justice as well as a reduction in environmental damage and energy costs[69]. Addressing what Hobson (2019) defined as Indigenous communities' "energy trilemma" in the Canadian Arctic – – comprising of energy cost disparities, poverty among remote communities, and dependency on imported fossil fuels[70], RES projects

[63] Ibid.

[64] G. Poelzer, G. Hoogensen Gjorv, G. Holdmann, N. Johnson,B.M. Magnússon, L. Sokka, M. Tysyachnyouk, S. Yu, "Developing Renewable Energy in Arctic and Sub-Arctic Regions and Communities: Working Recommendations of the Fulbright Arctic Initiative Energy Group" *University of Saskatchewan / International Centre for Northern Governance and Development*, 2016, p. 75, https://www.usask.ca/icngd/FulbrightArcRenewableEnergy.pdf.

[65] L. Mortensen, A.M. Hansen, A. Shestakov, "How three key factors are driving and challenging implementation of renewable energy systems in remote Arctic communities", *Polar Geography*, 40:3, 2017, p. 163-185.

[66] Ibid.

[67] D. Cambou, G. Poelzer, *Enhancing energy justice…*, op. cit., p. 304.

[68] D. Hobson, "The energy trilemma of Indigenous Peoples in the Canadian arctic: A way forward", 2019, 12 June 2019, https://www.ie-ei.eu/Ressources/FCK/image/RECHERCHE/Theses_2019/Hobson-The_Energy_Trilemma.pdf.

[69] R.D. Stefanelli, C. Walker, D. Kornelsen, D. Lewis, D.H. Martin, J. Masuda, C.A. Richmond, E. Root, H. Tait Neufeld, H. Castleden, "Renewable energy and energy autonomy: how Indigenous peoples in Canada are shaping an energy future", *Environmental Reviews*, 27:1, 2019, p. 95-105.

[70] D. Hobson, D., *The energy trilemma…*, op. cit., p. 75.

in the Canadian Arctic have been further argued to contribute to faster transition, greater transparency, and wider accountability in Arctic energy governance especially through a more capillary involvement of Indigenous organizations and broader enforcement of the right to Free, Prior and Informed Consent (FPIC) under the UNDRIP[7172]. A 2021 study, however, found that equity ownership by Indigenous communities in RES projects, albeit increasing, remains well below a quarter in the entire Canadian Arctic[73].

Nonetheless, regional energy dynamics face emerging geopolitical, sustainability-related, and technical challenges that might materially influence future energy trajectories.

The extraction of Arctic resources – whether fossil fuels, minerals, or REE – still raises major *environmental concerns*. The extraction and processing of REE reportedly entail meaningful environmental impacts, as does that of fossil products like petroleum and natural gas.[74] The so-called "Arctic Paradox" encapsulates the current tension between the international rush to extraction – made largely possible thanks to climate change – of resources, the combustion of which is the primary driver of climate change itself, and the poor or totally absent alignment of continued fossil fuel extraction and combustion with the International Energy Agency's 'Net Zero' pathways and the Intergovernmental Panel on Climate Change's pathway to limit global warming to the recommended limit of 1.5ºC, respectively[75,76]. Several authors have underlined how the decarbonization of autochthonous energy systems in the Arctic could pave the way for a lower regional carbon footprint and greater energy efficiency by localizing delivery of energy sources to satisfy local

[71] K. Karanasios, p. Parker, "Tracking the transition to renewable electricity in remote indigenous communities in Canada", *Energy policy*, 118, 2018, p. 169-181.

[72] C.E. Hoicka, K. Savic, A. Campney, "Reconciliation through renewable energy? A survey of Indigenous communities, involvement, and peoples in Canada", *Energy Research & Social Science*, 74, 2018, p. 13.

[73] C.E. Hoicka, K. Savic, A. Campney, *Reconciliation*, op. cit., p. 13.

[74] S. Iacuone, "Il "Paradosso Artico" tra sostenibilità e nuovi scenari energetici", *Sustainable and Responsible Management*, 2022, p. 64.

[75] Intergovernmental Panel on Climate Change (IPCC), "Current Status and Trends" in Core Writing Team, H. Lee, J. Romero (eds.), *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, Geneva, Switzerland, 2023, pp. 35-115.

[76] International Energy Agency (IEA), *Net zero by 2050*, Paris, International Energy Agency, 2021.

demand, increasingly focusing on LNG and RES where possible[77,78]. In the future, the expected growth in regional energy consumption (especially for large energy consumers such as industry and transportation) along with the rapid development and increasing cargo transportation along NSR could provide a further incentive for a rapid shift towards lower-carbon energy mixes at the regional level[79]. Regarding resource extraction, Arctic oil and gas production is increasingly challenged by environmental and related reputational risks detected by the ICOs, which have notably halted the development of major drilling and extractive activities in the past decade[80,81].

Blending *geopolitical and environmental challenges* is instead China's 'Net Zero' aspiration, which has the potential to reshape extractive dynamics in the region by mid-century. Indeed, President Xi Jinping's aspirations to achieve a CO2 emissions peak by 2030 and full carbon neutrality before the year 2060 sharply contrast with President Putin's long-term vision for a centrality of hydrocarbons.[82] If the Chinese energy mix is to follow IEA's pathway towards carbon neutrality, Chinese gas demand could peak as soon as 2035[83]. If Jinping's ambitions of increased local production, distribution, and consumption of the Chinese Presidency are pursued, further downward pressure on gas imports could materialize between 2035 and 2060 – significantly imperiling the Sino-Russian "Gas Bridge" and involved Arctic projects[84]. Abundant energy sources in the Arctic have been historically used as a medium to maintaining the Arctic as a conflict-free zone through cooperation, and whilst China is currently willing to pay a 'political premium' for the above-market price of Russian gas, the abovementioned shifts in Chinese energy needs

[77] M.O. Morgunova, D.A. Solovyev, L.V. Nefedova, T.S. Gabderakhmanova, *Renewable energy*, op. cit.

[78] V.A. Fedorova, E.T. Kadzhaeva, K.V. Vovkodav, "Transformation of the energy sector in the Arctic in the context of sustainable development of the region", 1201:1, 2021.

[79] A.S. Kovalenko, M.O. Morgunova, V.V. Gribkovskaia, "Infrastructural synergy of the Northern Sea Route in the International context", *Jenergeticheskaya Politika*, 4, 2018, p. 57–67.

[80] J. Henderson, J. Loe, *The prospects*…, op. cit.

[81] P. Johnston, "Arctic Energy Resources: Security and Environmental Implications." *Journal of Strategic Security*, 5:3, 2012, p. 13-32.

[82] Office of the President of Russia, "Meeting of the Valdai International Discussion Club", 24 October 2014, http://en.kremlin.ru/events/president/news/46860.

[83] International Energy Agency (IEA), *An energy sector roadmap to carbon neutrality in China*, Paris, International Energy Agency.

[84] P. Nore, *Gas Bridges*…, op.cit.

might materially shift the scales[85,86,87]. As global energy systems move towards decarbonization, increased interest and conflicts are indeed likely to focus on commodities related to renewables and low-carbon solutions such as REE, of which there are significant stocks in Greenland and parts of the Russian Arctic[88]. Nonetheless, scholars indicate that escalating tensions resulting from energy dynamics alone remain an unlikely scenario compared to other resource-rich regions, given the good track record of regional dispute resolution using exiting the legislative frameworks (e.g., UNCLOS regarding continental shelves)[89,90]. Finally, long-standing *technical challenges* continue to characterize the economics of new oil projects in function of the size of discoveries and oil market dynamics, making the economic viability of resource extraction largely dependent on the development of other sources of oil supply and the market penetration of alternative energy sources. Delays and cost overruns are, in fact, common among operating offshore fields (such as Snøhvit in the Barents Sea and Prirazlomnoye in the Pechora Sea) – indicative of the persistent limitations that hinder further exploration and extractive activities in the region[91]. Albeit today oil and gas extraction is increasingly more feasible thanks to offshore drilling and novel technologies to identify resource stocks, those are often located in difficult-to-access territories, and the infrastructure necessary to withstand harsh atmospheric conditions during both extraction and transport to processing facilities carries prohibitively high costs[92]. Economic viability for energy sourcing from hydrocarbons in the Arctic today is thus far from certain.

---

[85] Idem.

[86] D.H. Claes, A. Moe, "Arctic petroleum resources in a regional and global perspective", in R. Tamnes, K. Offerdal (eds.), *Geopolitics and security in the Arctic. Regional dynamics in a global* world, New York, Routledge, 2014, p. 97–120.

[87] E. Rumer, R. Sokolsky, p. Stronski, *Russia in the Arctic: A critical examination*, Washington, DC, Carnegie Endowment for International Peace, 2021, p. 3.

[88] International Renewable Energy Agency, *A new world: The geopolitics of the energy transformation*, 2019.

[89] P.F. Johnston, "Arctic energy resources: security and environmental implications", *Journal of Strategic Security*, 5:3, 2012, p. 13-32.

[90] T. Palosaari, "Cambiamento climatico e risorse naturali nell'Artico", *Human Security*, 2, 2016, p. 4-5.

[91] J. Henderson, J. Loe, *The prospects*…, op. cit.

[92] S. Iacuone, *Il "Paradosso Artico"*..., op. cit., p. 64.

THE MEDITERRANEAN

Climate change. Climate change is having significant impacts on the Mediterranean region, affecting various aspects of the environment, economy, and society, with significant consequences on socioeconomic development of many areas, particularly the poorest, least resilient, and least adaptive ones.

Recent evolutions have shown that climate change could affect and have a significant impact on different dimensions and sectors, bringing about, for example: changes in precipitation patterns, sea level rise, alteration of ecosystems, agricultural challenges, limits on tourism and GDP growth, threats to human health.

The Mediterranean region is one of the most responsive areas to climate change and was identified as a major "hot-spot" based on global climate change analyses[93].

This area is experiencing increasing temperatures, at sea, air and land levels, leading to more frequent and intense heat waves. Although the Mediterranean is an "almost closed" sea, its basin is part of a wider oceanic system and, in particular, is linked with evolutions related[94] to the Atlantic Ocean. Studies and analyses on climate change and water masses have shown that Oceans play a key role in energy storage in the global framework of the Earth–Ocean–Atmosphere system. The analysis of past evolution and future trends of the so-called "Sea surface temperature" (SST) is one of the crucial factors in the identification of climate scenarios and their future trajectories. SST is strongly related to heavy precipitation events (HPE), and particularly in the Mediterranean basin, with a crucial association with heat waves. Since the beginning of the 1980s, SST figures have followed a warming trend[95] that is presumed to continue for decades up to the end of this century[96].

---

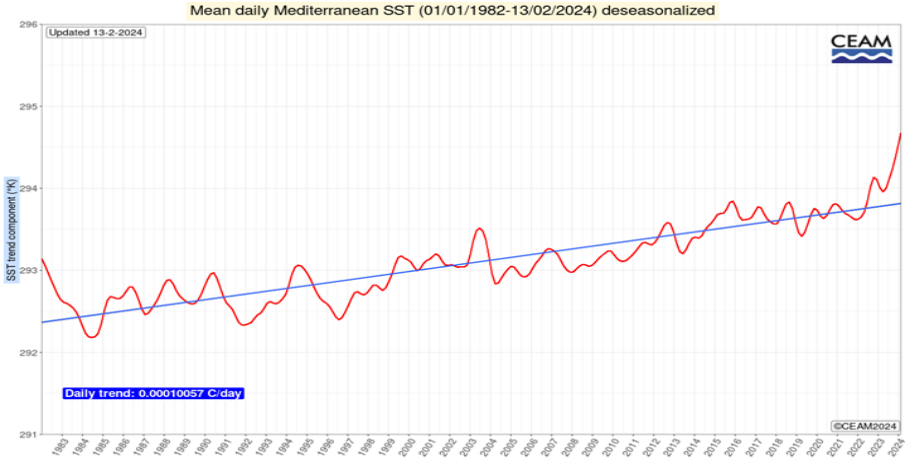
[93] F. Giorgi, "Climate change hot-spots", Geophysical Research Letters, Vol. 33(8), April 2006.

[94] For further information and data about SST and HPE see: Fundació de la Comunitat Valenciana Centre d'Estudis Ambientals del Mediterrani - CEAM-UMH. https://www.ceam.es/ceamet/SST/index.html

[95] A. Pisano, S. Marullo, V. Artale, F. Falcini, C. Yang, F. E. Leonelli, R. Santoleri, and B. Buongiorno Nardelli, "New Evidence of Mediterranean Climate Change and Variability from Sea Surface Temperature Observations", Remote Sensing, Vol. 12(1): 132, 2020.

[96] B. Kirtman, S.B. Power, J.A. Adedoyin, G.J. Boer, R. Bojariu et al., "Near-term climate change: Projections and Predictability". In: T. F.Stocker et al. (Eds.), "Climate change 2013: The physical science basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change", Cambridge University Press, Cambridge and New York, 2013.

Trends in daily temperatures in the Mediterranean



Source: Mediterranean Sea surface temperature portal[97]

The impact of warmer SST on general temperatures was clearly experienced during 2023, when summer temperatures were the hottest seasonal ones ever recorded. The Mediterranean region was especially hard-hit by the extreme heat in July. At the end of that month, the sea surface temperature of the Mediterranean Sea reached its highest ever recorded temperature (28.71ºC), beating the previous record of 28.25ºC set in 2003[98]. As reported by the experts of NASA's Goddard Institute of Space Studies (GISS), the Summer of 2023 was Earth's hottest since global records began in 1880. The average temperatures recorded in the months of June, July, and August were 0.23 degrees Celsius warmer than any other summer, based on NASA's record. Moreover, the same period registered 1.2 degrees Celsius higher than the average summer temperatures between 1951 and 1980[99]. Summing up, the Mediterranean region is warming about 20% faster than the

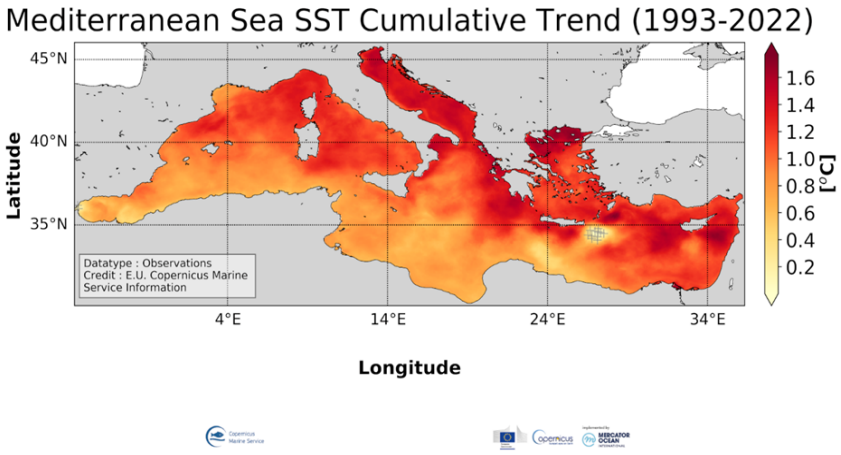
[97] "Mediterranean sea surface temperature portal". Fundació de la Comunitat Valenciana Centre d'Estudis Ambientals del Mediterrani - CEAM-UMH https://www.ceam.es/ceamet/SST/index.html

[98] D. Harper, "Mediterranean Sea breaks new heat record: What does this mean for weather in Europe?", Euronews, July 26, 2023. Accessed February 16, 2024. https://www.euronews.com/green/2023/07/26/mediterranean-sea-breaks-new-heat-record-what-does-this-mean-for-weather-in-europe#:~:text=Monday%20saw%20the%20sea%20surface,broken%20new%20records%20on%20Tuesday.

[99] "NASA Announces Summer 2023 Hottest on Record", NASA, September 14, 2023. https://www.nasa.gov/news-release/nasa-announces-summer-2023-hottest-on-record/. Accessed February 11, 2024.

global average and the air temperature is already 1.5ºC higher than in the pre-industrial averages[100].

As clearly shown by the following map, the areas where SST increase in the Mediterranean have been higher correspond to the Adriatic Sea, the Aegean Sea and the Eastern area related to Turkey, Cyprus, Syria and Lebanon.



Source: Copernicus Marine Service [9]

From the experts' perspective, what happened in 2023 was mainly due to the anticyclone's high-pressure system and to a "heatwave" coming from the Atlantic Ocean, that in June had been warmer than average across most of its basins, especially near North America and Europe. The "Atlantic Ocean heatwave" affected atmospheric circulation patterns and caused warming of air masses above them that persisted long after the lowering of the ocean temperature[101].

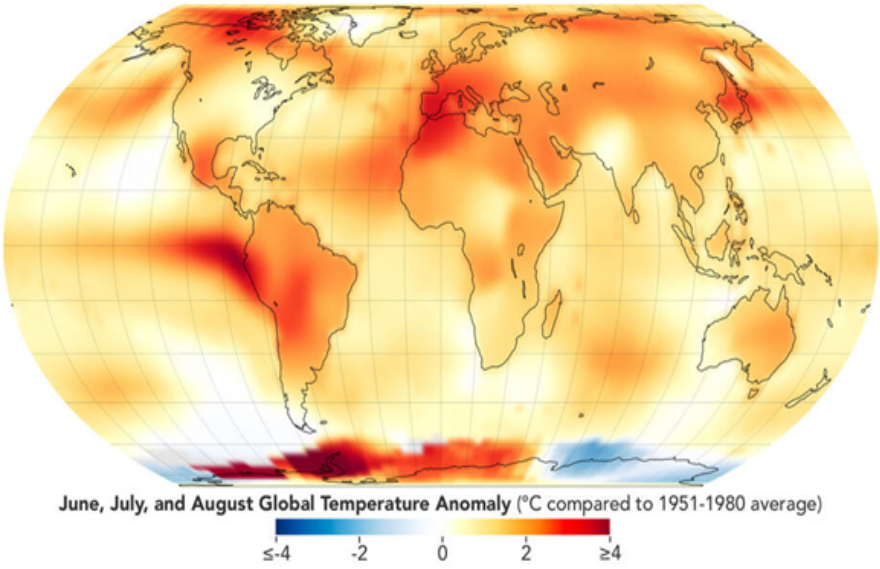
That phenomenon was generated by both ordinary regional factors and extraordinary dynamics: a combination that is increasingly

[100] D. Müller-Dum, J. Kube, "Dramatic weather records in the Mediterranean", Helmoholtz Climate Initiative, 26 June, 2023. Accessed February 11, 2024. https://www.helmholtz-klima.de/en/aktuelles/dramatic-weather-records-mediterranean#:~:text=The%20Mediterranean%20region%20was%20especially,Africa%20it%20was%20even%20higher.

[101] "The European heatwave of July 2023 in a longer-term context", Copernicus Climate Change Service (C3S), July 20, 2023. Accessed February 11, 2024. https://climate.copernicus.eu/european-heatwave-july-2023-longer-term-context

more common in recent years and that shows the interconnection between different geographic and climatic regions.

The following map depicts global temperature anomalies for meteorological summer in 2023 (June, July, and August), showing how much cooler or warmer different regions of Earth were compared to the baseline average from 1951 to 1980.



Source: NASA Earth Observatory/Lauren Dauphin[102]

The exceptional heat affected different regions, including the Western and Central Mediterranean basin and a broad area of the European continent. In July, people living in the Mediterranean basin were particularly hit, with daytime air temperatures of up to 45ºC on land. In the Italian region of Sardinia, the temperature reached 48ºC[103], while in some parts of northern Africa it was even higher. This brought severe forest fires: nearly 10% of the Greek island of Rhodes was burnt. The same phenomenon contributed also to severe rainfall in Central Europe, Greece, and Italy. in May 2023, the northern Italian region of Emilia-Romagna (particularly the provinces

[102] https://science.nasa.gov/image-detail/globaljja-gis-2023-hires/

[103] "In Ogliastra toccati i 48 gradi, è record in Sardegna", ANSA Sardegna, 25 July, 2023. https://www.ansa.it/sardegna/notizie/2023/07/24/in-ogliastra-toccati-i-48-gradi-e-record-in-sardegna_c7b1faf2-9c99-4344-b5f6-36f3443fc738.html. Accessed February 11, 2024.

of Bologna, Ravenna, Forlì-Cesena, and Rimini) experienced severe flooding, during three heavy rainfall events between 2nd and 16th of May, with many casualties and around 50,000 displaced people[104]. At the end of Summer, in the first two weeks of September, the Spanish areas of Madrid, Castile-La Mancha, Catalonia and Valencia experienced torrential rains and floods which engendered casualties and heavy damages[105].

At the same time, in Greece, Bulgaria, and Turkey the low-pressure system "Daniel" brought significantly heavy rain and floods[106]. The African side of the Mediterranean too was extraordinary hit by the Daniel.Extreme weather impacted Libya with heavy rains and floods that caused damages to dam infrastructures, which in turn led to the death of nearly twenty thousand people in the Derna area[107]. The tragedy suffered by Libya is a clear example of how areas suffering from political and socio-economic fragility are much more threatened by climate change-related phenomena. Furthermore, what happened in Libya epitomizes how geopolitics is also engaged: the massive urban reconstruction needs of Derna and its surrounding areas require sizeable financial capital[108], mainly pledged by Western countries and particularly EU members. The long-lasting political and security instability in Libya and geopolitical vacuum that has been characterizing this area, could make it possible for external

[104] The heavy rainfall over the first three weeks of May 2023 was the wettest event of that type in the record with a return time estimated to be about 200 years. The chance of such an event occurring is about 0.5%. "Limited net role for climate change in heavy spring rainfall in Emilia-Romagna"C. Barnes, D. Faranda, E. Coppola, F. Grazzini, M. Zachariah, C. Lu, J. Kimutai, I. Pinto, CM. Pereira, S. Sengupta, M. Vahlberg, R. Singh, D. Heinrich, Otto, FEL, 2023.
https://spiral.imperial.ac.uk/bitstream/10044/1/104550/14/Scientific_Report_Italy_Floods.pdf
.

[105] "Spain floods: Three dead and three missing after torrential rain", Reuters, September 5, 2023. Accessed 12 February 2024. https://www.reuters.com/world/europe/subway-train-lines-roads-closed-madrid-central-spain-after-heavy-rain-2023-09-04/

[106] R. Davies, "Storm Daniel affects Greece, Bulgaria and Türkiye - September 2023, European Flood Awareness System, October 10, 2023. https://www.efas.eu/en/news/storm-daniel-affects-greece-bulgaria-and-turkiye-september-2023

[107] C. Gazzini, "When the Dams in Libya Burst: A Natural or Preventable Disaster?", International Crisi Group, October 2, 2023. Accessed February 12, 2023. https://www.crisisgroup.org/middle-east-north-africa/north-africa/libya/when-dams-libya-burst-natural-or-preventable-disaster

[108] The amount of money needed for reconstruction has been calculated at 1.8 US billion. "Libya Storm and Flooding 2023 Rapid Damage and Needs Assessment", International Bank for Reconstruction and Development - World Bank Group, January 2024.
https://documents1.worldbank.org/curated/en/099353101242428521/pdf/IDU153d4e1711e33e145321b8881cf996ea3acf7.pdf

actors like Russia and even China to potentially get advantages in becoming more entrenched in the territory through urban investments[109], contributing to a much more fragmented scenario in terms of external engagement in Libyan dynamics.

What happened in 2023 reinforced the perception that the Mediterranean region is experiencing a critical situation due to climate change-related issues. For marine life, this means more bio-physical stress in addition to other factors affecting sea waters, such as: pollution, overuse, and acidification. Mass die-offs of corals and sponges are becoming increasingly common, while many mollusk, fish, reptile, and mammal species are threatened with extinction if climate change continues unabated[110].

Under an economic point of view, rising sea levels, heat waves, droughts, fires and intense and concentrated rainfall are significantly impacting various territories, especially coastal areas. The economic impact in coastal areas is markedly significant from a European perspective. 22 EU countries indeed enjoy coastal areas, with nearly 8% of the Union's population living by the sea and nearly 40% of its population living within 50 km from the sea. Due to the different levels of exposure and vulnerability of European coastlines, climate change could lead to an asymmetric distribution of economic losses locally, and unequal indirect effects that spillover throughout the European economy[111].

This brings to the concepts of climate change resilience and adaptation related to development levels. Notre Dame Global Adaptation Initiative (ND-GAIN)'s researchers have calculated that people living in least developed countries have 10 times more chances of being affected by a climate disaster than those in wealthy countries each year. Moreover, ND-GAIN data show it will take over 100 years for lower income countries to reach the resiliency of richer countries[112].

---

[109] F. Saini Fasanotti, "Libya's future after the Derna dam disaster", Geopolitical Intelligence Services, December 13, 2023. Accessed 17 February 2024. https://www.gisreportsonline.com/r/libya-flood/

[110] D. Müller-Dum, J. Kube, "Dramatic weather records in the Mediterranean", *op.cit.*

[111] I. Cortés Arbués, T. Chatzivasileiadis, O. Ivanova, et al., « Distribution of economic damages due to climate-driven sea-level rise across European regions and sectors", Scientific Reports, Vol. 14 (126), 2024.

[112] ND-GAIN's annual Country Index is published by the University of Notre Dame (Washington, D.C). It is an online tool that uses 45 indicators and over 20 years of data to summarize the vulnerability and readiness of 181 nations to the global challenges brought by climate disruption. https://gain.nd.edu/about/. Accessed April 15, 2024.

ND-GAIN Index ranking – Top 10 Countries

Country	ND-GAIN score
Norway	75.0
Finland	73.9
Switzerland	72.5
Denmark	71.9
Singapore	71.5
Sweden	71.4
Iceland	70.6
New Zealand	70.3
Germany	70.2
United Kingdom	70.1

It should be noted that no Mediterranean country is in the top 15 at world level, with the firsts being France (16th).

ND-GAIN Index ranking – Top 10 Mediterranean countries

Country	ND-GAIN score
France (16th)	67.5
Slovenia (21st)	64.8
Portugal (25th)	62.8
Spain (26th)	62.0
Israel (27th)	61.9
Greece (33rd)	60.2
Italy (35th)	60.1
Cyprus (40th)	58.0
Malta (40th)	58.0
Turkey (52nd)	56.5

Considering that the Arctic region is a specific target of our study, it is significantly evident that 5 out of 8 Arctic Countries are

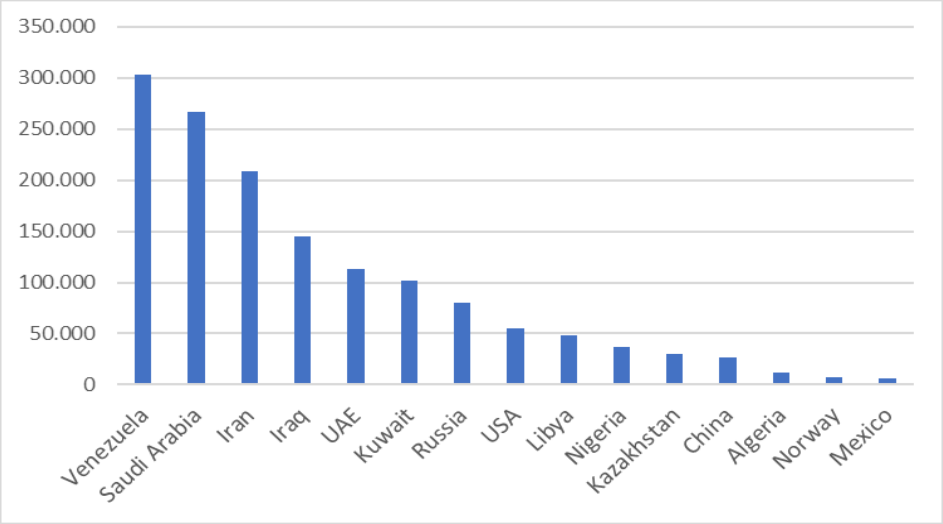
within the top 10 ranking of the ND-GAIN Index, with the other three being in the top 30 (Canada 14th, USA 17th, and Russia 30th).

Energy security and green transition. The Mediterranean area is one of the most important regions in terms of energy dynamics, home to some important producers of natural gas and oil, as well as some of the world's leading consumers of hydrocarbons.

Furthermore, the world's main maritime energy route passes through the Mediterranean and the basin is crossed by some of the main oil and natural gas transport infrastructures.

Some Mediterranean countries are historically rich in Oil&Gas: Algeria and Libya hold together nearly 4% of world crude oil proven reserves, while a similar percentage is the one related with Algeria, Egypt and Libya natural gas proven reserves.

Top 15 countries in the world for proven oil reserves in 2022 (in million barrels)



Source: OPEC Statistics[113]

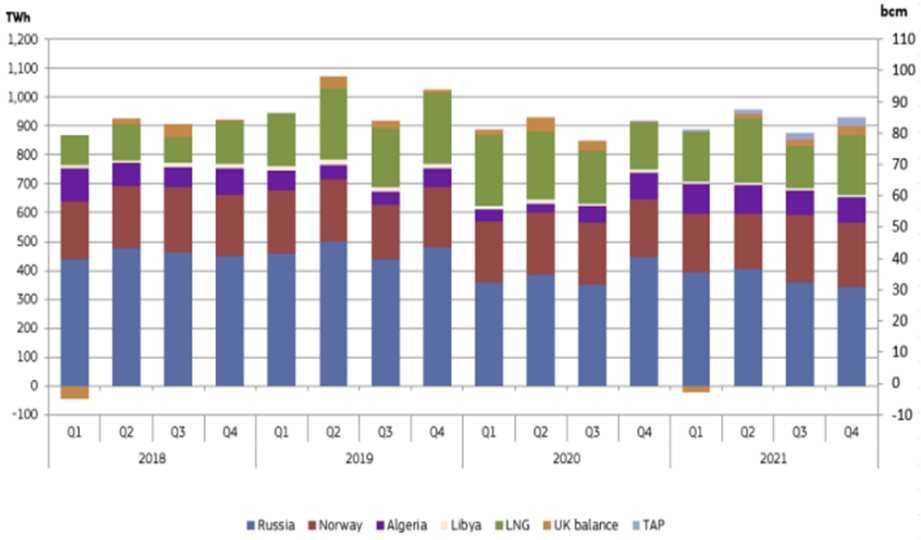
Mediterranean countries are not significant exporting countries, compared with actors like Saudi Arabia, Russia and USA in the oil sector or USA, Russia and Qatar for natural gas, to benchmark against the 2022 leading exporters at a global level. Nevertheless, Northern African countries have been integral to the energy supply of many

[113] "World proven crude oil reserves by country", OPEC Statistics. Accessed February 17, 2024. https://asb.opec.org/data/ASB_Data.php

economies in the Mediterranean basin, both for EU and non-EU countries.

Historically, excluding the share of Russian origin, North African countries have featured among the main suppliers of natural gas to European countries, especially to EU members coasting the Mediterranean. In 2023, North African suppliers contributed 14% of the EU's natural gas imports[114].

EU imports of natural gas by source, 2018-2021



Source: Market Observatory for Energy of the European Commission[115]

For the Mediterranean Oil&Gas producers, hydrocarbons are a vital component of the economy. The case of Algeria is a clear example: more than 85% of Algerian exports depend on natural gas, crude oil and refined petroleum, with Italy, Spain and France as main destinations.

The Libyan case is another clear example of high commodity dependency. Once a key oil producer at the global level (in the 1970s, Libyan oil production was around 3.4 million barrels a day, second only to Saudi Arabia in the Arab world).

---

[114] "Infographic - Where does the EU's gas come from?", European Council. Accessed April 15, 2024. https://www.consilium.europa.eu/en/infographics/eu-gas-supply/.

[115] "Quarterly report On European gas markets", Market Observatory for Energy of the European Commission, Volume 14, issue 4, 2022. https://naturalgas.org.il/wp-content/uploads/2023/08/GAZ_10_V5_01.08_ENG_6.pdf.

After the fall of Qaddafi and due to the long-lasting internal conflict, Libya's production heavily decreased, standing in 2023 at only 1/3 of its peak, and bringing the ranking of the country to 18th place in the world. Consequently, oil exports - which together with natural gas exports make up 95% of total external trade, a huge part of government revenues, and around 40% of the national GDP - were rarely over 1,000 million barrels a day.

Between 2000 and 2011, its oil reserves increased by more than 30% and today they are around 48 billion barrels, making it Africa's largest holder, constituting nearly 40% of the continent's total. Investments made to modernize old infrastructure and production plants, and to open new rigs will aim to increase the oil output at 2 million barrels per day by 2030.

Algeria is trying to gain an advantage from the EU embargo on Russian Oil&Gas and the will of European governments and EU institutions to limit the dependency on Russian hydrocarbons well beyond the current crisis. This will pass through an increase of its natural gas production and a strengthening of its status as a strategic supplier. The same could not be said of Libya, because of the internally unstable situation and the limited foreign investments heading to its upstream and downstream energy sector.

On the supply side, Egypt is a relevant player in the Mediterranean gas markets. It holds 2.2 trillion cubic meters (tcm) of proven gas reserves, equivalent to 12% of proven reserves in the African continent[116]. In 2015, Italian energy company Eni announced the discovery of the Zohr field. Zohr is the biggest gas field discovered in the Eastern Mediterranean region. Production from Zohr started in 2017: by 2022 Egyptian infrastructures were able to produce 64.5 bcm of natural gas, nearly a quarter of Africa's gas production. In 2022, Egypt exported 8.9 bcm LNG, with 73% going to Europe. There's no doubt that Egypt is presenting itself as a country with great potential in terms of exports of natural gas to Europe. Nevertheless, its demographic growth trends, and the increase in internal consumption of what is currently the main internal energy source, make it difficult to quantify the real impact on the energy supply dynamics of Europe and the Mediterranean area[117].

[116] "World proven crude natural gas reserves by country", OPEC Statistics. Accessed February 17, 2024. https://asb.opec.org/data/ASB_Data.php.

[117] C. Nakhle, "Egypt's gas exports under threat", Geopolitical Intelligence Services, Accessed February 17, 2024. https://www.gisreportsonline.com/r/lng/.

Amid the supply crisis that European countries experienced after the most recent Russian invasion of Ukraine, the Eastern Mediterranean emerged as a promising new source of natural gas, and particularly Egypt, Israel, and Cyprus. Since the turn of the century, exploration in deepwater basins in these three countries has resulted in the discovery of approximately 2,400 billion cubic meters (Bcm) of gas resources. Exploration is ongoing and new discoveries are possible, meaning that even greater volumes of natural gas could be available in the next decades[118].

The growing relevance of the Eastern Mediterranean for the energy supply needs of European countries and other regional actors was demonstrated also by Ankara's increasing assertiveness in recent years. A central country in the dynamics of the supply of hydrocarbons from southern Russia, the Caucasus and the Caspian Sea area, playing the role of transit hub for the main Oil&Gas pipelines heading to Europe, Turkey has been attempting to carve out a role for itself as a producer, trying to assert its rights of exploration and future extraction in a region, that of the Eastern Mediterranean, particularly concentrated in terms of presence by coastal countries and international players operating in the Oil & Gas sector. The maritime border delimitation agreement signed by Erdogan's government with the Libyan government of Al Serraj, in November 2019, showed Ankara's willingness to assert its presence in regional dynamics, and particularly those related to the exploitation of the present hydrocarbon deposits[119]. The reactions generated in most of the region - particularly from the Republic of Cyprus, Greece, and Egypt - highlighted the importance of this area and its strategic value for regional energy dynamics, as well as its strong geopolitical consequences[120]. The increasing competition in the area was contributing to triggering diplomatic tensions and even potential armed conflicts. In January 2019, the energy ministers from seven countries launched an international forum, the Eastern Mediterranean Gas Forum (EMGF), to

[118] For an overview of Eastern Mediterranean natural gas discoveries and recent evolutions see: "Rethinking Gas Diplomacy in the Eastern Mediterranean", International Crisis Group, April 26, 2023. https://www.crisisgroup.org/middle-east-north-africa/east-mediterranean-mena-turkiye/240-rethinking-gas-diplomacy-eastern.

[119] In October 2022, Ankara and Tripoli signed a memorandum of understanding on exploration for hydrocarbons in Libya's territorial waters and soil. "Turkey and Libya sign maritime hydrocarbons deal", France 24, October 3, 2022. Accessed February 17, 2024. https://www.france24.com/en/live-news/20221003-turkey-and-libya-sign-maritime-hydrocarbons-deal-1.

[120] For a broader perspective on the geopolitical evolutions related with energy dynamics in the Eastern Mediterranean, see: V. Talbot (Ed.), "The scramble for the Eastern Mediterranean. Energy and geopolitics", ISPI, LediPublishing, Milan, 2021.

develop and increase cooperation in the natural gas sector around the Eastern Mediterranean within a multilateral framework[121]. In September 2020, the member countries signed a charter, giving the forum formal status as an intergovernmental organization[122]. Since then, the EMGF has been playing a relevant action in trying to contain potential crisis but has also been perceived by Turkey and other actors as a sort of antagonist coalition[123].

One of the newest, but increasingly relevant, actors in the region is without doubts Israel, a country that used to depend on external supply to satisfy its energy needs and that, more than a decade ago, experienced changes akin to a revolution. Israel's natural gas reserves have been growing significantly since the start-up of Israel's first major producing field, Tamar, in 2013.

Israel Natural Gas Reserves after the 2013 "Gas Revolution"

Source: BDO and the Israeli Natural Gas Trade Association[124]

[121] Later joined by France, the EMGF now comprises 8 members (the Republic of Cyprus, Egypt, France, Israel, Italy, Jordan, Greece and Palestine. In addition, there are 3 observers: the European Union (EU), the World Bank, and the U.S. Furthermore, there are 36 members of the Gas Industry Advisory Committee (GIAC), composed by State-owned entities, international financial institutions, Oil companies - including Italian Energy Company ENI – and other relevant actors of the energy and gas sector, like Saipem and SNAM. See EMGF website: https://emgf.org/.

[122] "East Mediterranean states formally establish Egypt-based gas forum", Reuters, September 22, 2020. Accessed February 17, 2024. https://www.reuters.com/article/mideast-energyint/east-mediterranean-states-formally-establish-egypt-based-gas-forum-idUSKCN26D179.

[123] For an in-depth analysis of the EMGF and its real contribution to regional cooperation, see: K. Taehwan, S. Sang Yoon, "Competition or cooperation? The geopolitics of gas discovery in the Eastern", Energy Research & Social Science, Vol. 24, 2021.

[124] "A Decade of Israel's Natural Gas Revolution. Special report: the Natural Gas Economy 2023", BDO and the Israeli Natural Gas Trade Association, 2023. https://naturalgas.org.il/wp-content/uploads/2023/08/GAZ_10_V5_01.08_ENG_6.pdf.

The Leviathan reservoir, the largest in terms of natural gas production by Israel, was discovered in 2010, 130 km off the coasts of Haifa within Israel's Exclusive Economic Zone (EEC) and became one of the largest natural gas fields in the Mediterranean[125]. Production from Leviathan began at the end of 2019 and brought Israel to satisfy internal demand and to become a natural gas exporting country, supplying chiefly Egypt and Jordan. Recently, in mid-2023, the Ministry of Energy of the Israeli government officially recognized the Katlan gas field, which holds an estimated 68 billion cubic meters (bcm) of gas and was the first official recognition of a natural gas discovery made by the government of Israel since 2015[126]. That one and other recent discoveries brought the natural gas resources potentially available to Israel to more than 2,000 bcm, about double the previously estimated levels, with a share of natural gas per capita that has brought Israel into the top 3 OECD countries[127].

However, Oil&Gas supply and dependence is just one side of the coin. In recent years, the Mediterranean area experienced an increasing challenge in dealing with the sustainability of energy production and consumption.

Some of the countries whose coasts are bathed by the Mediterranean Sea are among the main producers of CO_2 linked to the extraction and combustion of hydrocarbons: the three main producers of hydrocarbons in the Mediterranean, Libya, Algeria and Egypt are among the top countries that continue to be responsible for the vast majority of gas flaring and CO_2-related emissions[128].

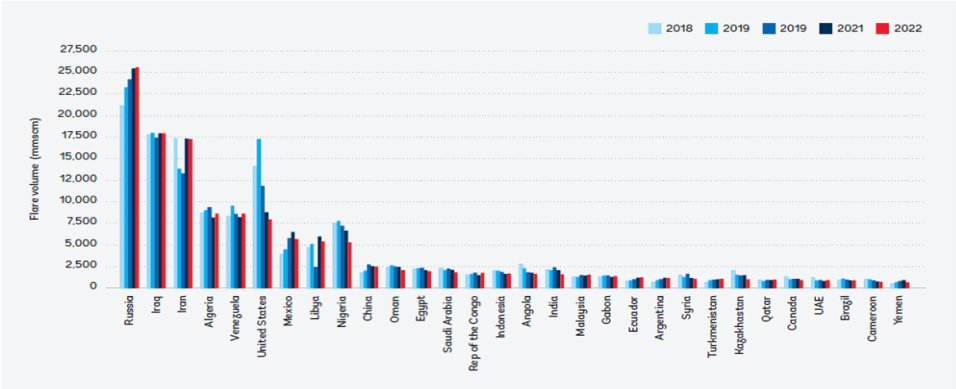
[125] "Celebrating the Tenth Anniversary of the Israeli Gas Revolution!", Natural Resources Administration Natural Gas Authority, August 15, 2023. https://www.gov.il/en/departments/news/news-020823.

[126] S. Wrobel, "Israel officially recognizes Energean's Katlan reservoir as a natural gas discovery", The Times of Israel, June 1, 2023. https://www.timesofisrael.com/israel-officially-recognizes-energeans-katlan-reservoir-as-natural-gas-discovery/.

[127] "A Decade of Israel's Natural Gas Revolution. Special report: the Natural Gas Economy 2023", op.cit.

[128] "Global Gas Flaring Tracker Report 2023", Global Gas Flatinrg Reduction Partnership, IBRD - World Bank, March 2023. https://thedocs.worldbank.org/en/doc/5d5c5c8b0f451b472e858ceb97624a18-0400072023/original/2023-Global-Gas-Flaring-Tracker-Report.pdf.

Flare volumes for the top 30 flaring countries from 2018 to 2022 (sorted by 2022 flare volume)



Source: Global Gas Flaring Tracker Report 2023[129]

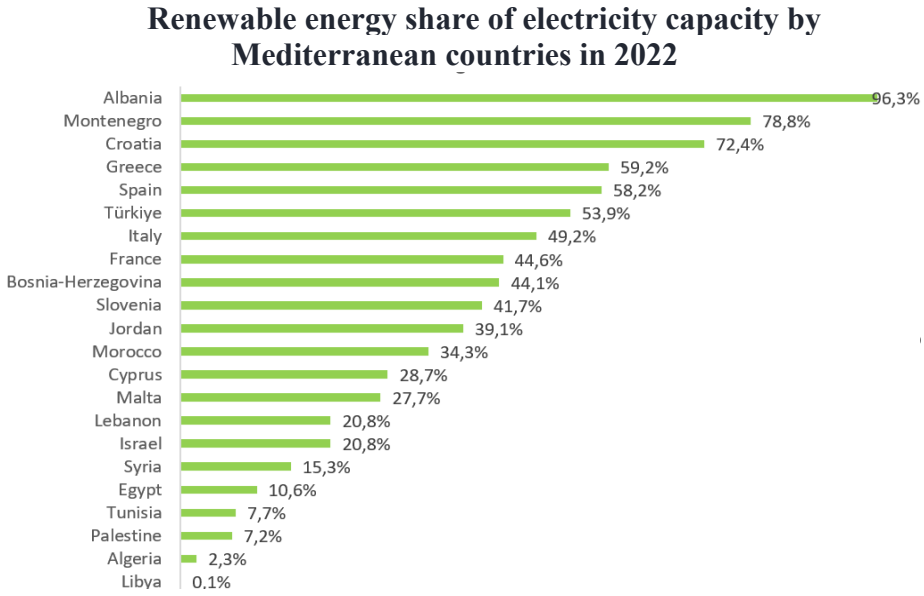
The same can be said about the intensity of CO_2-emissions per barrel of oil produced, in which Syria has the unenviable record as the country with the highest levels of flaring intensity in the world.

The Mediterranean region is still largely dependent on Oil&Gas, with fossil fuels making up more than 60% of the energy mix in the Northern Mediterranean states and more than 90% in the South.

In recent years international protocols and agreements brought to a decarbonisation process that has been put in place in most of the Mediterranean countries but with different results and at different paces. EU countries are generally ahead of most of their neighbors when it comes to solar, wind and biomass energy production. But many countries in the southern shore of the basin have huge potential, already under use. For example, Morocco has a photovoltaic power output between 4.33 and 5.54 kWh/kWp, double than Germany's one, which is a leading EU country in solar power production[130].

[129] *Ibidem.*

[130] "Global Solar Atlas", The World Bank and the International Finance Corporation. https://globalsolaratlas.info.



Source: IRENA[131]

Mediterranean countries could undertake a rapid and uninterrupted path towards an increase of RES' contribution to energy production and consumption, even if many obstacles should be removed, considering bureaucratic and legislative bottlenecks, infrastructural constraints and lack of investment[132].

From this point of view, the EU's long-term climate strategy, with the Fit for 55 legislation package possibly playing a key role in catalyzing shifts in other Mediterranean countries from fossil fuels into RES, as the October 2022 "Green Partnership Deal" signed between the EU and Morocco has shown[133].

[131] "Renewable energy statistics 2023", International Renewable Energy Agency (IRENA), 2023. https://www.irena.org/Publications/2023/Jul/Renewable-energy-statistics-2023.

[132] "How the Mediterranean could become a green-energy powerhouse. And what could hold it back", The Economist, December 12, 2023.

[133] "The EU and Morocco launch the first Green Partnership on energy, climate and the environment ahead of COP 27", European Commission, October 18, 2022. Accessed February 17, 2024. https://neighbourhood-enlargement.ec.europa.eu/news/eu-and-morocco-launch-first-green-partnership-energy-climate-and-environment-ahead-cop-27-2022-10-18_en.

SECURITY AND DEFENCE IN THE MEDITERRANEAN AND IN THE ARCTIC

ANDREAS ØSTHAGEN – MARCO DORDONI

THE MEDITERRANEAN

Beyond the Mediterranean's cultural and historical significance, the region holds profound geopolitical importance in contemporary times, particularly concerning the concept of security[1], i.e., the complex interplay between geopolitical, social, and economic factors that have a paramount impact on the region's stability.

International cooperation and strategic foresight are crucial to today's geopolitical context of the Mediterranean region and will impact not only the regional actors, e.g. Member States of the European Union, but also the broader transatlantic alliance (i.e. NATO). The different nature of the challenges in the Mediterranean Sea namely strategic location, energy resources, migration challenges, naval power dynamics, and the presence of transnational threats (e.g. organized crime) leads to a link of geopolitical importance with far-reaching implications for the security of nations bordering on its shores.

The historical perspective on Mediterranean security

From the root of the word Mediterranean, it is easy to understand the strategic importance of this sea. "Mediterranean" is derived from the Latin word "Mediterraneus," meaning "in the middle of the lands". The Greek Empire was one of the first populations that benefited from the strategic position of the Mediterranean Sea, conquering the lands that faced it. Ensuring security in the Mediterranean Sea was a priority for the British Empire, which, before becoming a global empire, held a significant presence in the Mediterranean through the control of the Strait of Gibraltar, Sicily, the

[1] M. Molinari, *Mediterraneo conteso. Perché l'Occidente e i suoi rivali ne hanno bisogno*, Milano, Rizzoli Editore, 2023, p. introduction.

Suez Channel, and the islands of Malta and Cyprus[2]. The access to the Mediterranean Sea was also, and still remains, strategic for the Russian Federation, as it had been for the Tsarist and the Soviet Russia. The historical objective of Russia is entry to the "warm seas'". The First Crimean War of 1853, initiated by the Russian attack on the Ottoman Empire districts and strongly desired by Tsar Nicolas I, aimed to occupy Crimea to gain control of the Black Sea[3]. This strategic move would provide easy access, through the Bosphorus and the Dardanelles Strait, to the "warm sea": the Mediterranean Sea[4]. With the dissolution of the Ottoman and Austro-Hungarian empires at the end of the First World War the Mediterranean scenario changed radically. The emergence of new states redefined regional balances. It was primarily the efforts of the League of Nations that altered the situation in the Mediterranean. Through Type A mandates, all the territories formerly part of the Ottoman Empire were divided between the two predominant powers of the time and the victors of the war, namely Great Britain and France. Syria and Lebanon to France, while Palestine, Jordania, and Iraq to Great Britain. The Second World War did not significantly impact the balance in the Mediterranean, much like the First World War. It was the post-war events that once again reshaped the regional scenario. On one hand, the wave of decolonization brought important Mediterranean States to become independent such as Algeria, Tunisia, and Morocco. On the other hand, in 1956 the Crisis of the Suez Channel led to two different but contextualized phenomena within the Mediterranean region, the definitive reorganization of British power and a division between the northern and southern parts of the region marked a significant shift. The countries in the southern part sought to establish their autonomous roles within the region, emancipating themselves from the powers that had previously subjugated them. This sentiment is still evident in the region. The onset of the Palestinian-Israeli wars and the conflict in Lebanon had profound implications for the regional and international security of the Mediterranean Sea during the Cold War.

---

[2] R.Holland, *Blue-Water Empire: The British in the Mediterranean since 1800*, London, Penguin Books, 2012, p 147-185. J. Darwin, *THE EMPIRE PROJECT The Rise and Fall of the British World-System, 1830–1970*, Cambridge, Cambridge University Press, 2009, p. 1- 6 (Introduction)

[3] S. Flanagan, A. Binnedijik, I.Chindea,K.Costello,G.Kirkwood,G.Massicot, C.Reach, Russia, *NATO, and Black Sea Security*, Santa Monica, Rand Cooperation, 2020, p. 11-25.

[4] P. Renouvin, *Il SECOLO XIX 1815-1871: l'Europa delle nazionalità e il risveglio di nuovi mondi,* Firenze, Vallecchi Editore, p.331-332.

These situations witnessed the United States becoming involved in the Mediterranean theater, a region in which it had not been particularly interested until then. The 1990-91 Kuwait crisis and the military invasion of Iraq in 2003 added value to the United States presence and influence in the Mediterranean and specifically in its Eastern area.

The 21st century saw significant evolutions in the Mediterranean basin, basically highlighting the different security perspectives that European Countries and the United States have been showing following the 9/11's "war on terrorism", the implications of the Arab Springs with their impact in producing the crises in Libya and Syria and the migration crises that have been affecting the basin. Parallel to that, the geopolitical and geo-economic developments characterizing the global dynamics have also influenced how this region is perceived by historical and new pivotal actors at international and regional level. From this point of view, the Mediterranean has been experiencing an increasing influence of China. As it became the concluding stage of the new Silk Road, enabling China's transition from a developing power to a global superpower[5]. China's Mediterranean entry has further introduced destabilization to the region, even raising the question that its significant involvement in crucial European ports might soon evolve into a more concrete form, a military one[6].

On the contrary, and from Washington's perspective, the Mediterranean appeared to be lacking a strategic approach, bringing to a specific and focused set of actions:

«The United States' Mediterranean engagement is old and multi-faceted. But it has rarely if ever been accompanied by a strong sense of the Mediterranean as a coherent strategic space, and area of U.S. interest per se»[7].

Key examples have been the United States' postures *vis-à-vis* the Libyan and Syrian crisis and particularly the "Leadership from behind" approach with the NATO intervention against the Qaddafi's

[5] L. Basagni, "The Mediterranean Sea and Its Port System: Risk and Opportunities in a Globally Connected World", in S. Colombo, E. Soler (Eds.), *Infrastructures and Power In The Middle East And North Africa*, Barcelona, European Institute of the Mediterranean, 2020, p. 12-33.

[6] S. Rhode, "China's Emergence as a Power in the Mediterranean: Port Diplomacy and Active Engagement" in Otte. T *Studies in Diplomacy and Statecraft,* London, Routledge, 2022, p.22

[7] I. O. Lesser, "The United States and the Future of Mediterranean Security: Reflections from GMF's Mediterranean Strategy Group'', *Mediterranean Policy Program*, German Marshall Fund of the United States, April 2015, p. 5.

regime in 2011. Although with a wide spectrum of positions, decision-makers in the United States kept on considering the Mediterranean a sort if "route" rather than a "quadrant":

«...a strategic passageway for oil from the Gulf and North Africa and for American troops. No need for a strategy, therefore, for a corridor»[8].

The lack of a specific strategy on the Mediterranean from the United States has been adding complexity to how its European partners in NATO could address the multiple challenges they had to cope with in the last three decades. Nevertheless, a lack of strategy does not mean a lack of interests: a key aim of U.S. authorities in the Mediterranean is to maintain influence in the region without having to bear the burden of security, specifically in the Eastern part of the region, that might necessitate military interventions, both costly from the political and financial point of view[9]. The recent evolutions, starting from the Gaza crisis in October 2023 and the Houthi attacks in the Gulf of Aden, together with Russian activism have brought Washington's foreign policy to, at least, reframe its positions.

The current complex governance upon the Mediterranean Sea

The role of Russia in the Mediterranean stability

Today two of the hot spots for Mediterranean security are the Bosphorus Strait and the Dardanelles Strait. The Eastern Mediterranean region emerges as a pivotal geopolitical arena, with the Bosphorus-Dardanelles strait assuming a central role. This strategic waterway holds considerable significance, notably due to the substantive presence and vested interests of Russia. With the first Russian escalation in Ukraine in 2014, with the unilateral annexation of Crimea and the subsequent invasion of the Donetsk Region in 2022, it has been two years that have underlined the importance of this part of the world.

More than a hundred and sixty years later from the First Crimean War (1853-1856), the passage to the Black Sea to land in the Mediterranean Sea remained the final target for the Russian

[8] A. Benantar, "What Role Does the USA Play in the Mediterranean?", *IEMed Mediterranean Yearbook 2009*, p.40. Accessed February 10, 2024 https://www.iemed.org/wp-content/uploads/2021/03/What-Role-Does-the-USA-Play-in-the-Mediterranean.pdf

[9] M. Yegin, "United States Policy in the Eastern Mediterranean'', *Comp. Southeast Europ. Stud*,70:3, 2022; p. 439–461

Federation, in the past Russian Empire. To fulfill this wish would require the port of Odessa, a goal not achieved by Tsar Nicholas I and not even by Putin so far[10]. Russia's presence in the Mediterranean extends beyond the north-western portion; in recent years, Russian influence has also reached the southeastern coasts[11]. Russian military intervention in Syria in 2015, involvement in Libya with support for Haftar, connections with Egypt and Algeria, and its presence through the Wagner group in the Levant and Sahel Region suggest that, despite not being a Mediterranean coastal country, Putin's Russia should be considered a significant actor in the Mediterranean region. Today, Russia maintains two military bases in Syria: a naval base at the Port of Tartus and an airbase at Khmeimim. Additionally, Russian private military contractors (PMCs) exert significant control over various air bases across Libya.[12] Those two new military bases are planned in Sudan and Eritrea, both of which will be strategically important naval bases to add a Russian footprint in the Red Sea[13]. In recent years, Russia has deployed PMCs not only in Syria and Libya but also in other strategically significant African states such as Egypt and Sudan, which play crucial roles in regional stability. Furthermore, Russia is a major weapons' supplier to many states in the region, including Iran, particularly in the procurement of drones[14]. As such, Russia's main objectives in the region are twofold. Firstly, it aims to establish a deterrent against NATO by leveraging its presence in the region. Secondly, in the context of great power competition, Russia

[10] U. Poletti, "Odessa: The Forbidden Dream Of Russia", PortCity Futures, 20 May 2022, https://www.portcityfutures.nl/news/odessa-the-forbidden-dream-of-russia

[11] C. Brandsma, "NATO and the Mediterranean", IEMed Mediterranean Yearbook 2019, December 2019, https://www.iemed.org/publication/nato-and-the-mediterranean/

[12] H. Notte, J. Alterman "Russia in the Middle East After Ukraine" Centre for Strategic and International Studies, 24 January 2023, https://www.csis.org/analysis/russia-middle-east-after-ukraine.

[13] A.McGregor "Russia in the Red Sea: Port Options in Eritrea" The Jamestown Foundation, 6 November 2023, https://jamestown.org/program/russia-in-the-red-sea-port-options-in-eritrea-part-two/. C. Doxsee"How Does the Conflict in Sudan Affect Russia and the Wagner Group?" Centre for Strategic and International Studies,20 April 2023 https://www.csis.org/analysis/how-does-conflict-sudan-affect-russia-and-wagner-group. The Maritime Executive "Sudan's Leader Agrees to Host Russian Naval Base on Red Sea", 12 February 2023, https://maritime-executive.com/article/sudan-s-leader-agrees-to-host-russian-naval-base-on-red-sea.

[14] ISPI, "Russian Relations With the Middle East After Putin's Invasion of Ukraine" ISPI Website, 11 September 2023, https://www.ispionline.it/en/publication/russian-relations-with-the-middle-east-after-putins-invasion-of-ukraine-143131. Stockholm International Peace Research Institute (SIPRI) "SIPRI Arms Transfers Database" Updated 2022, https://www.sipri.org/databases/armstransfers.

seeks to assert itself as a key player in every conflict scenario, signaling its status as a global power[15]. However, Russia is not the only actor with competing stakes in the Mediterranean.

Chinese influence in the Mediterranean basin

Also for the People's Republic of China, the Mediterranean comprises the final stage of the Silk Road branch directed toward Western countries, namely European ones, by sea. Enormous investments in the ports of Piraeus and Thessaloniki in Greece, Taranto, Trieste, and Venice in Italy, Marseille in France, and Malta signify a strategic move, ensuring a stable presence of China in the Mediterranean[16].

Likewise, in other regions e.g. the Arctic region, the proximity between China and Russia has been realized also in the Mediterranean Sea. Russia-China cooperation relies on a shared desire to erode U.S. and EU influence in the Region. Both countries aim to pursue this goal through different means. China prioritizes its economic interests and influence while Russia focuses on security presence to deny the NATO ability to control this area. To facilitate this situation is the lack of EU efficacy in the crisis i.e. Syria, and Libya, and a progressive U.S. retreat, which has created a vacuum that Russia and China have tried to fill[17]. In recent years, China has also intensified its military cooperation with key coastal actors, notably Egypt, and has forged relations with non-Mediterranean nations capable of exerting significant influence in the area such as Saudi Arabia, Iran, and Turkey[18].

The United Kingdom

The United Kingdom, being a historical maritime power, still maintains significant interests in the Mediterranean, revolving around

[15] H. Notte, J. Alterman "Russia in the Middle East…, op cit.

[16] E. Bonini "La Cina controlla i porti dell'Ue, così Pechino influenza l'Europa" EU News, March 1, 2023, https://www.eunews.it/2023/03/01/cina-controlla-porti-ue-influenza-europa/

[17] J. Townsend, A. Kendall-Taylorr, D. Shullman and G. McKinley, "Russia-China Cooperation in the Mediterranean" Center for a New American Security, September 1, 2021, p. 11-13

[18] K. Nguyen & P. Singer, "How China is winning the Middle East", Defense One, 19 January 2024,
https://www.defenseone.com/ideas/2024/01/how-china-winning-middle-east/393483/

three strategic nodes that have shaped its history: Gibraltar, Cyprus, and Malta. Valletta, the capital of Malta, remains a port of call for Royal Navy patrols traveling to and from the Gulf, the Horn of Africa, and the Indo-Pacific. The resurgence of Russian influence in the Near East, its presence in the Mediterranean basin, and the ongoing conflicts in Syria, Gaza Strip, and the civil war in Libya underscore the logistic relevance of the UK's National Security Doctrine and its military bases in Cyprus and Gibraltar[19].

Turkey: new crucial actor within the Mediterranean Sea

Turkey is a very curious observer towards the future development of the Mediterranean Sea. Turkey is a crucial factor in managing many of the security threats on NATO's southern flank. At the same time, it poses a challenge in itself. During the last years, the crisis over the Syrian Kurdish People's Protection Units in the fight against the Islamic State in Syria led Turkey to move away from Western positions, particularly from the United States, approaching Russia[20]. The ambiguous position maintained in the Ukrainian-Russian crisis also caused ruptures within the NATO coalition, accusing Turkey of exhibiting a certain level of autonomy in conducting its foreign policy in recent years. Another outstanding issue with the West is the status of Cyprus. On a strategic level, the importance of the island of Cyprus cannot be overlooked, especially considering Turkey's claim to a portion of its territory[21]. Cyprus, in addition to hosting vast oil fields in its territorial waters, is home to a large British military base on its territory. Recently, from this base, countermeasures have been initiated to address and alleviate the crisis in the Red Sea[22].

---

[19] M. Graves, "The British Presence in the Mediterranean Post-Brexit" IEMed Mediterranean Yearbook 2020, 2020
https://www.iemed.org/publication/the-british-presence-in-the-mediterranean-post-brexit/
United Kingdom Cabinet Office "National Security Capability Review" March 2018
https://assets.publishing.service.gov.uk/media/5af1991040f0b642e2d8fa06/6.4391_CO_National-Security-Review_web.pdf

[20] S. Neset, Aydin. M, Balta. E, Ataç. K, Bilgin. H, Strand. A, "Turkey as a regional security actor in the Black Sea, the Mediterranean and Levant Region", CMI Michelsen Institute, CMI Report 2, 2021, p.18-28

[21] K. Ulusoy, "The Cyprus Conflict: Turkey's Strategic Dilemma", Journal of Balkan and Near Eastern Studies, VOL. 18, NO. 4, p. 393–406

[22] H. Smith, "Cyprus faces backlash over use of British bases to bomb Houthis", The Guardian Online, 20 January 2024, https://www.theguardian.com/world/2024/jan/20/cyprus-faces-backlash-over-use-of-british-bases-to-bomb-houthis

Other relevant actors

Beyond "known" superpowers and regional actors, nowadays geopolitical and geo-strategic Mediterranean scenarios are increasingly characterized by the role of some middle-eastern emerging powers, and mainly Saudi Arabia and Iran.

Saudi Arabia is now a major economic force propelled by a well-established oil industry. Saudi Arabia, positioning itself as a power not aligned but capable of participating based on its interests, is actively seeking a distinctive status as a major player in international relations and within the Mediterranean dynamics too[23].

The "Elephant in the room" in the current Mediterranean security is Iran. Tehran has consistently exploited unstable situations to play a prominent role in international politics and has recently chosen to directly challenge the West by leveraging the historic Palestinian-Israeli conflict[24]. The most impactful approach is to target strategic points where the West conducts its economic activities, with the Red Sea being one such crucial location. This intention is evident behind the substantial supply of armaments to the Houthis, who control the Yemeni coast. In other terms, the design of Iran is to generate instability at the mouth of the Mediterranean to create it even inside the Mediterranean basin[25].

Some Mediterranean strategic spots for regional security

The Pillars of Hercules, as the ancient Greeks called the Strait of Gibraltar, continue to be a strategic focal point concerning the defense of Mediterranean interests for the actors involved. The Strait of Gibraltar is where two of the most important military bases of the United States and Great Britain are located and where the defense strategies of the area are planned[26]. The political and security situation in Libya today is characterized by complexity and instability. Libya is still divided into rival factions, with two main centers of power: the

[23] A. Ehteshami, A. Mohammadi, "Re-imagining Mediterranean Geopolitics: The Role of Eight Key Powers", Medreset Methodology and Concept Papers, 2016, https://www.iai.it/sites/default/files/medreset_cp_3.pdf.

[24] S. Khazaeli, "Iran's strategy in the Middle East and Mediterranean region: the Hezbollah model" HybridCoE, Research Report 5, 2022, p.70-79

[25] A. Vatanka, "The Houthis, Iran, and tensions in the Red Sea", Middle East Institute, 11 January 2024, https://www.mei.edu/publications/houthis-iran-and-tensions-red-sea.

[26] H. Admiral Train, *Maritime strategy in the Mediterranean*, Taylor, and Francis Online, 2008, p.49

internationally recognized Government of National Accord (GNA) based in Tripoli, and the Libyan National Army (LNA) led by General Khalifa Haftar, based in the east of the country[27]. These divisions contribute to ongoing political instability. On one hand, this political instability is seen as a disadvantage for the States of the European Union, in particular Italy, which no longer finds a real interlocutor representing the entire country, in particular for the issue of migrants[28]. On the other political chaos favors the infiltration of external powers (e.g. Turkey, Russia through the Wagner group, Egypt, and the United Arab Emirates) and the proliferation of the presence of transnational threats (e.g. organized crime)[29].

While not geographically placed on the shores of the Mediterranean Sea, the Sahel region has become a key area for the security and stability of the Mediterranean. The Sahel region, spanning across several African nations, is grappling with complex challenges such as radical and terrorist groups such as Al-Qaeda in the Islamic Maghreb (AQIM), Boko Haram, and the Islamic State in the Greater Sahara (ISGS), weakness of Institutions, migration and illicit trafficking and humanitarian crises[30]. The interconnection of these challenges makes the Sahel region a global concern, with impacts on security not only at the local level but also regionally and internationally. The region has become a potential breeding ground for terrorism and organized crime. The threat of cross-border movements, including illicit activities and the potential spillover of conflicts, underscores the interconnectedness of security dynamics between the Sahel and the Mediterranean. Addressing the challenges in the Sahel is crucial for fostering stability in the broader Mediterranean region[31].

The Syrian civil war outbreak in 2011 has left its traces on the current security of the Mediterranean. This conflict created a

[27] Center for Preventive Action "Civil Conflict in Libya" Council of Foreign Relations, 19 September 2023 https://www.cfr.org/global-conflict-tracker/conflict/civil-war-libya.

[28] E. Cusumano & M. Riddervold, "Failing through: European migration governance across the central Mediterranean", Journal of Ethnic and Migration Studies, 49:12, 2023, p. 3024-3042.

[29] United Nations Security Council, "As Foreign Interference in Libya Reaches Unprecedented Levels, Secretary-General Warns Security Council 'Time Is Not on Our Side', Urges End to Stalemate", 8 July 2020, https://press.un.org/en/2020/sc14243.doc.htm.

[30] UNHCR, "Sahel 2024 situation overview", UNHCR Global Focus, 18 December 2023, https://reporting.unhcr.org/operational/situations/sahel-situation

[31] United Nations, "Security situation in Sahel remains very worrying, Security Council warned", UN Global Perspective Human stories, 16 May 2023, https://news.un.org/en/story/2023/05/1136712.

humanitarian crisis of enormous proportions influencing the stability of neighboring countries, including Mediterranean nations like Turkey, Lebanon, and Jordan. In addition, after this crisis, Syria is entangled in complex regional dynamics, including relations with Israel, the Gaza Strip, Lebanon, Iranian involvement, and the rivalry between Riyadh and Tehran[32]. These dynamics make the Eastern Mediterranean one of the more complex and delicate places in the entire region.

There is also the climatic factor, which increasingly endangers the lives of many individuals through extreme natural phenomena. This situation is closely linked to the concept of human and economic security as it can exacerbate all the situations of instability described above: for this reason McDonald called it "climate security"[33]. The climate change impact could be a cause of the conflict because it can amplify existing challenges in the Mediterranean. In particular, the increased frequency of extreme events such as rising sea levels, floods, desertification, and drought can exacerbate the humanitarian challenges associated with migration, making the already critical situation of irregular migration and refugee flows unsustainable[34].

NATO Southern flank: the maritime strategy in the Mediterranean Sea

The outbreak of the War in Ukraine, paradoxically, has convinced all NATO members of the usefulness of its southern flank, erasing the skepticism manifested during the last decade and united around the idea that NATO must be the main entity ensuring security in this region by bringing together all its members, especially the regional ones[35]. In the Mediterranean basin, NATO faces a set of diverse, interlinked challenges. Some are familiar, others new; some are from within the region, others from beyond its borders, and still others are

[32] J. B. Alterman, H. A. Conley, *Syria, Turkey, and the Eastern Mediterranean*. Center for Strategic & International Studies, 2018, p.1-4. T. Carpenter, "Tangled Web: The Syrian Civil War and Its Implications" in *Mediterranean Quarterly*, Duke, Duke University Press, 2013 Vol. 24 (1), p. 1–11.

[33] M. McDonald, "Discourses of climate security", Political Geography, 33, 2013 p. 42-51. F. Fusco, "Climate Change and Security in the Mediterranean" Istituto Affari Internazionali, 4 March 2022, https://www.iai.it/sites/default/files/iai2204.pdf.

[34] For a broader perspective of Climate change related issues in the Mediterranean see the "Climate Change and Energy Security in the Arctic and the Mediterranean" chapter of this volume.

[35] S. Schnaufer II. , "To the Bastion: NATO's Return to Europe Leaves Its Troubled Southern Flank Open for Competition" in Farhadi et al *The Great Power Competition Volume 5*, New York, Springer Link Publisher, 2023, p. 309-324

looming on the horizon. Since its inception in 1994, the Mediterranean Dialogue has been a pivotal platform for NATO's active engagement in ensuring security in the Mediterranean region. After the 9/11 terrorist attacks against the United States in 2001 NATO launched Operation Active Endeavour. It was an Article 5 operation in the Mediterranean for helping to deter terrorist activity in the Mediterranean Sea and secure one of the busiest trade routes in the world.

The international context has undergone significant changes since 2001. In the globalized economy, the world's seas and oceans hold paramount importance, with 90 percent of all traded goods transported by sea. Furthermore, communication cables on the seabed carry 95 percent of the world's cyberspace traffic. The Mediterranean Sea is no exception. The Mediterranean is also an energy provider as it gives access to significant natural resources (large gas deposits). Nations seek to secure their energy needs (e.g. Israel, Cyprus, and Turkey) but this may also lead to tensions or conflict over economic gains. During the Warsaw Summit in 2016 to tackle these challenges NATO launched Operation Sea Guardian focusing on the Mediterranean. It has covered three main tasks: support maritime situational awareness, support maritime counterterrorism, and contribute to maritime security capacity building[36]. The different nature of these challenges, i.e., strategic location, energy resources, migration challenges, naval power dynamics, and the presence of transnational threats (e.g. organized crime) leads to a link of geopolitical importance with far-reaching implications for the security of nations bordering on its shores. The escalating complexity of governance in the region prompted NATO to readjust its strategy in particular in the Mediterranean. Presently, NATO faces new challenges in the Mediterranean basin, compounding the existing complexities in the region[37].

The outbreak of the war in Ukraine appears to have triggered a chain of reactions, transforming this regional conflict into a new confrontation between East and West—a conflict not only of weapons but also of values. Reiterating the complexity of the region, the

[36] North Atlantic Treaty Organization, "Operation Sea Guardian", NATO Website, Last updated 26 May 2023, https://www.nato.int/cps/en/natohq/topics_136233.htm.

[37] P. Morcos, L. Simon, "NATO and the South after Ukraine", Center for Strategic & International Studies (CSIS), May 2022, https://www.csis.org/analysis/nato-and-south-after-ukraine.

Israeli-Palestinian conflict on October 7, 2023, further highlighted the intricate dynamics in the Mediterranean. The last NATO Strategic Concept, drafted in 2022 after the Madrid Summit, underscores the imperative for the Atlantic Alliance to adapt to an evolving and increasingly insecure international order[38]. As reported in the last Mediterranean Security Agenda drafted by the NATO Parliamentary Assembly, the Alliance must be able to securitize the three strategic points within the Mediterranean basin: access to the Atlantic Ocean, the Red Sea, which leads to the Indian and Pacific Oceans, and the Black Sea, which leads to Eastern Europe and Russia[39].

The NATO Southern flank is also threatened by underwater threats. Since the Russian invasion of Ukraine NATO has focused on detecting Russian submarines in the Mediterranean Sea which reflects the ongoing technological competition and strategic concerns between NATO countries and Russia. Submarine activities in this region have been a point of interest for both military sides due to their potential impact on maritime security and regional control.

The Mediterranean area is also crucial for the underwater infrastructure that runs on the seabed. It hosts four crucial natural gas pipelines vital for the EU's energy supply and approximately 250 cable systems keys in connecting the EU to the global internet[40]. NATO's Vilnius Summit Declaration underscores the organization's role in protecting these Critical Undersea Infrastructures (CUI) from the growing number of external threats[41]. NATO is recognized as the

[38] North Atlantic Treaty Organization, "Strategic Concept 2022", NATO Library, 29 June 2022,
https://www.nato.int/nato_static_fl2014/assets/pdf/2022/6/pdf/290622-strategic-concept.pdf.

[39] S. Krimi, "NATO and The Mediterranean Security Agenda", NATO Parliamentary Assembly, 24 November 2021, https://www.nato-pa.int/document/2021-nato-and-mediterranean-security-agenda-krimi-report-021-pcnp-21-e.

[40] M. Moreno Minuto"La competizione strategica per il dominio delle infrastrutture critiche underwater: controllo e tutela delle dorsali dati" in *Le sfide multidimensionali ed emergenti del Mediterraneo allargato: quale ruolo dell'Italia"* Rivista Trimestrale della Società Italiana per l'Organizzazione Internazionale, Q. 26, 2023 p. 19-22

[41] C. Wall, P. Morcos "Invisible and Vital: Undersea Cables and Transatlantic Security", 11 June 2021
https://www.csis.org/analysis/invisible-and-vital-undersea-cables-and-transatlantic-security. *See* for example the recent Balticconnector pipeline incident and last year's Nord Stream pipeline explosions which highlighted the risk of deliberate damage to CUI across Europe. M. Cavcic "Following incident, Balticconnector pipeline capacity getting a boost to strengthen regional gas system", Offshore Energy, 23 November 2023,

primary actor capable of deterring and preventing hybrid attacks on its allies' critical infrastructure[42]. This factor is of high relevance in the Arctic area too.

The Arctic

Geopolitical tensions and competing for influence in the Arctic have intensified over the past few years. Although there is limited chance of direct competition for resources in the Arctic, the Russian annexation of Crimea in 2014 led to a halt in security cooperation with Russia and there has subsequently been an uptake in military exercises and bellicose rhetoric from Russia about the "threat" from the West. The Russian full-scale invasion of Ukraine in February 2022 marks an additional watershed in relations between the West and Russia, including in the Arctic, as also cooperation in non-security domains was halted and further sanctions on Russia were put in place.

Moreover, the Russian invasion of Ukraine further underscores another trend in the Arctic, namely the increased engagement of China in Arctic issues, as well as Russian-Sino political, economic and even military collaboration in parts of the same area. Although China, as many other non-Arctic actors, holds legitimate research and economic interests in the region, there is also an element of "great power competition" driving an Arctic interest. This is not only the case for China, but applies more widely to actors like India, the EU, the UK and even – at times – the United States. These dynamics are, however, different from the immediate security consequences of Russian behaviour in the Arctic, or more accurately, parts of the Arctic.

Finally, despite the increased regional tension and the dividing line between Russia and the other seven Arctic states[43], both Arctic

---

https://www.offshore-energy.biz/following-incident-balticconnector-pipeline-capacity-getting-a-boost-to-strengthen-regional-gas-system/. Security Council Report "The Nord Stream Incident: Closed Consultations", Security Council.org, 7 November 2023, https://www.securitycouncilreport.org/whatsinblue/2023/11/the-nord-stream-incident-closed-consultations.php.

[42] S. Monaghan, O. Svendsen, M. Darrah, E. Arnold, "NATO's Role in Protecting Critical Undersea Infrastructure", 19 December 2023, https://www.csis.org/analysis/natos-role-protecting-critical-undersea-infrastructure.

At the 2023 NATO Vilnius summit, allies agreed to establish the Maritime Centre for the Security of Critical Underwater Infrastructure within NATO's Allied Maritime Command (MARCOM). Within NATO other Centers have Research programs based on studying new systems for securitizing the CUI such as the NATO Centre For Maritime Research & Experimentation based in La Spezia (Italy).

[43] Canada, Iceland, Finland, Norway, Sweden and the United States.

scholars and Arctic states emphasise how the Arctic is a region characterised by the need for mutual cooperation. To sufficiently manage shared marine living resources, measure Arctic-specific effects of climate change, or ensure rights and livelihoods of Arctic indigenous peoples, some form of dialogue and engagement with Russian actors is needed. Moreover, some express a hope that due to Russia's vested interest in low-level of 'softer' forms of collaboration in various issues areas that pertain to the Arctic, this part of the world could be one arena where the 'West' and Russia re-engage politically and economically when, or if, Russia ceases hostilities in Ukraine. What these sets of political dynamics amount to is a complex pattern of 'great power competition' in the Arctic. Furthermore, different security dynamics in the Arctic (or parts of the Arctic) entail varying potential for conflict between Arctic, or non-Arctic, actors.

International Level: Power Balance and Spill Over

During the Cold War, the Arctic played a prominent role in the political and military competition between two superpowers. The region was important not due to conflicts of interest within the Arctic itself but because of its strategic role in the systemic competition between the US/NATO and the USSR at the international level[44]. Norway was one of only two NATO countries (the other being Turkey) that shared a border with the Soviet Union. And Alaska—albeit separated by the Bering Strait—was in close proximity to the northeast of the USSR. Greenland and Iceland were strategically located in the North Atlantic, and the Kola Peninsula was, and still remains, key in terms of Soviet and Russian military planning, as it provides Russian access to the Atlantic Ocean for strategic nuclear submarines[45].

When the Cold War ended, the Arctic went from a region of geopolitical rivalry to one where Russia could be included in various cooperative arrangements with its former opponents. Several regional organizations (such as the Arctic Council, the Barents Council, and the Northern Dimension) appeared in the 1990s to deal with issues such as environmental matters, regional and local development, and cross-border cooperation – and relates to *regional* relations (next

[44] K. Åtland, "Mikhail Gorbachev, the Murmansk Initiative, and the Desecuritization of Interstate Relations in the Arctic," *Cooperation and Conflict*, 43: 3, 2008, p. 289–311.

[45] R. Huebert, "Submarines, Oil Tankers and Icebreakers." I*nternational Journal*, 66: 4, 2013, p. 809–24

section)[46]. Although the interaction between Arctic states and Arctic peoples increased during this period, the region nevertheless disappeared from the geopolitical radar and lost its *systemic* or global significance.

Over the last two decades, the strategic importance of the Arctic region has again increased. As in the Cold War, the strategic importance of the region has grown primarily because Russia is committed to revamping its global militaristic and political position. The Arctic is one of the geographical areas where this can be done more or less unhindered. At the same time, the region is critical to Russia's nuclear deterrence strategy vis-à-vis NATO because of the Russian Northern Fleet, which houses the country's strategic nuclear submarines. Russia's increased military emphasis on the Arctic stems both from the melting of the sea ice that leads to increased shipping activity, and from the importance of the Arctic to Putin's overall strategic plans and ambitions[47].

In turn, especially since the Russian annexation of Crimea in 2014, this has led NATO countries to look north and counter the Russian presence there by increasing their military presence through exercises or maritime security operations in the Barents Sea[48]. With Russia's invasion of Ukraine in February 2022, the security environment in the Arctic has become further tense. Hopes of re-starting security dialogue in the North to reduce tension that emerged around 2019-2020 have been dashed, and sanctions on Russia, as well as halts in dialogue with the country, have been put in place. Finland's and Sweden's subsequent decisions to join NATO in 2022—making seven out of eight Arctic countries NATO members—further solidifies the divisions and spill-over of tensions to the North.

In contrast to what was the case during the Cold War, China has also emerged as a player in the North. When Beijing asserts its

[46] O. Young, "Whither the Arctic? Conflict or Cooperation in the Circumpolar North." *Polar Record*, 45: 1, 2009, p. 73–82. W. Lackenbauer, "Polar Race or Polar Saga? Canada and the Circumpolar World", in J. Kraska (ed) *Arctic Security in an Age of Climate Change*, New York, Cambridge University Press, 2011, p. 218–43.

[47] G. Hønneland, Geir. *Russia and the Arctic: Environment, Identity and Foreign Policy*, London, I. B. Tauris 2016. A. Sergunin e V. Konyshev, "Russian Military Strategies in the Arctic: Change or Continuity?" *European Security*, 26: 2, 2017, p. 171–89. A. Todorov, Andrey, "Russia in Maritime Areas off Spitsbergen (Svalbard): Is It Worth Opening the Pandora's Box?" *Marine Policy,* 122: December, 2020.

[48] D. Depledge, Duncan, "Train Where You Expect to Fight: Why Military Exercises Have Increased in the High North", *Scandinavian Journal of Military Studies*, 3: 1, 2020, p. 288–301.

influence on the world stage, the Arctic is one of many regions where China's presence and interactions are components in an expansion of power, be it through scientific research or investments in Russia's fossil fuel industries[49]. China describes itself as a 'near-Arctic state', which can be perceived as not only having the right to get involved, but also having a duty to do so[50].

But China's entry into the Arctic policy realm elicits reactions, especially in the United States. This has led to the Arctic becoming relevant in the increasing global power competition between China and the United States. US Secretary of State Pompeo's 2019 warning about Beijing's Arctic interests highlights how the United States sees the Arctic as yet another arena where the new systemic competition between the two countries is sharpening[51]. This is to a lesser extent linked to Chinese actions *in* the Arctic; it is more about the United States wanting to blunt China's global growth in as many areas as possible[52]. However, questions about Chinese–Russian cooperation in the Arctic and the effects this could have on regional tension are increasingly on the agenda after the sanctions placed on Russia in 2022.

Thus, tensions arising from issues in other parts of the world (i.e., Ukraine) or *global* power struggles have a spill-over effect for the Arctic: on the rhetorical level in the form of bellicose statements and on the operational level in the form of increased military presence and exercises by NATO and Russia. The Arctic will continue to be on the global political agenda both because of its importance for Russia's strategic thinking and because of increasing Chinese interest in the region that in turn both engender rivalry with the US.

Regional Level: Shared Interests in Stability

[49] A. Edstrøm, I. Stensdal e G. Heggelund, "Den «nye Supermakten»: Hva Vil Kina i Arktis?" *Internasjonal Politikk*, 78: 4, 2020, p. 523–34. L. Guo e S. Wilson, "China, Russia, and Arctic Geopolitics." The Diplomat, 29 March 2020. https://thediplomat.com/2020/03/china-russia-and-arctic-geopolitics/.

[50] The Guardian, "US Warns Beijing's Arctic Activity Risks Creating 'New South China Sea.'" 6 May 2019. https://www.theguardian.com/world/2019/may/06/pompeo-arctic-activity-new-south-china-sea.

[51] US Department of State, "Looking North: Sharpening America's Arctic Focus." Remarks, 2019, https://www.state.gov/looking-north-sharpening-americas-arctic-focus/.

[52] A. Østhagen, "The Arctic Security Region: Misconceptions and Contradictions", *Polar Geography*, 44: 1, 2021, p. 55–74.

There is an important difference between these overall strategic considerations and those security issues concerning the Arctic region in particular. As highlighted, when the Cold War's systemic competition came to an end, regional interaction and cooperation flourished in the North in the 1990s. As the region again gained global attention, in response to the concerns about 'a lack of governance' in the Arctic the five Arctic coastal states gathered in Greenland in 2008 and declared the Arctic to be a region marked by cooperation[53]. They affirmed their intention to work within established international parameters and agreements, especially the UN Convention on the Law of the Sea – highlighting a specific *regional* approach and coherence amongst the Arctic states[54].

Following this meeting, the Arctic states have frequently repeated the mantra of cooperation, articulated in relatively streamlined Arctic policy and/or strategy papers[55]. The deterioration in the relationship between Russia and the other Arctic states in 2014 did not change this[56]. They reconvened in Greenland in 2018 and repeated promises of cooperation and protection of the Law of the Sea, which, after all, gives the Arctic states sovereign rights over large parts of the Arctic Ocean.

The Arctic states have shown a preference for a stable political environment in which they maintain their dominance in the region. This is not only encouraged by regional cooperation but also by economic interests, which are well served by a stable political climate. As a consequence of the melting ice and high raw material prices at the beginning of this century, the Arctic states have looked north both in terms of investment and of opportunities related to shipping, fishing, and oil and gas extraction. Russia's ambitions with the

[53] Arctic Ocean Conference, "The Ilulissat Declaration." Arctic Ocean Conference. Ilulissat, 2008, https://www.regjeringen.no/globalassets/upload/ud/080525_arctic_ocean_conference-_outcome.pdf.

[54] K. Stephen e S. Knecht (eds), *Governing Arctic Change: Global Perspectives*, London, Palgave Macmillan, 2017.

[55] L. Heininen, K. Everett, B. Padrtová e A. Reissell, "Arctic Policies and Strategies — Analysis, Synthesis, and Trends." Laxenburg, Austria, 2020, http://pure.iiasa.ac.at/id/eprint/16175/1/ArticReport_WEB_new.pdf.

[56] M. Byers, "Crises and International Cooperation: An Arctic Case Study", *International Relations*, 31: 4, 2017, p. 375–402. A. Østhagen, "High North, Low Politics Maritime Cooperation with Russia in the Arctic," *Arctic Review on Law and Politics*, 7: 1, 2016, p. 83–100.

northeast passage and industrial activity on the Yamal Peninsula in particular require a presence in the North, but also stability[57].

Russia's invasion of Ukraine in 2022 led to the suspension of cooperation with Russia in various forums such as the Arctic Council and Barents Cooperation. Despite these negative developments, the Arctic countries have still stated a desire to shield the region from conflicts in other parts of the world and cooperate in so-called 'soft' policy areas. However, political cooperation or dialogue with Russia is not possible as of the time of writing and will apparently be very limited in the country in the future.

The question is to what extent the events in 2022 will alter the long-term fundamentals of shared interest amongst the Arctic states. The Arctic is unlikely to figure less prominently in Russian economic development agendas, but this might be counterweighted by its increased strategic importance vis-à-vis NATO. Whether the Arctic Council will ever return to 'normal' remains to be seen, and much depends on the actions of the Putin regime in Moscow.

The National Level: Russian proximity

Finally, to understand the dynamics of security policy in the Arctic, we must include a national perspective on the challenges and opportunities in this domain. Central to this is the role of the region in national defence and security considerations, as there is great variation in what each country chooses to prioritise in its northern regions in terms of national security and defence.

For Russia, as mentioned above, the Arctic is integrated into national defence considerations. Although these are to some extent related to developments elsewhere, investments in military infrastructure in the Arctic also have an Arctic impact, although primarily on the countries in close proximity to Russia (mainly Finland, Norway, and Sweden, and to some extent those in the wider North-Atlantic area and the US across the Bering Sea/Strait). Consequently, the Arctic is also integrated in the national defence policy of the

[57] D. Claes e A. Moe, "Arctic Offshore Petroleum: Resources and Political Fundamentals," in S. Rottem, I. Soltvedt e G. Hønneland (eds), *Arctic Governance: Energy, Living Marine Resources and Shipping*, London, I. B. Tauris, 2018, p. 9-26. A. Jørgensen e A. Østhagen, "Norges Vern Av Suverene Rettigheter Rundt Svalbard: Russiske Persepsjoner Og Reaksjoner (Norway's Defence of Sovereign Rights around Svalbard: Russian Perceptions and Reactions), " *Internasjonal Politikk*, 78: 2, 2020, p. 167–92.

Nordic countries, precisely because it is here that Russia—as a major power—invests some of its military capacity[58].

In North America, the Arctic plays a slightly different role in national security concerns[59]. Although an important buffer vis-à-vis the USSR and later Russia, some have argued that the most immediate concerns facing the Canadian Arctic today are social and health conditions in northern communitie. This does not discount the need for Canada to be active in its Arctic domain and to have Arctic capabilities, but this perspective differs from the crucial role that the Russian land border plays in Finnish and Norwegian security concerns. However, with the Russian invasion of Ukraine in 2022, the debate has (again) emerged if Canada has actually invested sufficiently in Arctic security capabilities to be able to deter Russia in the north[60].

The United States, however, is in a different situation. For Alaska, security relations are indeed defined by its proximity to Russia. Alaska plays a somewhat important role in the US defence policy, with its border with the Russian region of Chukotka across the Bering Strait—albeit it is not comparable to the role of the Russian border in the security policy concerns of Norway (and NATO) due to the presence of Russia's strategic nuclear weapons (submarines and ballistic missiles)[61]. However, this has only to a limited extent attracted the attention of decision makers in Washington, DC. The United States has been reluctant to make a significant investment in capabilities and infrastructure in the North, although the rhetoric around the Arctic hardened under the Trump administration, and decisions were made to invest in new icebreakers for the US Coast Guard[62].

---

[58] D. Depledge e A. Østhagen, "Scotland: A Touchstone for Security in the High North?" *RUSI Journal*, 166: 6–7, 2021, p. 46–63. H. Saxi, "The Rise, Fall and Resurgence of Nordic Defence Cooperation," *International Affairs*, 95: 3, 2019, p. 659–680.

[59] D. Depledge e W. Lackenbauer (eds), *On Thin Ice: Persepctives on Arctic Security*, Peterborough, North American and Arctic Defence and Security Network (NAADSN), 2021, https://www.naadsn.ca/wp-content/uploads/2021/03/Depledge-Lackenbauer-On-Thin-Ice-final-upload.pdf.

[60] E. Blake, "To What Extent Does Russia Present a Real Threat to Canada's Arctic?" CabinRadio, 27 April 2022, https://cabinradio.ca/90997/news/politics/to-what-extent-does-russia-present-a-real-threat-to-canadas-arctic/.

[61] B. Padrtova, "Frozen Narratives: How Media Present Security in the Arctic," *Polar Science*, 21: September, 2019, p. 37–46.

[62] V. Herrmann e L. Hussong, "No UNCLOS, No Icebreakers, No Clue? U.S. Arctic Policy Through the Eyes of Congress, " in J. Weber (ed), *Handbook on Geopolitics and*

The limited involvement of the US in its own 'northern areas' highlights the mentioned differences in the nuanced distinction between the international (system) level and national considerations. At a system level, the United States can and will involve itself in regions such as the Arctic when it coincides with American interests. The activity of the US Sixth Fleet in the Barents Sea in May and September 2020, the reactivation of the US Second Fleet out of Norfolk in 2018 with responsibility for the North Atlantic (i.e. High North), and increased US participation in NATO exercises in Norway since 2014—such as the biannual *Cold Response* exercises and *Trident Juncture 2018*—are examples of the United States' ability and willingness to engage in security policy in parts of the Arctic as required – with a goal to both reassure its Nordic NATO allies and keep a close eye on Russian strategic capabilities on the Kola Peninsula[63].

At the same time, Alaska itself has primarily served as a base for US missile defence and some number of forces (primarily air force) and there is no immediate concern over Russian threatening actions across the Bering Strait – a stark contrast to what the northern border with Russia means to Norwegian defence and security policy. At the same time, we see that increased military activity by Russia and China in the North Pacific and Bering Sea is causing some concern also in Washington DC, and might lead to further priority given to Alaskan/Arctic security concerns by the USA writ large.

Arctic dynamics after 2022

Security and geopolitics in the Arctic region cannot simply be boiled down to a statement of conflict or no conflict. This tenet holds, even after February 2022. The Arctic states have limited reason, if any at all, for entering into direct regional conflict over resources or territory in the whole Arctic region—even if sub-regional or national security concerns persist, such as those between Finland, Norway, Sweden and Russia. These are linked to the defence posture of various Arctic countries, as well as the overarching links between the Arctic region and other domains such as the Baltic Sea.

Still, the war in Ukraine has clear consequences for Arctic security dynamics in several ways. The impression of what is possible

---

Security in the Arctic: The High North Between Cooperation and Confrontation, Cham, Springer, 2021, p. 23–40.

[63] Andreas Østhagen, *The Arctic*..., op. cit.

Russian behaviour changed radically. It strengthens the security policy arguments mentioned above. Although the drivers of the growing tension between NATO / 'West' and Russia are not in the High North or in the Arctic in general, we are already seeing the contours of the consequences along several axes.

The European High North will become even more central to operational defence and security policy thinking in both Norway and NATO in general. This would have been the case even without the Finnish and Swedish accessions: the more tension between NATO and Russia, the more relevant the High North is in terms of deterrence, surveillance and ability to deny Russian access to the North Atlantic / Atlantic at large. These trends are further amplified by the Finnish and Swedish NATO membership.

Although the reason for conflict does not emerge from the Arctic, the Arctic is undoubtedly important for Russian military doctrines and thus also in a larger deterrence perspective as seen from NATO headquarters in Brussels and Mons. Linked, there is a question concerning Russian calculations in the North. Forums for cooperation in the Arctic have been suspended, and thoughts of a security policy dialogue with Russia in the North have been shelved. The goal of reduced tension and dialogue with Russia in the North has been replaced by a halt in cooperation in some areas and an increased need to deter Russia in the High North.

In this context small disputes over sovereign rights at sea, the legal status of passageways or maritime zones, or (un)intended mishaps during military exercises and operations might escalate beyond immediate control. Such escalation could drag the Arctic (or parts of the Arctic) into an outright conflict between Russia and NATO-members.

Additionally, the great power rivalry in the Arctic will increase, as the USA, Great Britain, France, the EU, Turkey, China and – increasingly – India look more to the North for strategic and symbolic reasons as the region is increasingly accessible as well as relevant in global power games. The Arctic will not become less important, simply because the United States and Russia are already in the region, and actors like China, India and the EU are increasingly demonstrating their (strategic) interests in the North. The worse the relationships among these players are globally, the more tension we will see in the Arctic, too, which is materialised by challenging statements, sanctions, and occasional military displays. This became

particularly apparent in 2022 after Russia's invasion of Ukraine. Such tension has little to do with regional issues in the Arctic (ice melting, economic opportunities, etc.), and everything to do with the strategic position that the Arctic holds as a geographic space where these actors engage.

THE EUROPEAN DIMENSION

ANDREAS RASPOTNIK – GIACOMO DI CAPUA – MARCO DORDONI

NORTHERN DIMENSION

Arctic security and cooperation are in flux, so is the region's energy situation and future perspective. Here comes the European Union (EU), a complicated geopolitical creature, constantly in the process of defining what kind of geopolitical actor it wants to be (or is allowed to be by its Member States)[1]. The special nature of the EU in the international context as well as the complicated division of competences between the EU and its Member States make the EU a unique global/Arctic actor, and its relationship with the region intricately complex[2]. Ever since 2007–2008, the EU's main institutions have developed a dedicated set of Arctic-related documents, defined and re-defined their own positions and overall expressed the EU's very own 'Arcticness'—from the Union's geographical and functional Arctic presence to a monetarised (funding for regional development and research) and ecological (the EU's Arctic footprint) presence, to highlight a few[3]. And although the EU has competences in many policies pertaining to the Arctic – either exclusive, shared or complementary with the Member States – foreign and security policy remains a policy domain very much dominated by the 27 Member States. From an EU-Arctic perspective this set-up becomes even more complex as Arctic-related concerns reside in Brussels within the realm of a soft (security) policy – not written into the Treaties, with no distinct budget line and no set rule book on how to contribute to Arctic security[4]. While both the establishment of the

[1] A. Raspotnik, *The European Union and the Geopolitics of the Arctic*, Cheltenham & Northampton, Edward Elgar, 2018.

[2] A. Raspotnik, A. Stępień, "The European Union and the Arctic: A Decade into Finding Its Arcticness", in J. Weber (ed.), *Handbook on Geopolitics and Security in the Arctic: The High North Between Cooperation and Confrontation*, Cham, Springer, 2020, pp. 131-146.

[3] Idem.

[4] A. Raspotnik, "A quantum of possibilities: The strategic spectrum of the EU's Arctic policy", Centre for European Policy Studies, 17 December 2020, https://www.ceps.eu/a-quantum-of-possibilities/.

Barents Euro–Arctic Council back in 1993 and the introduction of the Northern Dimension in 1999 (and 2006, respectively) were aimed at fostering relations with Russia to mutually tackle a broad range of security challenges in the European Arctic, the circumpolar North has hardly been part of any discussions concerning a strategic outlook, lack of capabilities or means for crisis management over the past two decades. As a matter of fact, the EU has rather timidly covered Arctic hard security matters, and has only lightly touched the region in the 2022 Strategic Compass – to name one example[5]. For good reasons and a lack of (legal/institutional) competence, the EU itself has only discussed security in a general, implicit way: the strengthening of low-level regional and multilateral cooperation, allegiance to international legal order and the vision of a cooperative Arctic that is not affected by any spillover effects[6]. Moreover, the EU's Arctic geography – three EU Member States being Arctic states (Denmark, in relation to Greenland, Finland and Sweden), as well as the Union's close relationships with Iceland and Norway – has never translated into a clear EU Arctic *Strategy* that would take account of the security concerns of these countries, including how to manage their Arctic security relations with Russia and increasingly with China. A small but significant step in the EU involvement in the Arctic has been made with the inauguration of the "EU Office" in Nuuk, Greenland, in the width of March 2024. As stated by the President of the EU Commission, Ursula von der Leyen, this initiative "…marks the beginning of a new era of the EU-Greenland partnership, with Europe's concrete presence in Greenland and in the wider Arctic region"[7].

But what does that mean for an *Arctic security situation that is currently in flux*?

[5] Council of the European Union, A Strategic Compass for Security and Defence - For a European Union that protects its citizens, values and interests and contributes to international peace and security, Brussels 21 March 2022.

[6] European Commission e High Representative, A stronger EU engagement for a peaceful, sustainable and prosperous Arctic (JOIN(2021) 27 final), Brussels, 13.10.2021.

[7] "President von der Leyen inaugurates the EU Office in Nuuk and signs cooperation agreements to strengthen the EU-Greenland Partnership", EU Commission Press Release, 15 March 2024, https://ec.europa.eu/commission/presscorner/detail/en/IP_24_1425. Accessed 17 April 2024.

Over the past decade, the EU has felt a need to adapt its posture on the increasingly conflicted world stage, whether because of the emerging great power rivalry, changing transatlantic relationship, more assertive China, or its continuous clashes with Russia. In a post-2014-Crimean Europe, EU-Russia relations have shifted from fostering interdependence to managing vulnerabilities, particularly given the new energy crisis that is forming. In a post-24/2/2022 world, managing these relations are increasingly harder to imagine. As such, Russia's invasion of Ukraine, and its multifaceted issues arising thereof, is only one constituent of multiple intertwined and reinforcing global crises the EU is currently facing – from global climate change to the loss of biodiversity, from energy to food and water security and from social injustice to the ever-increasing global inequality[8].

Given Russia's invasion of Ukraine, fears about conflict in the Arctic are also particularly prescient across Europe, particularly regarding a possible spill-over in tensions from Ukraine, further degrading EU-Russia relationship to the Arctic, where both entities play an important policy role. Parts of the region, especially the European Arctic, is already experiencing an increase in tensions from heightened concerns about submarine cable warfare, disinformation campaigns, as well as military exercises and posturing by Russia – which partly is what led to the applications of Finland and Sweden to NATO. However, while the Arctic remains one of the places with some – maybe also increasing – tension between Russia and the West, when considering relations in Ukraine, Belarus, the Baltic states, the Black Sea and the Middle East, the Circumpolar North is the calmest.

From an energy perspective, it can be generally said that the EU has strong economic ties with all Arctic states. For Norway and (before February 2022) Russia, these trade ties also have (had) a pronounced Arctic dimension, particularly with regard to energy aspects, including offshore hydrocarbons extraction and renewables[9]. In 2006 (and 2009), when Russian supplies to EU Member States were interrupted as a consequence of disputes over gas trade with Ukraine, the question of security of supply became one of the key

[8] S. Žižek, "From Cold War to Hot Peace", Project Syndicate, 25 March 2022, https://www.project-syndicate.org/onpoint/hot-peace-putins-war-as-clash-of-civilization-by-slavoj-zizek-2022-03.

[9] T. Koivurova, A. F. Hoel, M. Humpert, S. Kirchner, A. Raspotnik, M. Smieszek e A. Stępień, "Overview of EU actions in the Arctic and their impact (Final Report - June 2021)".

themes in the EU's energy policy[10]. In 2014, the EU (and other countries) imposed sanctions on Russia, targeting the financial, energy and defence sectors. The sanctions prohibit the sale, supply, transfer, export, and financing of equipment for oil exploration and production in Arctic offshore, deep water and shale formations. However, they did not affect Russian gas exports. In the light of taking stock of the EU's Arctic footprint, the EU's Arctic policy update from 2021 established that the effects of its policies on the demand for Arctic resources constitute an important component of the EU's Arctic engagement[11]. As such, the proposal for banning new Arctic hydrocarbon projects has quickly become the most discussed aspect of the new policy[12]. It called for keeping as much oil, coal and gas in the ground as possible and making a commitment – both in the EU and possibly multilaterally – to agree on not purchasing new Arctic hydrocarbons. In 2022, however, and after Russia's invasion of Ukraine, several sanction rounds were imposed, which led to significant changes in the share of the main energy partners because of the sanctions directly and indirectly affecting the imports of energy products. Russia had been the largest supplier of petroleum oils to the EU in 2021 with a share of 24.8 % (third quarter of 2021). With regard to petroleum oils, the EU ban on seaborne imports of Russian crude oil entered into force on 5 December 2022, followed by the embargo on refined oil products as of 5 February 2023. In the third quarter of 2022, although Russia was still the largest provider of petroleum oils, its share had already dropped to 14.4 %, which - a year later - further dropped to 3.9 %[13]. The situation is rather similar with regard to natural gas where Russia had been the largest supplier to the EU in the third quarter of 2021 with a share of 48.0 %. It was essentially Norway that took the pole position from 2022 onwards with a share of 45,1 & in 2022 and 48,6 % in 2023[14]. From an Arctic perspective, the devil, however, is in the details as the EU has thus far not placed any sanctions on the import of Russian liquefied natural gas (LNG). As a

[10] A. Airoldi, "Security aspects in EU Arctic policy", in G. Hoogensen Gjørv, M. Lanteigne e H. Sam-Aggrey (eds.) *Routledge Handbook of Arctic Security*, Abingdon, Routledge, pp. 337-347.

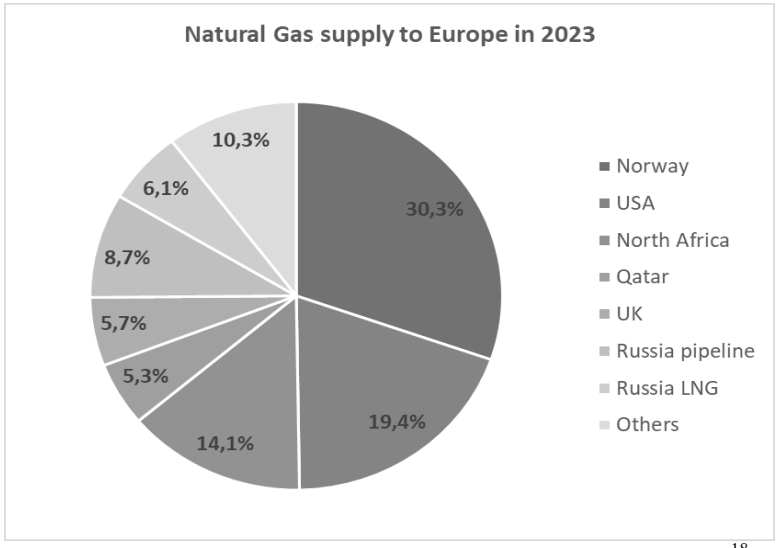
[11] European Commission & High Representative, *A stronger…*, op. cit.

[12] A. Stępień, A. Raspotnik, "Continuity with Great Confidence: The European Union's 2021 Arctic Policy Update", 28 October 2021.

[13] Eurostat, "EU imports of energy products - latest developments", Data extracted in December 2023. https://ec.europa.eu/eurostat/statistics-explained/index.php?oldid=564016#Main_suppliers_of_petroleum_oils.2C_natural_gas_and_coal_to_the_EU.

[14] Idem.

result, the EU remains a destination for 50 % of Russia's LNG exports, sending in excess of 1 billion USD each month to the Russian Federation. While up to 12 EU Member States have received Russian LNG since February 2022, the key importers remained Belgium, France and Spain[15]. As reported, the European ports also facilitate the transshipment of Russian LNG to buyers outside the continent. More than 20 % of Yamal LNG passes through terminals in Europe where it is reloaded from specialized ice-capable carriers to conventional LNG tankers for onward transport[16]. In June 2023 it was indicated that EU Member States received 300 shipments of LNG from Russia since the beginning of the Ukraine War, representing approximately 20 billion USD in revenue for the Russian Federation[17].



Source: European Commission based on ENTSO-G and Refinitiv[18]

[15] M. Humpert, "EU Countries Continue to Import $1bn of Russian Arctic LNG Every Month", High North News, 7 December 2023. https://www.highnorthnews.com/en/eu-countries-continue-import-1bn-russian-arctic-lng-every-month.

[16] A. Hancock, "EU ports help sell on over 20% of LNG imports from Russia", Financial Times, 29 November 2023. https://www.ft.com/content/aff34dec-9fbb-4158-9af8-7a7761b25893. M. Humpert, EU Countries…, op. cit.

[17] M. Humpert, "EU Received 300 Shipments of LNG from Russia Since Beginning of Ukraine War", High North News, 22 June 2023. https://www.highnorthnews.com/en/eu-received-300-shipments-lng-russia-beginning-ukraine-war.

[18] "Infographic - Where does the EU's gas come from?", European Council, https://www.consilium.europa.eu/en/infographics/eu-gas-supply/. Accessed February 15, 2024.

SOUTHERN DIMENSION

Energy developments

The southern borders of the EU represent a fundamental dimension for the Union to navigate its quadruple energy crisis, including the recently-onset energy inflation, new supply risks arising from the diversification of energy providers post-Russian invasion of Ukraine in 2022, dilution of incentives for the green transition due to short-term investment in transitional fossil fuels, and potential lack of solidarity among Member States[19]. As part of the Union's long-term energy ambitions, the Mediterranean partners are today increasingly perceived as prospective energy partners whilst internal solidarity and internal collectivity have been repeatedly identified as strategic objectives to solidify the Union's energetic autonomy amid geopolitical turmoil and urgently-needed decarbonization processes. First, the European strategic autonomy defined in terms of security of energy supply chiefly depends on its external energy relations (especially with its Southern partners), considering its 40% overall dependency on energy imports[20] and that, in 2023, one-third of natural gas imports, indeed, came from the Middle East and the southern Mediterranean[21]. As the Union strives to diversify its gas imports pursuant to its 'Fit for 55' (FF55) objectives, the geographical proximity, abundance of natural resources, and existing energy infrastructure of countries in the Southern and Eastern Mediterranean are beyond attractive[22], while the price premium that an EU in energetic crisis proposes makes it in turn a good prospective buyer for gas from Northern Africa countries like Libya and Algeria[23], as well from Israel and Egypt. Further, green hydrogen – an energy source included in the European Commission's 2020 New Industrial

[19] M. Damen, "Four challenges of the energy crisis for the EU's strategic autonomy", *European Parliamentary Research Service*, 2023, p. 3.

[20] M. Damen, *Four challenges*…, op. cit., p. 8.

[21] The Economist, "Can the Mediterranean become Europe's energy powerhouse?", 13 November 2023, www.economist.com/business/2023/11/13/can-the-mediterranean-become-europes-energy-powerhouse.

[22] V. Ertl, Y. Zegzouti, "Securing Energy, Reshaping Decarbonisation: Reconciling Mediterranean Energy Transitions with Energy Security and Regional Stability", Policy Center for the New South, 2023, https://www.policycenter.ma/publications/securing-energy-reshaping-decarbonisation-reconciling-mediterranean-energy-transitions.

[23] V. Ertl, Y. Zegzouti, *Securing Energy*…, op.cit.

Strategy[24] and New Agenda for the Mediterranean[25] – has quickly become an increasingly popular arena of energy cooperation with the Middle East and North Africa and prospects of future supply of this energy source are increasingly material. At the same time, the expansion of RES-sourced energy production has been identified as strategic to fulfill not only the regional needs for clean energy as per the updated Renewable Energies Directive but also to stabilize the power grids and reach the ambitious climate targets of the FF55 package[26]. In this direction are aimed the initiatives seeking to connect power grids across the Mediterranean. The memoranda of understanding on the EuroAsia Interconnector and EuroAfrica Interconnector, both of which aim to stabilize regional power supply by transferring excess power and balancing energy provision during bottlenecks while preventing power outages, as well as the Elmed Interconnector and Italy-Montenegro-Serbia-Bosnia and Herzegovina Interconnection project are clear-cut examples of this diversification and decarbonization strategy[27,28]. Albeit interconnection remains in its infancy in Euro-Mediterranean energy systems, specific funding instruments, like Connecting Europe Facility, are being deployed to improve power connectivity also with Eastern Mediterranean partners and equip EU energy systems with both resilience and security in a period characterized by unique energetic fragility[29].

Second, novel energy relations with its southern partners follow the rationale of supply diversification and have become a distinctive trait of EU energy strategy in recent years. Following the second revision of the '*REPowerEU*' policy package, EU Member States have established or intensified their energy trade with countries such as Algeria for natural gas[30] and Israel and Egypt for liquified natural gas (LNG)[31], and prospectively evaluated long-term 'clean power'

[24] B. Moreno-Dodson, C. Tsakas, S.P. David, "The Clean Energy Challenges: Sustainability, Decarbonization and Security of Supply in the Euro-Mediterranean Region", *IEMed: Mediterranean Yearbook 2022*, 2022, p. 62-68.

[25] I. Vardakastanis, M.H. De Felipe Lehtonen, "Energy policies and strategies in the Euro-Mediterranean region", *European Economic and Social Committee*, 23 February 2022.

[26] The Economist, *Can the Mediterranean*…, op. cit.

[27] I. Vardakastanis, M.H. De Felipe Lehtonen, *Energy policies*, op. cit., p. 7.

[28] The Economist, *Can the Mediterranean*…, op. cit.

[29] I. Vardakastanis, M.H. De Felipe Lehtonen, *Energy policies*, op. cit., p. 8.

[30] EURACTIV, "EU energy chief praises Algeria 'partnership'", 12 October 2022, www.euractiv.com/section/energy/news/eu-energy-chief-praises-algeria-partnership.

[31] E. Gormus. "Navigating Energy Inflation in the Southern Mediterranean: Challenges and Opportunities for Producing and Importing Countries", *IEMED Mediterranean Yearbook*

exporters like Morocco and Egypt to secure power supply beyond short-term diversification. While the former is particularly well-placed to become a primary RES exporter due to both its geographical proximity and its renewable energy potential (as seen in its 400-megawatt program *Noor PV II*, launched just before the pandemic)[32,33], the latter is positioning its assets to solidify its energy relations with the Union through a dual strategy of continued hydrocarbon exports and strategic investments in RES and green hydrogen[34]. Particularly active in the Euro-Mediterranean energy trade following the discontinuation of Russian imports in late 2022, Germany epitomizes the EU's approach to its southern borders vis-à-vis supply diversification and energy decarbonization. The country has, in fact, on the one hand meaningfully increased the volume of imports from leading Mediterranean players like Algeria[35] while, on the other, engaging in "hydrogen diplomacy" with southern Mediterranean and African partners, which might prove fundamental in decarbonizing the country's heavy industries[36]. It is, however, important to stress how such a European strategy towards its Southern neighbors might also carry novel, untested security-of-supply risks[37]. Moreover, Southern and South-eastern European partners might be severely affected by the carbon border adjustment mechanism included in the EU's FF55 package[38]. In particular, based on 2022 figures for carbon intensity of exports to the EU, Libya, Algeria, Turkey, and Egypt – two of which should be key strategic partners, as mentioned above – would be among the most affected in the region. Going forward, regional electricity market integration could particularly assist in the scale-up of renewable energy by improving flexibility in the power system and optimizing investments[39]. Extending regional grid integration to Southern and South-Eastern partners in the Euro-Mediterranean region could significantly lower prices of decarbonizing electricity and decrease logistical challenges

2023, 2023. https://www.iemed.org/publication/navigating-energy-inflation-in-the-southern-mediterranean-challenges-and-opportunities-for-producing-and-importing-countries/

[32] V. Ertl, Y. Zegzouti, *Securing Energy*…, op.cit.

[33] B. Moreno-Dodson, C. Tsakas, S.P. David, *The Clean Energy*…, op. cit, p. 62-68.

[34] V. Ertl, Y. Zegzouti, *Securing Energy*…, op.cit.

[35] N. Blechner, "Woher Deutschland nun sein Gas bekommt", *Tagesschau*, 23 August 2022, www.tagesschau.de/wirtschaft/gaslieferungen-deutschland-101.html.

[36] The Economist, *Can the Mediterranean*…, op. cit.

[37] M. Damen, *Four challenges*…, op. cit., p. 6.

[38] B. Moreno-Dodson, C. Tsakas, S.P. David, *The Clean Energy*…, op. cit, p. 62-68.

[39] B. Moreno-Dodson, C. Tsakas, S.P. David, *The Clean Energy*…, op. cit, p. 62-68.

in scaling up capacity[40], ultimately facilitating energy exchange beyond short-term, post-2022 supply diversification and towards the FF55 objectives.

Last, internal solidarity and improved regional connectivity have represented a pillar of the EU's approach to Euro-Mediterranean energy policy. Prominent examples thereof are the first hydrogen-only pipeline across the Mediterranean, *H2Med*, launched by France, Spain, and Portugal with EU funding as a replacement for the project initially designed to transport hydrogen through the Pyrenées (known as the 'MidCat gas pipeline')[41,42] as well as the new LNG terminal in Northern Greece, aimed at increasing gas transmission capacity under the REPowerEU objectives[43]. In addition to being a co-sponsor of the *H2Med*, France has further stepped into the EastMed Pipeline project following the step back from the United States[44], positioning itself in an advantageous position for both Euro-Mediterranean LNG and hydrogen procurement. On the other hand, the United Kingdom – the involvement of which in EastMed Pipeline project was expected in Cyprus considering British history of political and economic involvement through a presence in the island — features a notable absence in the Euro-Mediterranean clean and low-carbon energy market, having invested instead in offshore licensing and drilling in northern Europe[45]. On the other hand, as a country featuring a carbon-heavy energy mix looking for further diversification of supply, Poland has been at the center of the establishment of novel interconnectors to rely more on gas and generate corridors with the eastern Mediterranean Sea thanks to the new Poland-Slovakia interconnector – part of a larger North-South gas infrastructure corridor[46].

[40] B. Moreno-Dodson, C. Tsakas, S.P. David, *The Clean Energy*…, op. cit, p. 62-68.

[41] P. Sánchez Molina.

[42] M. Damen, *Four challenges*…, op. cit., p. 8.

[43] M. Damen, *Four challenges*…, op. cit., p. 4.

[44] S.I. Balci, "The UK's Position in the Eastern Mediterranean: Relations with the GASC", *Ankara Center for Crisis and Policy Studies*, 2 February 2023, www.ankasam.org/the-uks-position-in-the-eastern-mediterranean-relations-with-the-gasc.

[45] S.I. Balci, *The UK's Position*, op.cit.

[46] Directorate-General for Energy of the European Commission, "Inauguration of the gas interconnector between Poland and Slovakia", 26 August 2022, https://commission.europa.eu/news/inauguration-gas-interconnector-between-poland-and-slovakia-2022-08-26_en.

Security and Defence key factors

The EU plays an important role in upholding security within the Mediterranean region. While NATO ensures freedom of navigation and stability in the region through its maritime security initiating operations based on a more structured and responsive organization with advanced military capabilities, the EU is a different security actor, therefore focusing more on humanitarian angles and political-economic stability[47].

The year 2023 was marked by a fundamental shift in geopolitical realities. The EU struggled with defining its role in the face of rising tensions between major powers. The continued Russian invasion of Ukraine and the recent Israel-Hamas conflict underscored the need for a unified European members' response, prompting a reevaluation of security postures. This geopolitical turmoil – involving also the Mediterranean region – has triggered a reaction among EU Member States, who have acknowledged the importance of pooling resources and expertise to collectively enhance defense capabilities effectively and practically. In October 2023, the EU Rapid Deployment Corps (RDC) conducted its first-ever live exercise, the EU Crisis Management Military Exercise 2023 (MILEX-23), in Spain, involving 2800 military personnel from various EU Member States. These exercises aim to enhance the interoperability and interchangeability of European armed forces[48].

For the Mediterranean Sea, the EU has endeavored to implement a coordinated strategy to regulate migratory flux and to halt human trafficking. The European Commission has devised two distinct strategies, one for the Western Mediterranean route and the other for the Eastern route. A common aspect in both approaches is the significance of cooperation with partner states, including Libya, Turkey, Egypt, Tunisia, and Morocco, to help stem migration[49]. Other crucial measures to address this challenge involve strengthening operational

[47] North Atlantic Treaty Organization "Joint Declaration on EU-NATO Cooperation", NATO website, 10 January 2023, https://www.nato.int/cps/en/natohq/official_texts_210549.htm.

[48] E. Jacob "European Security and Defence from 2023 to 2024", European Organisation of Military Associations and Trade Unions (EUROMIL), 2023. https://euromil.org/european-security-and-defence-from-2023-to-2024/

[49] E. Campelli & G. Gomel "The enlarged Mediterranean, a region in transition: conflicts, challenges, future perspectives" Centro Studi di Politica Internazionale (CeSPI), 2022 https://www.cespi.it/en/eventi-attualita/dibattiti/il-mediterraneo-allargato-una-regione-transizione-conflitti-sfide-2

procedures for search and rescue, preventing irregular departures, combating migrant trafficking, and establishing legal migration routes. Additionally, the EU Commission emphasizes the need for improving reception and asylum systems within member states[50].

Recent substantial Chinese investments in key European ports have raised concerns about potential future security threats within EU Member States, particularly those in the Mediterranean region. The European Parliament addressed this issue in January 2024, adopting a resolution titled "Building a Comprehensive European Port Strategy", advocating for restricting and managing foreign investments, with a specific focus on Chinese strategies within the Mediterranean Sea. To emphasize the significance of this last EU address, despite the EU primarily being an economic power - which would suggest welcoming such investments - the growing security concerns of the last years have transformed these Chinese investments into a security concern rather than an economic opportunity[51].

In addition to the numerous surface challenges for the EU, on the horizon there are numerous challenges that affect the seabed. Approximately 250 cable systems connect the EU to the global internet, with two-thirds being submarine cables laid in the surrounding seas, namely the Atlantic, Mediterranean, North Sea, and Baltic Sea[52]. Through the Mediterranean seabed pass the connections from the EU to Eastern and Southern Asia, and from the EU to the Middle East and North Africa (MENA)[53]. Actually under construction and to be completed between 2024 and 2025, the Medusa submarine cable system will become the longest in the Mediterranean Sea (With a length of

[50] European Commission "Migration routes: Commission presents new Action Plan for the Western Mediterranean and Atlantic routes", EU Commission Press Office, 6 June 2023 https://ec.europa.eu/commission/presscorner/detail/en/ip_23_3056. European Commission "Migration routes: Commission presents EU Action Plan for the Eastern Mediterranean route", EU Commission Press Office, 18 October 2023 https://ec.europa.eu/commission/presscorner/detail/en/ip_23_4994.

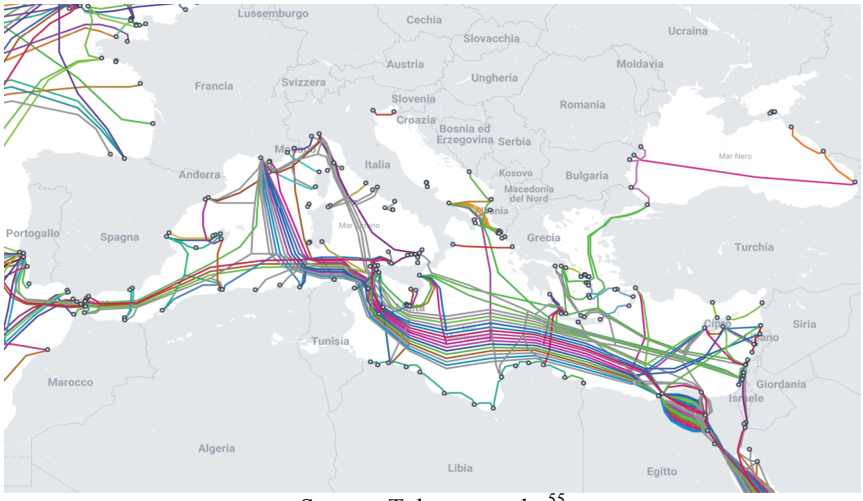
[51] European Parliament, "European Parliament resolution of 17 January 2024 on building a comprehensive European port strategy", January 19, 2024 https://www.europarl.europa.eu/doceo/document/TA-9-2024-0025_EN.html.

[52] M. Moreno Minuto "La competizione strategica per il dominio delle infrastrutture critiche underwater: controllo e tutela delle dorsali dati" in *Le sfide multidimensionali ed emergenti del Mediterraneo allargato: quale ruolo dell'Italia"* Rivista Trimestrale della Società Italiana per l'Organizzazione Internazionale, Q. 26, 2023 p. 15-16

[53] Overall, 27 active cable connections between the EU Member States and the MENA region are installed, Idem.

7,100 km) and will connect eleven countries in North Africa and Southern Europe[54].

Submarine cable system in the Mediterranean



Source: Telegeography[55]

Four crucial natural gas pipelines, vital for the EU's energy supply—particularly in the aftermath of measures taken to reduce dependence on Russian supplies—also traverse beneath the Mediterranean Sea. Trans-Mediterranean Pipeline from Algeria through Tunisia to Italy (Sicily), Megdaz from Algeria to Spain, Greenstream Pipeline from Libya to Italy, Trans-Adriatic Pipeline from Azerbaijan at the Caspian Sea to Europe from Greece through Albania and the Adriatic Sea to Italy. The sabotage of these critical undersea infrastructures, both submarine cables and pipelines, would have severe consequences, impacting the European economy and its connections and destabilizing the Member States. For their strategic relevance, the EU has carried out new strategies to prevent espionage and or terroristic attacks on these critical infrastructures. In June 2022, the European Parliament released a report on "Security threats to undersea

[54] Accessed 12 February 2024. https://neighbourhood-enlargement.ec.europa.eu/system/files/2022-11/2022-11-24%20-%20Factsheet%20for%20Media%20-%20Medusa.pdf

[55] Submarine Cable Map, Telegeography, Transport Networks Research Service. Accessed 12 February 2024. https://www.submarinecablemap.com/.

communications and infrastructure – consequences for EU"[56]. It emphasizes the need for enhanced surveillance, coordination, and cooperation among Member States' coastal guards to protect critical infrastructures. The report also advocates for data sharing and suggests integrating submarine critical infrastructures into marine protected areas and no-fishing zones to prevent accidents related to fishing activities. Finally, it is also to be remembered that, together with classical security and defence issues, also climate change related factors are considered to be a sensitive threat to the Mediterranean basin and for the European Union interests in that area.

The EU heavily depends on maritime trade routes for the projection of power and economic prosperity. Currently, about 75% of goods entering Europe are transported via sea, and European maritime enterprises rely on free navigation[57].

EU and NATO have established complementary initiatives aimed at enhancing maritime risk awareness to improve the security of the shipping community operating in high-risk areas. Both organizations have successfully engaged in operational cooperation at sea, notably in the Mediterranean, including the Aegean, and Horn of Africa-Red Sea theaters. The strategic partnership between the EU and NATO is currently manifested at the tactical and operational level in the existing cooperation and coordination between the European Union Naval Force in the South-Central Mediterranean (EUNAVFOR MED) Operation Sophia (ENFM) and Operation Sea Guardian in the Central Mediterranean. EU and NATO are continuing to cooperate in counter-piracy operations and coordination possibilities for escorting merchant ships through the Internationally Recommended Transit Corridor, i.e. EUNAVFOR Operation ATALANTA, and NATO Ocean Shield insisting on the Gulf of Aden to protect the eastern Mediterranean access. In addition, since 2016, NATO, in cooperation with the Greek and Turkish coastguards and through the establishment of direct links with Frontex, has been assisting in cutting the lines of illegal trafficking within the Aegean Sea while providing maritime situational awareness[58].

---

[56] European Parliament "Security threats to undersea communications cables and infrastructure – consequences for the EU" 1 June 2022 https://www.europarl.europa.eu/thinktank/en/document/EXPO_IDA(2022)702557.

[57] M. Bressan "Le sfide multidimensionali…, op. cit., p. 9.

[58] S.Hill & B.Bastomski "Legal Dialogue on Human Rights Obligations: NATO's Aegean Sea Activity as a Case Study" Harvard Law School National Security Journal (Online Ed.), 28 October 2020.

The EU is also closely monitoring the increasing presence of Russian ships and submarines in the Mediterranean. It expresses full confidence in the capabilities of national navies and emphasizes cooperation with NATO in case of military escalation[59]. In addition to actively collaborating with NATO on security initiatives, the EU also plays a significant role in facilitating diplomatic dialogue to address international security issues. It's important to note that the EU, compared to NATO, operates as a soft/normative power, employing diplomatic and norm-setting approaches to address security challenges proactively.

https://harvardnsj.org/2020/10/28/legal-dialogue-on-human-rights-obligations/.

[59] B.Faucon "Russia Seeks to Expand Naval Presence in the Mediterranean" Wall Street Journal (Online Ed.), 15 September 2023.

https://www.wsj.com/world/africa/russia-seeks-to-expand-naval-presence-in-the-mediterranean-b8da4db.

THE ITALIAN PERSPECTIVE

ALDO PIGOLI – MARCO DORDONI – GIACOMO DI CAPUA

While not being an Arctic Country and having historically its main geopolitical, geo-strategic and geo-economic space in the wide Mediterranean basin, Italy has shown a significant set of interests in the Arctic area, together with a relevant presence on different domains.

Italian involvement in the Arctic dates to the end of the XIX Century and has been developing at different moments and levels throughout the XX Century, up to the new Millennium. The relationship between the Arctic and Italy is strongly grass-rooted in the past but has been developed also with a forward-looking attitude into the future.

The Italian membership in the Arctic Council finds its roots in both these factors and testifies the will of the Italian institutions, at political-institutional and scientific level, to play an important role in the international management of the nowadays and future challenges the North Pole and the Arctic region have and will have to cope with.

To categorize the main extent to which Italy relates to the Arctic, we could identify:

- the historical-cultural bond with the region thanks to the Italian explorers who took part in the discovery and scientific missions in the Arctic Circle and beyond;
- the political involvement of the country in the main regional organization, the Arctic Council, formalized in 2013;
- a scientific involvement in the environmental and natural dimensions of the climate change dynamics of the area;
- the increasing importance of the Arctic Ocean and of the surrounding territories for what concerns the extraction of energy resources, rare earth elements and critical raw materials;
- the monitoring on the feasibility of the "real" opening of Arctic communication sealines and trade routes;
- and, last but not least, the economic opportunities linked with the economic development of the Arctic region, where directly or indirectly, Italian economic operators are already being active and the Italian institutions responsible for directing and supporting the commercial relations and foreign investments of Italian companies are evaluating the value of this area in a more strategic way.

The "Italian Arctic Strategy" formulated in 2015, then updated in

2016[1], defined the different and Italian Arctic interests, highlighted in five main dimensions: political, environmental, human, scientific, and economic[2]. The latter one, together with the Energy and Security dimensions will be analyzed throughout this chapter.

The Arctic economic dimension

The Arctic region has been experiencing increasing attention from several countries and economic actors around the world that have expressed economic interests on its vast natural resources and potential opportunities. Due to climate change and the melting of ice masses, this area has become more accessible in recent years, opening new possibilities for different economic activities.

The Arctic region is characterized by the presence of numerous economic resources, which range from energy resources of fossil origin, such as oil and gas[3], to traditional activities based on agriculture (fishing and livestock), up to mineral resources linked to the most recent developments in the technological and industrial development experienced by a vast majority of countries around the world, such as Rare Earths and critical raw materials[4]. The latter have become of paramount relevance for the supply-chains of both the EU and the U.S. – still broadly dependent from Chinese exports – and are closely related to scientific research applied to the industrial sector and the development of green economies and renewable energy, key drivers of future economic development at world level and, specifically, in most of the Arctic territories[5].

The increased focus on the polar environmental and cultural elements and the rise in the average temperature have also stimulated

[1] "Verso una strategia italiana per l'Artico. Linee-guida nazionali", MAECI, 2015 (aggiornamento 2016). https://www.esteri.it/wp-content/uploads/2021/11/Verso-una-strategia-italiana-Artico-%E2%80%93-linee-guida-nazionali.pdf.

[2] For a summary of the main Italian politico-institutional involvements in the Arctic: C. Robustelli, "The Italian Presence in the Arctic", in "Arctic Connections: A Trust Building Arctic Cooperation on Energy, Security and Blue Economy", La Comunità Internazionale, Quaderno 18, Editoriale Scientifica Napoli, 2020.

[3] This sector is particularly relevant for Italian companies, like ENI, and will be in-depth analysed further on in this chapter.

[4] B. Watson, S. Masterman and E. Whitney, "Critical Minerals in the Arctic: Forging the Path Forward", Wilson Center, July 10, 2023. https://www.wilsoncenter.org/sites/default/files/media/uploads/documents/Critical%20Minerals%20in%20the%20Arctic%20-%20Forging%20the%20Path%20Forward.pdf.

[5] M. Q. Frederiksen, "If we want an energy transition, we must have more mining", Arctic Economic Council. Accessed 9 February 2024. https://arcticeconomiccouncil.com/news/if-we-want-an-energy-transition-we-must-have-more-mining/.

the growth of local and regional tourism[6], an element that should not be underestimated for local and international operators in this sector[7].

Estimating the economic dimensions in the Arctic involves aggregating the GDPs of all the Arctic regions, which can be complex due to differing methodologies in data gathering and elaboration, data availability, and economic structures among the various regions, also considering that some administrative regions in the Arctic countries are not totally geographically placed within the Arctic circle.

One of the most accurate studies on the regional economic dimension of the Arctic is "The Economy of the North – ECONOR"[8]. In its latest version, published in 2021 and referring to the year 2018, the authors indicated that the Arctic regions generated 0.7% of global GDP: 615 billion USD, under Purchasing Power Parity (PPP) conversion. With half of the Arctic landmass under its sovereignty, the Russian Federation holds nearly ¾ of the entire wealth produced in the Arctic area (73% in 2018). The second richest Arctic region is Alaska, which produces nearly 10% of the regional GDP, thus bringing the other 6 Arctic countries' territories to participate only for 18% of the total regional economy. For example, in 2020 Alaska produced 5 times the economic wealth of the Canadian Arctic regions (45 billion USD PPP at 2015 constant prices, compared to 8.7 billion USD of Yukon, Nunavut and Northwest Territories combined)[9]. One peculiar characteristic is that the relevance of the Arctic regions to the respective countries' GDP is not similar: while the Russian Arctic produces a significant proportion of the entire Russian GDP (more than 10%), for Norway its Arctic regions generate a smaller part of the

[6] An example of the significant role tourism has in the Arctic and sub-Arctic region is Iceland, where between 2016 and 2019 tourism generated more than 8% of GDP. "The share of tourism in GDP estimated at 6.1% in 2022", Statistics Iceland, 28 February, 2023. Accessed 12 February 2024. https://www.statice.is/publications/news-archive/national-accounts/the-share-of-tourism-in-gdp-2022-provisional-estimates/.

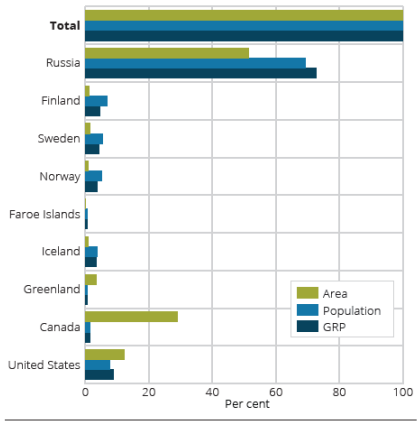
[7] The share of tourism in other national economies in the Arctic is smaller, but nevertheless it is of high importance for many local communities and regions where it represents a driver of economic growth in response to the decline in other traditional primary industries. G. T. Jóhannesson, J. Welling, D. K. Müller, L. Lundmark, R. O. Nilsson, S. de la Barre, B. Granås, T. Kvidal-Røvik, O. Rantala, K. Tervo-Kankare and P. Maher, "Uncertain Futures – From Overtourism to Re-starting Tourism", Nordic Council of Ministers, 2022. Accessed 12 February 2024. https://pub.norden.org/temanord2022-516/.

[8] S. Glomsrød, G. Duhaime and I. Aslaksen (eds.), "The Economy of the North, ECONOR 2020", Statistisk sentralbyrå, Statistics Norway, 2021, p. 44-45.

[9] OECD Stats, Regional Economy. https://stats.oecd.org/index.aspx?queryid=67054. Accessed February 10, 2024.

national wealth[10], also because the Oil&Gas revenues coming from the Arctic area production are not included in the economic statistics of the Arctic Norwegian regions. Furthermore, if we consider Canada and the United States, the non-Arctic economies are dominating, and this occurs also in relation to population dimensions.

Figure 3.2. Arctic surface area, population and GRP of Arctic states as share of the Arctic total. 2018. Per cent



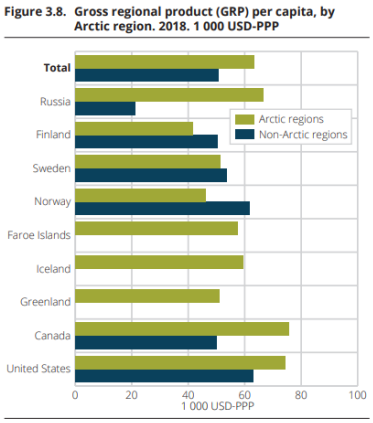
Source: ECONOR 2020[11]

The economic differences between the Arctic regions are strongly highlighted when measuring the per capita wealth: in Alaska, the GDP per capita (under PPP terms) in 2018 was 75,000 USD, while in Northern Finland was 42,000. Resource rich areas, like the Canadian Arctic territories, Alaska and Northern Russia have high regional GDP per capita levels: in Russia, per capita income in the Arctic regions is four times higher than in the non-Arctic territories. The Arctic region has traditionally played a key role in the Russian economy: 80% of Russian natural gas, 17% of oil, 90% of nickel and cobalt, 60% of copper and almost 100% of diamonds and rare earth metals are produced in the Arctic regions of Russia, with the

[10] This is true also in per capita terms. From this point of view, it is possible to compare the Norwegian situation with the Italian one, where the area is much more connected with the Mediterranean economy – basically, the southern regions – produces a smaller part of the Italian GDP, compared to the Northern regions.

[11] S. Glomsrød, G. Duhaime and I. Aslaksen (eds.), "The Economy of the North, ECONOR 2020", cit. p. 41. GRP stands for "Gross Regional Product".

percentage of Russian Arctic's exports on the entire Russian exports estimated to be around 20%[12].



Source: ECONOR 2020[13]

There is no doubt that mining and Oil&Gas activities are those that contribute the most to the wealth generation of the Arctic area. As mentioned, regions that are still heavily dominated by more traditional subsistence activities, such as hunting and fishing, in Greenland, in Northern Canada or in Northern Norway, have much lower gross products. Reindeer herding in Russia and Scandinavia is of substantial importance to the livelihoods and lifestyles of indigenous populations like the Saami and the Nenets, but does not contribute significantly to the GDP of these regions. These aspects must be adequately addressed to balance the need for economic growth with the sustainability aspects of socio-economic developments[14].

Italian economic interests in the Arctic

Looking from the Italian perspective, there are a series of economic sectors and activities that fall within the interests of Italian

[12] A. B. Likhacheva, I.A Stepanov, "Russian Arctic Policy: Opportunities for the Development of the Siberian and Far Eastern Regions." Regional Research of Russia. 11 (Suppl 1), 2021, p. 13-22.

[13] S. Glomsrød, G. Duhaime and I. Aslaksen (eds.), "The Economy of the North, ECONOR 2020", cit. p. 44.

[14] A. Novoselov, I. Potravny, I. Novoselova, V. Gassiy, "Sustainable Development of the Arctic Indigenous Communities: The Approach to Projects Optimization of Mining Company", Sustainability, 12(19):7963, 2020 . For further information, see the Arctic Council's "Sustainable Development Working Group" web portal: https://sdwg.org/.

companies, not only large corporations, but also Small and Medium Enterprises (SMEs), operating independently or through subcontracting activities. The economic relevance of the Arctic region for the Italian Country system could not be measured considering the economic dimensions of this region, which will never compete with the Mediterranean centrality in Rome's geopolitical and geo-economic projections. Excluding Italy, the Mediterranean basin involves 20 Countries, with quite all of them consistently dependent on the Mediterranean "Blue economy" for their growth and development. The combined GDP of these countries is nearly 10% of the world GDP[15]; something like more than 20 times the Arctic one. Not to mention the demographic dimensions. It would be without sense to compare the Arctic area with the Mediterranean region in terms of trade and investment relevance for Italy. This is particularly true if we look at the maritime dimension of the Italian economy, where the Mediterranean plays a pivotal role for different economic sectors[16].

Nevertheless, it is precisely the maritime dimension of the Italian economy that leads us to reflect on the importance of a greater and more strategic presence of the Italian country system in the Arctic region, certainly not to look for an alternative but to increase Italy's relevance in the international "Blue economy". From this point of view, one of the most interesting aspects of the Arctic region current and future developments is strongly related with the evolution of maritime routes and the related impact on different economic activities and sectors. The melting of ice has opened new shipping routes that could provide a shorter and more economically viable path for shipping goods at global level and mainly between Europe and Asia. The physical opening of sea lines and their economic affordability is a key matter for the Italian system and for the port and maritime infrastructures of Italy, considering the centrality of mercantile maritime power in its history and present. Arctic maritime routes are still limited in both accessibility throughout the year and in terms of economic costs for transit, docking in port and repair and

[15] P. Manoli, "Economic Linkages across the Mediterranean: Trends on trade, investments and energy", Hellenic Foundation for European & Foreign Policy (ELIAMEP), Policy paper 52, January 27, 2021.

[16] "XI Rapporto Economia del Mare 2023", a cura di Informare – OsserMare, Camera di Commercio di Frosinone Latina, 2023. https://www.informare.camcom.it/wp-content/uploads/2023/05/XI-rapporto-economia-del-mare.

maintenance services[17]. Considering one of the two trans-Arctic routes that melting ice could potentially open up in the future, the Northern Sea Route (NSR)[18], it appears evident that the maritime traffic is characterized by low volumes, compared to other maritime regions in the world, especially the Mediterranean one. The latest figures available for the NSR, indicate that the total traffic volume on the in 2022 was 34 million tons., with nearly 3,000 voyages made by 314 vessels[19]. Comparatively, every year 2 billion tons of goods cross the Mediterranean[20], with nearly 60 million containers moved during 2021[21], coming from and heading to different areas of the world. In 2022, 89% of the vessels that crossed the NSR waved a Russian registration flag, while 72% of non-Russian-flagged ships were LNG tankers, showing that most of the maritime trade is related with hydrocarbons, basically coming from Russian territory.

Most of the studies and hypotheses provided by shipowners, shipping companies, institutions, think tanks and academics have substantially ruled out the possibility of even partially replacing the classic international merchant routes - both in terms of container ships, bulk carriers and tankers - with the Arctic ones. In fact, most cargo ship activity currently taking place in the Arctic is regional, not trans-Arctic or international. However, there is a growing development of regional routes and countries such as Russia are investing significantly in shipping and maritime and land infrastructure, to take advantage of the increasing accessibility of some areas within territorial waters. Is remarkable that 2022 was the first year since 2011 were maritime traffic in that NSR area decreased, after more than 10 years of progressive growth: between 2011 and 2021 the total cargo volume registered in the NSR increased nearly

[17] "Arctic: risks and opportunities for Italian ports from climate change", Nova News, April 6, 2022. https://www.agenzianova.com/en/news/Arctic-climate-change-risks-and-opportunities-for-Italian-ports/.

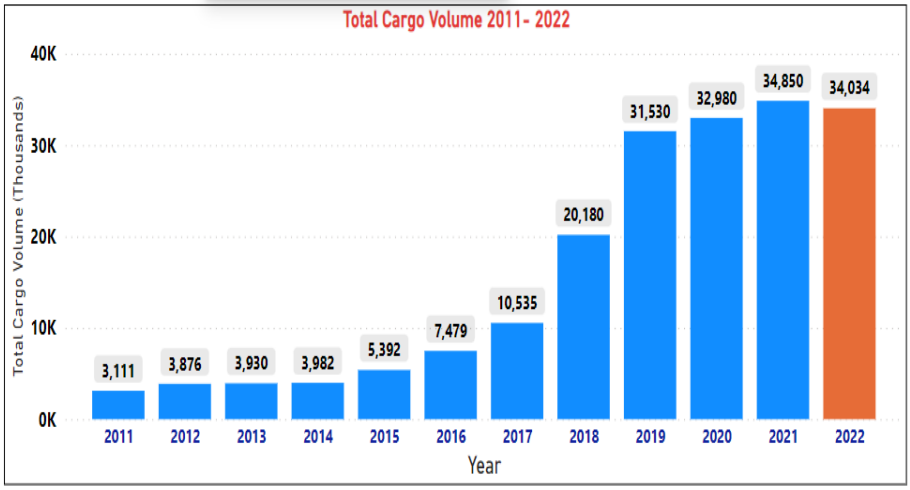
[18] The NSR shipping route is about 5,600 kilometers long and runs from the entrances to the Novaya Zemlya straits in the west, along the Russian Arctic coast above Siberia, through the Kara Sea, Laptev Sea, East Siberian Sea, and Chukchi Sea, to Cape Dezhnyov on the Bering Strait. The route lies within Russia's exclusive economic zone (EEZ) and is included in what has been called the Northeast Passage.

[19] "Shipping traffic at the NSR in 2022", Center for High North Logistics Information Office, 9 June 2023. https://arctic-lio.com/nsr-2022-short-report/.

[20] The length of the sea route from Gibraltar on the West to Suez, on the East, is nearly 4,320 km.

[21] D. Ferrara Panaro, "Porti, shipping e logistica negli scenari marittimi: il Mediterraneo tra pandemia e guerra", Aspenia Online, Feb 20, 2023. https://aspeniaonline.it/porti-shipping-e-logistica-negli-scenari-marittimi-il-mediterraneo-tra-pandemia-e-guerra/#_ftnref1.

900%[22], demonstrating that until the outburst of the Ukraine crisis, that route was becoming more and more relevant.



Source: Center for High North Logistics Information Office[23]

In addition, we should not underestimate the current critical situations that the world's main trade routes, such as the one passing through the Suez Canal, and the one centered in the Panama Canal, are experiencing. The elements who increase worries about the future of these maritime and commercial routes are:

- political-military events, such as the recent crises between Israel and Hamas and the conflict in Yemen, with the military attacks by Houthi militias against Western ships crossing the Gulf of Aden to and from the Red Sea[24];
- issues of a structural nature, linked to the growing traffic that the Suez Canal has to sustain that they bring and that could likely lead in the future to systematic slowdowns in transit times, with related increases in economic costs[25];
- climate change related impacts, like the prolonged drought that Panama is experiencing that brought to the cut of nearly 40% of the daily permits of passage issued by the Canal Authority[26].

Those aspects could provide a potential boost towards an

[22] *Ibidem.*
[23] *Ibidem.*
[24] For an updated monitoring on the Suez Canal transits, see the IMF's "PortWatch" platform: https://portwatch.imf.org/.
[25] "Suez Canal traffic uninterrupted after ship suffers fault - canal authority", Reuters, 7 December, 2023. Accessed 12 February 2024. https://www.reuters.com/world/africa/suez-canal-traffic-uninterrupted-after-ship-suffers-fault-canal-authority-2023-12-06/.
[26] M. Rojanasakul, "Panama Canal Drought Slows Cargo Traffic", The New York Times, Jan. 26, 2024. https://www.nytimes.com/interactive/2024/01/26/climate/panama-canal-drought-shipping.html.

increased focus and more investments on the Arctic region and its maritime routes. With the ongoing war in Ukraine and with Russia under western countries' sanctions and diplomatic isolation, this scenario seems impossible to achieve, but strategic approaches should always look beyond the present situation. From this point of view the United States are closely monitoring the evolution in the area to be prepared on the future potential developments influencing maritime trade[27]. The Italian interests in the Arctic maritime routes' evolutions should not only be focused on their potential for a partial future substitution of the Mediterranean ones, but also on considering the economic opportunities within the entire spectrum of economic activities, from ship building to infrastructures construction and maintenance, to technological services, where Italian companies and economic operators could play an important role, has already showed in recent years[28].

Economic and trade relations between Italy and the Arctic region.

According to data from the Italian Trade Agency (ITA)[29], between 2021 and 2022, Italy's main trading partners were: Germany (€311.6 billion in trade), France (€204 billion), the United States (€155 billion), China (€129 billion), Spain (€115 billion), the Netherlands (€99 billion), Switzerland (€88 billion), Belgium (€88 billion), the United Kingdom (€67 billion) and Poland (€63 billion). During the first 10 months of 2023, this group of countries remained unchanged, albeit with significant changes in position[30]. Apart from the United States, none of the Arctic countries are in the top 10 and only Sweden and Canada are in the top 20 (approximately around 20th place in the period January 2021-October 2023).

The same can be said for the main countries that make foreign direct investments (FDIs) in Italy (Source: Italian Trade Agency[31]).

---

[27] "Changes in the Arctic: Background and Issues for Congress", Congressional Research Service, R41153, January 18, 2024.

[28] For an overview on the Italian economic presence in the Arctic and the potential opportunities for the Italian companies in the future: "Energia e industria. L'Italia oltre il Circolo Polare", Italia chiama Artico 2023, Osservatorio Artico, November 30, 2023. https://italiachiamaartico.osservatorioartico.it/.

[29] Italian Trade Agency Statistics. https://www.ice.it/it/statistiche/. Accessed February 10, 2024.

[30] China saw its contribution to Italian imports decreasing by about 20%.

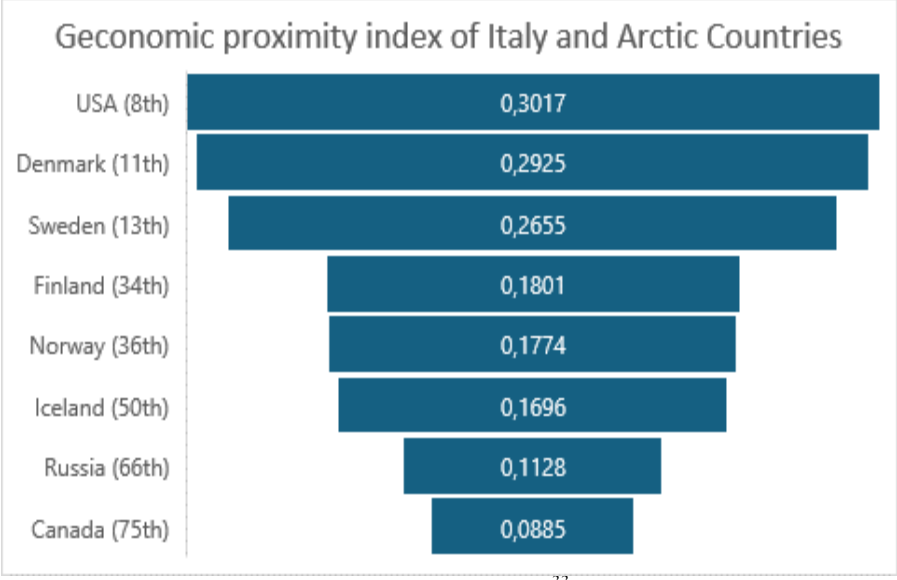
[31] Info Mercati Esteri, Osservatorio Economico, MAECI. https://www.infomercatiesteri.it/paesi.php.

	Italian FDIs stocks in 2022 in the Country (€ million)		**Country FDIs stocks in 2022 to Italy (€ million)**
USA	56,060 €	USA	16,942 €
RUS	11,673 €	SWE	4,488 €
DEN	8,383 €	DEN	2,629 €
CAN	4,913 €	RUS	1,222 €
SWE	3,137 €	FIN	969 €
FIN	2,551 €	NOR	913 €
NOR	718 €	CAN	851 €
ISL	-4 €	ISL	147 €

In this case, although there are significant differences between the various years as regards flows, in terms of stocks the Arctic countries are scarcely present in economic and financial operations directed towards Italy and the Mediterranean in general.

Therefore, it could be affirmed that, in terms of economic nearness, the Arctic region is not the closest for Italy, with the exception of the USA[32].

[32] Data from the Geoeconomic Proximity Index (GPI)®, created by Carobene and Pigoli. Based on official data on trade, foreign direct investments and economic and trade agreements of 200 countries, the GPI® objectively measures how close the world economies are to each other: 1 is maximum proximity; 0 is absolute distance. To have a detailed explanation of how the GPI® works and a practical application of its results see: A. Carobene, A. Pigoli, "Come le nuove tecnologie influenzano lo studio della geopolitica", in A. Plebani (Ed), "Dinamiche geopolitiche contemporanee", Ce.St.In.Geo. geopolitical outlook 2023, EduCatt, Milano, 2023, p. 212-215.



Source: BAIA[33]

Nevertheless, if we take into consideration one a key area where the Italian politico-institutional system is currently focusing with a strategic approach, the African continent, data seem not to differ: the major Italian's trade and investments partners in the African continent, are currently far from being geo economically closed, some of them even laying behind most of the Arctic States.

Country position in the GPI ranking	**GPI value**
Egypt (61th)	0,1371
Algeria (65th)	0,1257
Morocco (71th)	0,0972
South Africa (73th)	0,0892
Tunisia (78th)	0,0832

Source: BAIA[34]

This element adds food for thought when it comes to setting future geo-economic strategies for the Italian decision-makers, considering that investments and economic strategies could be directed in the future also to areas where, now, the distance seems relevant.

[33] http://baiaintelligence.it
[34] *Ibidem.*

The case of Italy-Norway economic and trade relations

Economic and trade relations between Italy and Norway were characterized by a substantially regular trend during the years prior to the outbreak of the Ukrainian crisis in February 2022. Until that date, the annual trade of goods was around 3 billion euros, with Italy covering a market share of about 10% of Norway's trade with the rest of the world, while Norwegian shares in the Italian market have always been between 40th and 50th position[35].

	Export from Italy to Norway (bln €)	**Import from Norway to Italy (bln €)**
2018	1.715	1.424
2019	1.880	1.111
2020	1.606	1.198
2021	1.795	1.505
2022	2.015	6.020
2023	2.156	4.506
Total	**11.167**	**15.764**

Source: Italian Trade Agency[36]

As shown by figures in the table, from 2022 onwards, Norwegian exports to Italy have been skyrocketing, basically due to the energy supply that the Italian system was in need of because of the war in Ukraine and the embargo on Russian hydrocarbons. Between 2021 and 2022 natural gas exports from Norway to Italy increased by nearly 670%, with a value of €5.5 billion. While significantly decreasing during 2023, the value of exports has remained nearly 4 times higher than in 2020, where natural gas imports from Norway to Italy reached a value of €750 million[37]. This is clearly highlighted by Norway's jump in the ranking of Italy's trade suppliers: from the 50th rank in 2021 to the 24th in 2022[38].

[35] "Scheda di Sintesi Norvegia", Info Mercati Esteri, Osservatorio Economico, MAECI. https://www.infomercatiesteri.it/public/osservatorio/schede-sintesi/norvegia_80.pdf.

[36] "Interscambio commerciale dell'Italia per paesi: Norvegia", Italian Trade Agency Statistics. https://www.ice.it/it/statistiche/. Accessed April 15, 2024.

[37] Although with smaller numbers, oil supply too has grown significantly, passing from 252 million € in 2020 to 625 million € in the first 10 months of 2023.

[38] For a more detailed analysis on the strategic relevance of Norwegian natural gas supply to Italy see the following section of this chapter.

Italian national interests in the Energy sector of the Arctic region

Italy is a present and invested actor in the energy dynamics of the Arctic. As ice thaws and access to ichthyic stocks, hydrocarbons, and minerals widens, the country is keen to play an active role in the region by leveraging its technical expertise in hydrocarbon extraction and robust manufacturing capability[39]. Energy is one of the main economic drivers of the "Italian Arctic Strategy", in recognition not only of a long-standing and increasingly profitable economic involvement in the Arctic through the presence of national companies but also of the country's technological capability to mitigate environmental risks at the core of the extractive activities of hydrocarbons[40]. In the *Strategy*, the Italian Ministry of Foreign Affairs and International Cooperation (MAECI) identifies a "long tradition in research and extraction of hydrocarbons at sea", highlighting an alleged "environmental compatibility of extractive operations" with a focus on Italian competencies aimed at ensuring a safe performance "among the best in the world" and a further interest in renewable energy sources, particularly geothermal, in the region[41].

From a macroeconomic perspective, Italy's energy mix is significantly intertwined with Arctic energetic dynamics, particularly due to the role that Norwegian and Russian natural gas has historically played in the domestic primary energy supply and the country's charted energy transition. Despite sharp reductions in natural gas consumption in 2023[42], natural gas still represents the primary power source in the national net consumption, and its contribution to the energy mix has steadily grown, with a 44-percent rise in the period 1990-2020[43]. Before the Russian invasion of Ukraine in 2022, Italy

[39] M. M. Minuti, "L'Italia Ha Un Interesse nell'Artico, Ecco Come Difenderlo", *Limes*, 6 February 2019, www.limesonline.com/cartaceo/litalia-ha-un-interesse-nellartico-ecco-come-difenderlo.

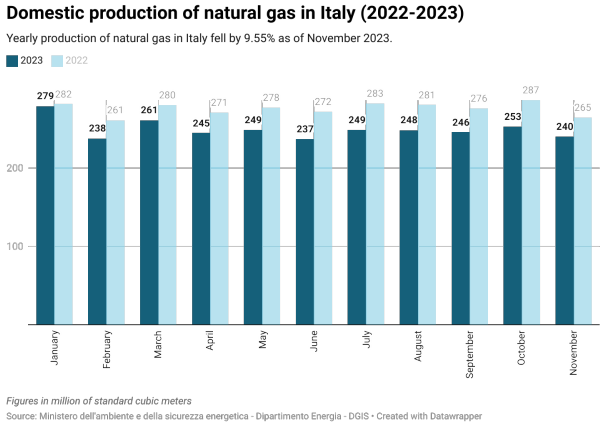
[40] F. Pace, "Arctic region, climate change and multidimensional security: opportunities and challenges for Italy", *LUISS Department of Political Sciences*, 2021, p. 53.

[41] Ministero degli Affari Esteri e della Cooperazione Internazionale (MAECI), "Verso una Strategia Italiana per l'Artico: Linee-Guida Nazionali", 2015, p. 7-15.

[42] Reuters, "Italy's 2023 gas consumption drops to 8-year low, GME says", 17 January 2024, www.reuters.com/business/energy/italys-2023-gas-consumption-drops-8-year-low-gme-says-2024-01-17.

[43] International Energy Agency (IEA), "Greenhouse Gas Emissions from Energy Data Explorer", 2023, www.iea.org/data-and-statistics/data-tools/greenhouse-gas-emissions-from-energy-data-explorer.

significantly relied on both Norway and Russia for its natural gas, which was produced abroad and imported via international pipelines or transported by sea as LNG[44]. In 2021, 46% of natural gas imports were from Russia and approximately 8% from Norway, the latter being worth approximately $870 million yearly[45]. In 2021 and 2022, following the European Union's *REPowerEU* targets, Italy almost halved its natural gas imports from Russia, replacing it with natural gas traded by countries such as Azerbaijan and northern European partners – including Norway – through existing infrastructures and pipelines[46]. In 2023, fuels from Russia via pipeline were below 5% of total imports, and Russian gas represented approximately 3% of total natural gas imports by late 2022[47,48]. Considering the anticipated role of natural gas in the country's energy transition plans as per Italy's *Integrated National Plan for Energy and Climate 2030* (PNIEC), Arctic-sourced natural gas falls wholly within national interests and trade relations with Norway in this regard could meaningfully shape the country's energy policy towards 2030.



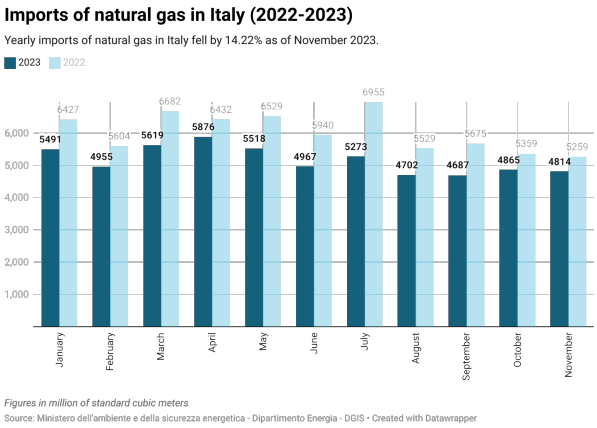
[44] F. Pace, *Arctic region*…, op. cit., p. 83.

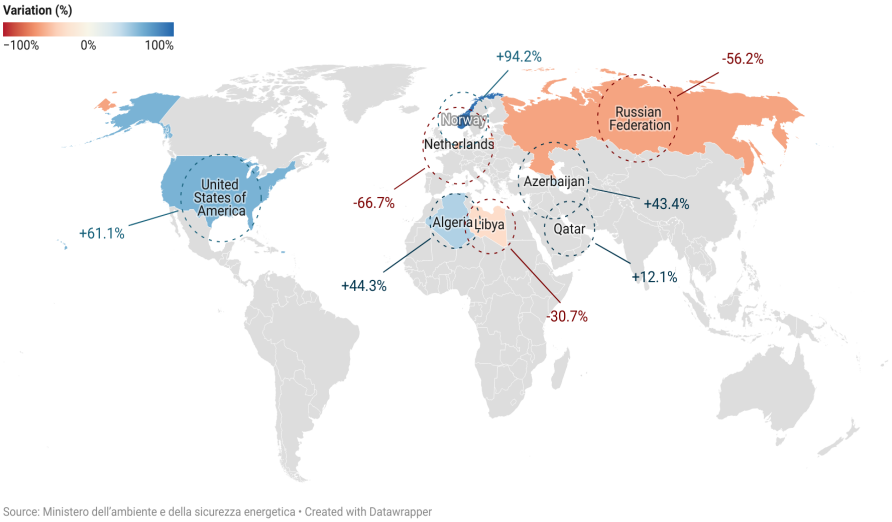
[45] G. Gaulier, S. Zignago, "BACI: International Trade Database at the Product-Level. The 1994-2007 Version", *CEPII Working Paper*, 23, 2010.

[46] D. Panzeri, F. Andreolli, F. Bellisai, M. Bienati, G. Giordano, M. Governatori, "Il Panorama Energetico Italiano dopo l'Invasione Russa dell'Ucraina", *ECCO*, 2023, p. 3.

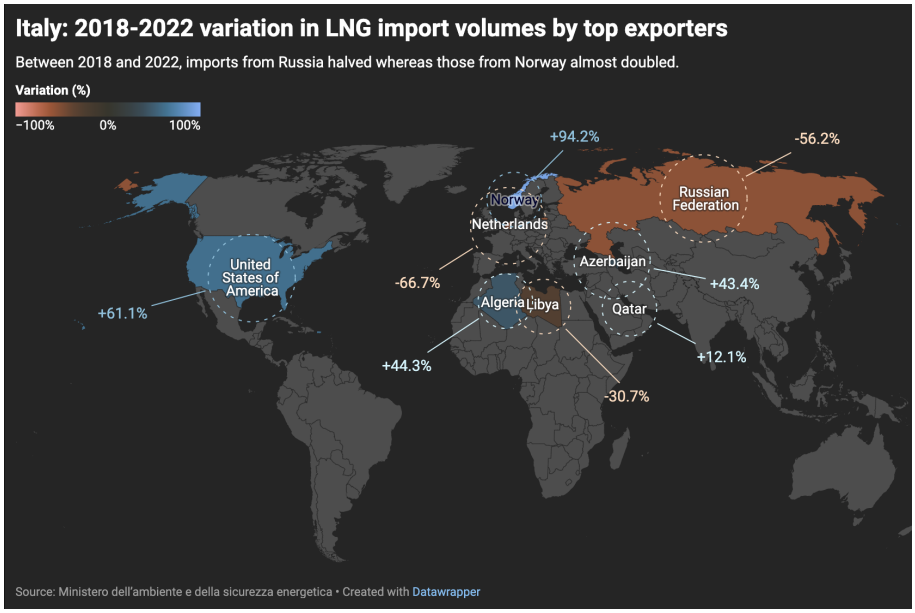
[47] Reuters, *Italy's 2023 gas*…, op. cit.

[48] IEA, "Executive Summary", n.d., www.iea.org/reports/italy-2023/executive-summary.





Source: Ministero dell'ambiente e della sicurezza energetica



Source: Ministero dell'ambiente e della sicurezza energetica

Furthermore, Italian companies actively contribute to both extraction and production (E&P) activities in the Arctic. Among leading Italian companies active in the Arctic are Saipem in Norwegian waters on behalf of Total and Shell Norway, which further joined a joint venture for the realization of 'Arctic LNG2' in 2019[49], Nuovo Pignone in the Russian Arctic, and Vard (*Fincantieri* Group), which is involved in naval constructions for offshore infrastructure[50]. However, the *Ente Nazionale Idrocarburi* (ENI), the largest Italian multinational company for energy and gas, arguably represents the largest feat of Italian involvement in Arctic extractive and exploration activities as the company sustained its presence and cooperation with Russian and Norwegian companies in the past two decades while other major energy companies instead withdrew from the region following the mid-2010 fall in oil prices[51,52]. With regards to extractive activities, ENI plans to maintain a long-term involvement in the Arctic region, articulating its extractive activities as located in the "operable Arctic" (chiefly in ice-free territories), the "challenging

[49] L. Parigi, "La strategia dell'Italia per l'Artico", *Osservatorio Parigi*, 14 September 2020, www.osservatorioartico.it/strategia-italia-artico.

[50] M.M. Minuti, *L'Italia ha un Interesse*…, op. cit.

[51] M. M. Minuti, *L'Italia ha un Interesse*…, op. cit.

[52] M.L. Lagutina, "Strategy of the Italian Republic in the Arctic", *Arctic and North*, *24*, 2016, p. 135-144.

Arctic", and the "extreme Arctic" based on the anticipated technical and logistical challenges in extracting hydrocarbons and the related anticipated period of return on investment[53]. The company – chief operator of *Goliat* – the biggest and northernmost floating offshore platform in the Barents Sea for oil production and oil and gas storage, has been operating since 1965 in Norwegian territories, where the Goliat deposits (located in the Barents Sea and worth approximately 250 million barrels of oil) were first discovered. Through Goliat, the company has generated €43 billion in the first three years of operation[54]. The Italian Arctic Strategy further recognizes ENI's extraction of hydrocarbons as valuable for the country's energy portfolio diversification[55]. Throughout its history of operations in the region, ENI has diversified its mining portfolio through mergers (see, for instance, Vår Energi AS, which has become one of the main E&P societies in Norwegian waters), acquisitions (e.g., purchasing the assets of ExxonMobil's Upstream in over 20 fields), and novel licenses (namely in the Northern Sea, Barents Sea, and Norwegian Sea)[56]. In 2020, ENI further created the company Vågrønn, through which Renewable Energy Sources (RES) projects in the region, particularly offshore wind farms, could be developed in Norway and other markets in the High North through tenders for offshore licenses[57]. In the 2012-2021 period, the company further established partnerships with Russian Rosneft and Gazprom for crude oil import to Italy and in 2017, memoranda of understanding between Rosneft and ENI were concluded for a long-term collaboration in hydrocarbon trade and extraction, albeit the freeze of commercial relationships with the Russian oil company post-2014 meaningfully reduced Italo-Russian cooperation via ENI[58]. In addition to extraction, ENI is also involved in exploration activities in the Barents Sea, active stock research in Greenland, and is the first company to obtain a license from Washington to extract from the deposits in Nikaitchuq and Oguruk in the Alaskan Beaufort Sea. 120 further licenses were bought in 2021 for exploration in the Eastern North Slope[59].

---

[53] Commissione III (Affari Esteri e Comunitari) della Camera dei Deputati, "Resoconto Stenografico: Indagine Conoscitiva no.17", 2016, p. 35.

[54] F. Pace, *Arctic region*…, op. cit., p. 82.

[55] MAECI, *Verso una Strategia*…, op. cit., p. 11.

[56] F. Pace, *Arctic region*…, op. cit., p. 82.

[57] F. Pace, *Arctic region*…, op. cit., p. 83.

[58] M.L. Lagutina, *Strategy of the Italian*…, op. cit., p. 143.

[59] F. Pace, *Arctic region*…, op. cit., p. 82.

In conclusion, Italy – via national energy companies and through energy trade with major gas exporters – has meaningful stakes in the energy dynamics of the Arctic. Nonetheless, an evident clash between continued investments in the extraction of hydrocarbons, incompatible with the IPCC-recommended greenhouse gas mitigation pathways, and *raison d'être* of the Italian presence in the Arctic ("it is important that it [climate change] is universally recognized as a priority at the global level", as per the *Arctic Strategy*) emerges[60]. Given the central role of energy trade in Arctic geopolitical governance, Italy's challenge for the next decades will likely be navigating its domestic energy transition while maintaining the important bilateral and multilateral trade relations with the Arctic Five and particularly with Norway.

Key drivers of Italian national interests towards the Arctic in the Security sector

As a member of NATO and the European Union, Italy expresses daily concern over Russia's subversive stance, stemming from both the invasion of Ukraine on February 22, 2022, and Moscow's aggressive posturing in other international scenarios[61]. The Arctic is one such theater revealing Russia's intent to undermine Western certainties, possibly starting from the region it knows best: the High North[62].

The primary driver prompting Italy's interest in the Arctic is now related to Russia itself. In other words, Russia represents a current threat to Western countries, including Italy[63]. (Borozna 2024)

Russia was a robust economic partner for Italy and Europe for several years, especially in the supply of hydrocarbons. This partnership persisted even after Russia's unilateral declaration of Crimea's annexation in 2014. However, the invasion of Ukraine and the subsequent unilateral annexations of Donetsk and Luhansk regions had a different impact, radically altering the perception of Russia within European chancelleries. If the perception of Russia has

[60] MAECI, *Verso una Strategia*…, op. cit., p. 7.

[61] Center for Strategic and International Studies. (n.d.). *Arctic military activity tracker*. https://arcticmilitarytracker.csis.org/.

[62] E. Buchanan, *Red Arctic: Russian strategy under Putin*, Washington D.C, Brookings Institution Press, 2023, p. 16-20.

[63] A. Borozna, "Russia's Security Perceptions and Arctic Governance", *Politics and Governance*Vol. 12, 2024 p. 2-5.

changed, so has the perception of the "Russian Sea" – the Arctic[64].

Especially because Moscow pursues several military objectives in the Arctic. Firstly, Russia's seven out of 11 ballistic missile submarines stationed on the Kola Peninsula ensure the country's second-strike capability. Secondly, Russia aims to protect access for its Northern Fleet to the North Atlantic and the European Arctic, which would be crucial in a potential conflict scenario with NATO. Thirdly, Russia's extensive northern borders necessitate military bases in the Arctic to enable the rapid deployment of military capabilities[65].

Once viewed as a region for scientific and economic cooperation, as outlined in the latest Italian government plan on the Arctic[66], it has now transformed into a territory where one must "prepare for the unexpected", as stated by Admiral Bauer during theArctic Circle event in Reykjavik, in October 2023[67].

An unstable Arctic or escalation in the Arctic would directly involve Italy on two fronts. Firstly, with Finland and Sweden's admissions, the Arctic becomes a region composed of 7/8 NATO member states[68]. An attack by Russia on any other state would be considered a violation of Article 5 of the North Atlantic Treaty, potentially triggering a collective defense response from all Alliance members, as outlined in the article[69].

On the other hand, an escalation in the Arctic would seriously jeopardize all activities and interests that Italy pursues in that region.

Italy is internationally recognized for excellence in polar scientific studies, with recent discoveries affirming Italian greatness and expertise in these latitudes. The Italian National Research Council's Polar Institute, and the Hydrographic Institute of the Italian Navy, are among the most authoritative actors operating in the Arctic,

---

[64] *Ibidem*, p. 150-171.

[65] E. Rumer, R.Sokolsky, & P. Stronski). Russia in the Arctic—Critical examination. Carnegie Endowment for International Peace, 2021, p. 6 https://carnegieendowment.org/2021/03/29/russia-in-arctic-critical-examination-pub-84181.

[66] MAECI, *Verso una Strategia*…, op. cit., p. 3.

[67] A. Edvarsen "NATO's Military Leader: "We Must Be Prepared for Military Conflicts Arising in the Arctic" High North News, 30 October 2023

https://www.highnorthnews.com/en/natos-military-leader-we-must-be-prepared-military-conflicts-arising-arctic.

[68] Mason Evers. Z "A Changing Security Landscape: NATO and Russia in the Arctic" The International Affairs Review. 1 January 2024, https://www.iar-gwu.org/print-archive/fl2hwo38rikirjykl1w8lguqhmt2ub.

[69] North Atlantic Organization Treaty "The North Atlantic Organization Treaty" 4 April 1949

https://www.nato.int/cps/en/natolive/official_texts_17120.htm

relying on international cooperation among scientists from different states. A possible "white war," as coined by Mian, would seriously endanger this international scientific cooperation. The Russian invasion of Ukraine has already caused serious damage, affecting the survival of the most important international scientific forum in the Arctic, the Arctic Council, fragmenting it internally and blocking data exchange between the Russian scientific community and others in the region, including the Italian community[70].

The Arctic, rich in key raw materials for energy transition, is of great interest to a country like Italy, which lacks these resources in its subsoil[71].

Italy's goal, in conjunction with the European Union, is to reduce dependence, especially on China, for the supply of raw materials[72].

Security issues in the Arctic would make it difficult for European countries, including Italy, to exploit these resources, as they rely on dialogue and diplomacy and would not be ready for a direct confrontation with major powers to secure resources[73]. On the other hand, countries like China and Russia would find fertile ground in seizing Arctic underground resources, further increasing Europe's dependence on other international actors.

With the evolution of the concept of war from traditional to strategic, critical infrastructures play a key role in current conflicts. ENI is the Italian company most extensively involved in the Arctic, participating in many of these "critical activities", such as oil exploration and extraction, particularly off the Norwegian coast[74].

A fear of conflict emerges, posing a serious risk to the company's activities in the region. On one hand, due to the escalating tension in a strategic point like the Norwegian coast and the stretch of water

---

[70] M. Mian, *La Guerra Bianca*, Vicenza, Neri Pozza Editore, 2022, p. 21.

[71] M. Bressan "Le sfide multidimensionali alla sicurezza marittima nell'area del Mediterraneo allargato: la tutela degli interessi marittimi nazionali e la catena di valore marittima" in *Le sfide multidimensionali ed emergenti del Mediterraneo allargato: quale ruolo dell'Italia"* Rivista Trimestrale della Società Italiana per l'Organizzazione Internazionale, Q. 26, 2023 p. 10.

[72] European Council & Council of European Union "Infographic - An EU critical raw materials act for the future of EU supply chains" Website, 21 November 2023, https://www.consilium.europa.eu/en/infographics/critical-raw-materials/.

[73] Foreign Policy "Arctic Competition; PART ONE: RESOURCE COMPETITION IN THE ARCTIC" 13 October 2020,
https://foreignpolicy.com/2020/10/13/arctic-competition-resources-governance-critical-minerals-shipping-climate-change-power-map/.

[74] ENI "Our activities in Norway" 8 September 2023, https://www.eni.com/en-IT/actions/global-activities/norway.html.

separating Norway from Svalbard, one of the focal points of Russia's Arctic Strategy[75].

On the other hand, the likelihood and risks of targeted attacks on Western oil platforms would increase. It should be emphasized that, following the Russian invasion of Ukraine, the Norwegian Arctic has become a major basin for supplying gas and oil to the European Union. Thus, attacking one of these platforms could mean attacking the heart of European energy supplies.

The Italian Army, the Italian Navy, and important Italian companies have been engaged for several years in ensuring stability in the Arctic region and preventing the potential conflict that, as we have seen in the previous chapters, would also harm significant Italian interests.

From a military perspective, the Italian army has been preparing for Arctic missions for several years. In January 2024, the "Volpe Bianca'' exercise took place, where a Tactical Group from the 2nd Alpini Regiment faced challenging trials, simulating the critical conditions that could arise in the far North[76]. This mission also serves as preparation for the NATO international exercise "Nordic Response", where over 20,000 soldiers from 13 nations, including Italy, will practice defending NATO's northern flank[77].

In 2017, the Italian Navy launched the High North project to actively contribute to the National Arctic Strategy. During the High North 2023 mission, the navy conducted monitoring activities and mapped the marine surface and seabed in the Svalbard region, an area key for science but also a spot of growing geostrategic importance[78].

From a security perspective, Italian expertise and the know-how of Italian companies are contributing to ensuring stability in the region and navigation safety. Fincantieri and Leonardo are two key Italian

---

[75] J. Kluge, M. Paul, "Russia's Arctic strategy through 2035: Grand plans and pragmatic constraints", SWP Comment, No. 57/2020, Stiftung Wissenschaft und Politik (SWP), Berlin, 2020, p. 2-4, https://d-nb.info/1261089294/34.

[76] Comando Truppe Alpine "Al via l'esercitazione "Volpe Bianca" Esercito.difesa.it, 25 January 2024
https://www.esercito.difesa.it/comunicazione/Pagine/volpe_bianca.aspx.

[77] A. Edvarsen, "Nordic Response" High North News, 2 February 2024 https://www.highnorthnews.com/en/nordic-response-over-20-000-soldiers-13-nations-will-practice-defending-natos-northern-flank. L. Parigi "La Guerra di domani" Osservatorio Artico, 24 January 2024, https://www.osservatorioartico.it/volpe-bianca-2024/.

[78] Marina Militare "Al via La Campagna High North 2023" M.M Redazione Web, 19 July 2023, https://www.marina.difesa.it/media-cultura/Notiziario-online/Pagine/20230719_Marina_Militare_Al_Via_La_Campagna_High_North_2023.aspx.

players in the Arctic. On one hand, Fincantieri, the largest shipbuilding company in Europe, has recently committed to providing new ships for the Norwegian state. Fincantieri has also contributed its renowned "Alliance" ship to the Italian Navy for environmental observations and is working to expand the Italian polar fleet with a new Polar Research Vessel[79].

On the other hand, Leonardo, a multinational Italian company specializing in aerospace, defense, and security, is participating in the European project ARCSAR - Arctic Security and Emergency Preparedness Network[80]. Leonardo aims to deploy high-tech innovation systems for search and rescue, as well as radar for navigation aid in the Arctic. This project is being carried out in collaboration with e-Geos, a company focused on earth observation and geo-spatial information. e-Geos is also responsible for the Cosmo-SkyMed, Italy's satellite system designed to monitor the retreat of the Arctic ice[81].

In conclusion, although the Arctic is not a primary national interest for Italy, it is a region where Italy boasts various collaborations, areas of excellence, and confirms its status as a middle power. The international geopolitical situation is changing day by day, presenting growing threats and new actors on the global stage. In an international scenario where the concepts of national defense and space are radically evolving, Italy, as a NATO member and a founding member of the European Union, must be prepared even in regions not contiguous to its primary national interests, like the Arctic, to defend a status quo that sees it as a middle power and significant national interests that would be disintegrated by a possible conflict in the region.

---

[79] Fincantieri "Polar Research Vessel", 2022 https://www.fincantieri.com/en/products-and-services/naval-vessels/polar-research-vessel/. Redazione Ansa "Fincantieri: taglio lamiera nave idro-oceanografica della Marina", 19 December 2023.
https://www.ansa.it/sito/notizie/economia/2023/12/19/fincantieri-taglio-lamiera-nave-idro-oceanografica-della-marina_ad295e00-6c43-40dd-9735-10750e0a3ad1.html.

[80] Leonardo, Comunicato Stampa "Leonardo partecipa al progetto europeo ARCSAR per lo sviluppo sostenibile e la sicurezza dell'Artico" Leonardo.com, 25 February 2019 https://www.leonardo.com/it/press-release-detail/-/detail/leonardo-to-participate-in-arcsar-25-02-19.

[81] A. Muro Pes "Far but not so far: Italy's Role and Interests in the Arctic" Arctic Institute, 10 November 2020 https://www.thearcticinstitute.org/italy-role-interests-arctic/.

THE NORWEGIAN PERSPECTIVE IN THE MEDITERRANEAN SEA

ANDREAS ØSTHAGEN – MARCO DORDONI – ALDO PIGOLI

Norway's interests and engagements in the Mediterranean region are strongly influenced by the geopolitical, geo-economic and geo-strategic dimension of Norwegian affairs. Historically, the Vikings - predominantly the Varangians - were active across the region, in particular in Istanbul and Sicily. During the 15th-16th centuries, Norway's trade relations with the Mediterranean - certain Italian city states especially - expanded. Trade, fisheries and maritime activity have allowed these linkages to continue to expand into the modern era. Today, Oslo's perspective is focused mainly on security aspects, related to the geopolitical evolutions in the Mediterranean Sea, and to the ongoing evolutions of the Israel-Hamas conflict and the crisis in the Gulf of Aden linked with the Houthi's threat to maritime security, a dimension where Norway as a maritime country is deeply interested in. Moreover, the security and defence perception from Oslo towards Mediterranean issues is strongly dependent on the Ukraine crisis' consequences and outcomes, due to the increasing and expanding Russian influence in the Mediterranean, the Sahel and the Red Sea. While not being only limited to the security aspects, but including the economic and financial domain, energy is another key element in the way Norwegian decision-makers are looking at the Mediterranean, particularly after the EU embargo on Russian hydrocarbons supply and the need for many EU countries, including Italy, to find rapid and sustainable alternatives for today's needs and for the future strategic approaches. Last but not least, Norway is involved in climate related dynamics of the Mediterranean, considering the strong interconnections that this region has with the Arctic in terms of climate change management and sea life protection.

Security issues

Considering Norway's interests and engagements in the region, the Norwegian perspective on security in the Mediterranean Sea is

multifaceted, and driven by several trends depending on which *issue* we look at, and which *parts* of the Mediterranean is in question. In traditional geopolitics, a state was "secure" if it controlled its land and maritime borders around it. Today, this is no longer the case because threats have changed, taking on increasingly transnational characteristics, and military technologies allow for the targeting of strategic objectives at a very long distance and with very high precision.

Norway, as a maritime nation, is strongly interested in maintaining security and stability not only in adjacent seas but also in those geographically distant ones that can affect Norwegian national interests. This is also the case with Norway's interest in the Mediterranean. The main interests that connect Norway to the Mediterranean include energy, submarine cables, migratory flows, Russian and Chinese activities in the Mediterranean, upholding the primacy of the Law of the Sea, bilateral relations with various Mediterranean states, the links between NATOs Northern and Southern flanks, and finally climate change, for which geographical boundaries do not exist. Following the Russian invasion of Ukraine, Norway became the EU's primary supplier of oil and gas[1]. Many of the communications within the European continent rely on a complex system of submarine cables installed beneath the Mediterranean. This is one of the main reasons why Norway has been seeking to revise the 1998 "Security Act"[2] to include regulations tailored for the defense of submarine cables and has been investing in technologies able to increase the protection of this relevant infrastructures[3].

Other reasons that strengthen the interconnections between Norway and the Mediterranean from a security standpoint include the increasing presence of Russia and China in the Mediterranean Sea. February 2022 significantly strained relations between Russia and Norway. Many bilateral cooperation efforts were suspended, and numerous Norwegian companies operating in Russia halted their projects. With the continuation of the war in Ukraine, the Russian threat becomes increasingly tangible along the 196 km border between

[1] See the "European dimension" chapter.

[2] https://wvm.legislationline.org/taxonomy/term/13199.

[3] S. Treloar, "Norway to Improve Security Around Submarine Fiber Cables", Bloomberg, November 29, 2022. Accessed 14 February 2024. https://www.bloomberg.com/news/articles/2022-11-29/norway-to-improve-security-around-submarine-fiber-cables?embedded-checkout=true.

Russia and Norway and the extensive maritime boundary with Russia in the Arctic Ocean. For this reason, the growing Russian activity in the Mediterranean is a source of concern for Norway as well. On one hand, there is an increasing presence of Russian submarines in the Mediterranean Sea, and on the other hand, there are the alliances that the Russian Federation is establishing in North Africa and the Middle East. The latter point can be directly linked to other Norwegian interests in the Mediterranean, such as maritime strategy, which has become a cornerstone of Norwegian policy, especially after the Russian invasion of Ukraine and the regulation of migration flows. Moreover, this links to broader security concerns and how NATO increasingly conceives of the interconnectedness between the defence alliance's Northern and Southern Flank. Linking capacities and shared threat perceptions have been in focus ever since Norway launched the Core Area Initiative (i.e. back to territorial defence and the "basics" of NATO) in 2008, further amplified after 2014. Norway's role as a key country for NATO activity and control in the North Atlantic mirrors that of Italy in the Mediterranean in terms of the Italian "*peninsula*" geographic centrality and geopolitical relevance.

Although the immediate threat in a European context is undoubtedly Russia, the long term "pacing threat" is increasingly perceived as China - not only in the United States but also in Europe. Here, again, the maritime domain stands out. From Xi Jinping's renowned speech on the Polar Silk Road in Norway, two conflicting perspectives coexist. On one hand, there are the significant advantages that the opening of the Northern Sea Route (NSR) annually would bring to the Norwegian economy, potentially making it the gateway for Asian goods into Europe, akin to the role currently played by the Mediterranean Sea in the Suez route. On the other hand, there is a concern about potential reliance on Chinese and Russian authorities and related leverage that investments in Norway could bring - so called geo-economics - alongside the environmental perspective that seeks to protect the fragile Arctic environment. It has thus become clear in recent years that Norway takes a rather cautious approach to the development of the NSR and its links to a Polar Silk Road, mirroring concerns raised in many EU-Mediterranean states such as Italy when it comes to Chinese investments and ownership over crucial port infrastructure.

Linked, the recent attacks by the Houthis on container ships in the Red Sea aim to disrupt the commercial flows connecting Asia to

Europe, which is the primary market for Asian raw materials worldwide. This crisis, which may seem distant from Norway, could indeed have significant repercussions on the annual opening of the NSR. The instability in the Red Sea and the challenges of navigating through the Bab al-Mandab strait have resulted in losses in terms of goods and transportation costs. Recent reports indicate that these factors have prompted China[4] and Russia to seriously consider and expedite plans for an annual opening of the NSR[5]. The strategies employed by China in the Mediterranean are also of interest to Norway. In fact, China is utilizing a similar approach in the Arctic as it does in the Mediterranean. China employs a broad range of political, economic, and military tools to increase its global footprint, often remaining opaque about its strategy, intentions, and military buildup. In the maritime domain, China aims to subvert the rules-based international order, including freedom of navigation and utilizes its economic leverage to create strategic dependencies and enhance its influence in key maritime routes by controlling critical infrastructures.

Moreover, the ongoing conflict in the Middle East also impacts relations between Norway and the Mediterranean, or more accurately the Eastern Mediterranean. Norway has historically been a strong supporter for peace negotiations - naturally given its small power status and dependence on international law and stability - and has come forcefully out against the Israeli atrocities in Gaza. The conflict in that part of the Mediterranean risks overshadowing other long-term structural challenges like that of China, and immediate European security concerns emanating from the Russian invasion of Ukraine. Seeing these issues as interconnected concerns thus relate to both an actor-oriented approach (Russia, China, Italy) and issues that connect

[4] T. T. Martins, "Arctic Ambitions: China's Engagement with the Northern Sea Route", November 24, 2023. https://thediplomat.com/2023/11/arctic-ambitions-chinas-engagement-with-the-northern-sea-route/#:~:text=China's%20interest%20is%20branded%20as, connectivity%20and%20promoting%20Arctic%20exploration.Accessed Febrary 15, 2024. G. Oddo, "La crisi nel Mar Rosso accende i riflettori sul risiko dell'Artico. Che cosa può succedere tra Russia, Nato e Cina. E l'Europa…", Milano Finanza, Numero 015, 20 January 2024, pag. 28, https://www.milanofinanza.it/news/la-crisi-nel-mar-rosso-accende-i-riflettori-sul-risiko-dell-artico-che-cosa-puo-succedere-tra-russia-202401191730514118. M. P. Funaiole, B. Hart, J. S. Bermudez Jr., and A. Powers-Riggs, "Frozen Frontiers. China's Great Power Ambitions in the Polar Regions", CSIS, April 18, 2023. https://features.csis.org/hiddenreach/china-polar-research-facility/. Accessed February 15, 2024.

[5] For data and analysis about the Russian approach to the NSR, see the "Italian perspective" chapter of this publication.

Norway/the Arctic and Italy/the Mediterranean (the role of NATO, challenges to the Law of the Sea framework).

The ever-present security concern that derives from being a neighbor of Russia, alongside, new and nontraditional security threats, are the primary reasons why Norway is considered a steadfast member of the NATO Alliance. Relatedly, Norway has committed to increase defense spending to 2% by 2026 and has supported NATO missions in the Mediterranean, such as Operation Sophia, Operation Sea Guardian, together with the US led "Operation Prosperity Guardian", in the Red Sea[6].

Trade and economic dimension

The Norwegian economic interests and presence in the Mediterranean are a genuine demonstration of the geographic determinants linked to trade and investments. Most of Norway's trade relations and investments are strongly related to Scandinavia, the Arctic region, the European Union in general and, understandably, with the two major trade actors at global level: USA and China.

Taking into consideration the average of Norwegian exports in the period 2018-2023 in value, 65% concerned just five countries: the United Kingdom (20.7%), Germany (20.5%) and the Netherlands (8.2%), France (7.2%) and Sweden (7.1%). The eight Arctic states are among the main destinations for Norwegian goods, all in the top 20 places, except Russia, which occupies the 31st place only. Comparatively, considering the average values over the same period, the top 5 countries of origin of Norwegian imports were China (11.5%), Sweden (11.5%), Germany (11.5%), USA (7.0%) and Denmark (5.0%). Again, as might be expected, all Arctic states are among the top 20 countries of origin of Norwegian imports, with the exception of Iceland, which occupies 40th place. When considering the Mediterranean Basin, the situation is significantly different, even if, both in terms of exports and imports, some Mediterranean countries are playing a relevant role in the trade relations of Norway. Norway economic and commercial links with the Mediterranean are strongly driven by its membership in the European Economic Area (EEA),

[6] "Norway increases support to Combined Maritime Forces in the Red Sea", Norway Government Website 21 December, 2023. https://www.regjeringen.no/en/aktuelt/norway-increases-support-to-combined-maritime-forces-in-the-red-sea/id3019271/. Accessed 14 February 2024.

within which Norway fully applies the EU's *acquis communautaire* related to free movement of goods, persons, services and capital. Further, and as a member of the European Free Trade Association (EFTA), Norway is also able to conclude bilateral Free Trade Agreements (FTAs) in the so-called EFTA framework, negotiating an FTA with a respective third country via EFTA. Considering the three main trade partners of Norway in the Mediterranean, France, Italy and Spain, it should be highlighted that these countries are observers of the Arctic Council.

Main Mediterranean destination of Norwegian exports of goods (NOK million)[7]

Country	2018	2019	2020	2021	2022	2023
France	65,846	53,490	39,506	112,540	247,863	111,068
Italy	13,432	12,502	11,782	18,445	23,205	31,600
Spain	18,214	20,721	14,326	21,954	23,786	24,976
Türkiye	5,864	7,275	12,845	14,165	11,133	11,894
Greece	1,002	1,822	2,257	6,767	5,366	6,706
Croatia	755	481	466	1,084	784	2,606
Israel	1,120	1866	1860	2,071	2,639	2,314
Egypt	3,244	3579	1262	2,220	3,024	2,263
Morocco	1,356	955	879	456	361	524
Cyprus	235	240	424	243	392	433

[7] "External trade in goods", Statistikkbanken, Statistics Norway, https://www.ssb.no/en/statbank/table/08804. Accessed 13 February 2024.

Main Mediterranean origin of Norwegian imports of goods (NOK million)[8]

Country	2018	2019	2020	2021	2022	2023
Italy	22,673	23,631	22,975	25,416	27,432	31,757
France	22,628	24,975	23,954	24,388	28,691	29,079
Spain	14,497	15,607	18,408	19,996	20,977	22,295
Türkiye	6,493	8,671	8,806	11,680	8,973	9,773
Slovenia	1,399	1,502	1,518	1,782	1,909	2,196
Morocco	976	884	1,037	1,358	2,268	2,051
Greece	803	924	865	994	1,052	1,942
Israel	879	990	1,323	1,178	1,649	1,801
Croatia	746	513	671	1,124	934	938
Malta	93	70	78	102	122	759

Taking a look at Foreign Direct Investments (FDI) related to Norway, 31% of the average FDI's stocks coming from abroad between 2018-2022 where from Sweden (19%), Denmark (7% and Finland (5%), while the entire Mediterranean basin contributed to less than 10%, mostly with stocks related from Cyprus, Spain, France, Israel and Italy[9].

Top 10 countries of origin of FDIs to Norway - average value of stocks 2018-2022 (% of total inward stocks)[10]

Country	Norway inward FDIs stocks (% on total)

[8] *Ibidem.*

[9] "Foreign direct investment", Statistikkbanken, Statistics Norway, https://www.ssb.no/en/statbank/table/11326/, Accessed 13 February 2024.

[10] *Ibidem.*

Country	Norway inward FDIs stocks (% on total)
Sweden	19%
Luxembourg	13%
Netherlands	9%
United States	9%
United Kingdom	8%
Denmark	7%
Finland	5%
Switzerland	4%
Ireland	4%
Cyprus	2%

The main sectors in terms of inward FDI are financial and insurance services (17.5%), wholesale and retail trade (116%), manufacturing (11.4%), information and communication (10.1%), and real estate (9.3%)[11]. Norway continues to be a major investor abroad, with a total stock of outward FDI of USD 188 billion, mainly: in 2022 17% of Norwegian FDIs abroad were related to mining and quarrying, while 14% to manufacture[12].

Top 10 countries of destination of norwegian FDIs - average value of stocks 2018-2022 (NOK million)[13]

Country	Norway outward FDIs stock

[11] "Foreign direct investment", Statistikkbanken, Statistics Norway, https://www.ssb.no/en/statbank/table/11325/, Accessed 13 February 2024.

[12] *Ibidem.*

[13] "Foreign direct investment", Statistikkbanken, Statistics Norway, https://www.ssb.no/en/statbank/table/11326/, Accessed 13 February 2024.

United States	17%
Sweden	14%
Netherlands	11%
Denmark	8%
United Kingdom	7%
Singapore	5%
Spain	4%
Brazil	4%
France	4%
Luxembourg	3%

The geo-economic relevance of the Arctic region and of Northern Europe for Oslo is confirmed by the data coming from the Geo-economic Proximity Index (GPI). The first Mediterranean countries in the ranking are Spain (12th), France (13th), Turkey (19th) and Italy (20th). Considering the southern shore of the Mediterranean Sea, and precisely, Northern Africa, the closest to Norway is Morocco, which ranks 65th.

Geo-economic proximity of Norway (Top 20 Countries + Arctic Council countries + Mediterranean countries)

Rank	**Country**	**GPI with Norway**	**Rank**	**Country**	**GPI with Norway**
1	Sweden	0,5821	21	Greece	0,175
2	Netherlands	0,3969	25	Israel	0,1729

3	Denmark	0,3561	26	Lebanon	0,1723
4	USA	0,3089	27	Malta	0,1721
5	United Kingdom	0,308	28	Jordan	0,1715
6	Switzerland	0,307	30	Cyprus	0,1711
7	Luxembourg	0,2902	31	Croatia	0,1667
8	Iceland	0,2786	32	Slovenia	0,1664
9	Germany	0,2616	38	Albania	0,1556
10	Finland	0,2607	45	Bosnia and Herzegovina	0,1526
11	Liechtenstein	0,254	47	Palestine	0,1522
12	Spain	0,2488	60	San Marino	0,1333
13	France	0,2445	63	Canada	0,1039
14	Ireland	0,2323	65	Morocco	0,0775
15	Poland	0,1951	76	Egypt	0,0727
16	Belgium	0,1913	83	Tunisia	0,0709
17	Lithuania	0,1804	91	Russia	0,0621
18	Estonia	0,1803	97	Algeria	0,0574
19	Turkey	0,1784	112	Libya	0,0536
20	Italy	0,1783	131	Syria	0,0497

FUTURE SCENARIOS

The analysis of the Arctic and the Mediterranean from the climate change, security, and energy perspective has shown many interconnections and brought to the consideration that future regional evolutions will tend to increase the interdependence between them.

Below are some indications relating to the possible evolutionary scenarios of the Arctic and the Mediterranean in terms of climate change, energy dynamics and security, based on the analysis carried out in the previous chapters.

CLIMATE CHANGE

As carefully described and analyzed in this study, recent physical phenomena observed in the Arctic have primarily had to do with:

- significant changes in both precipitation and air temperature;
- dramatic changes in hydro-climatic systems, sea ice extent and volume, and marine productivity;
- increased fire rates, prolonged thawing of permafrost, decreased snow cover and alterations to regional ecosystems leading to feedback effects with a direct impact on carbon cycles.

Unfortunately, in many cases such shifts appear irreversible or will require radical trend reversals, which are not supported by current decarbonization pathways nor their pace, as recent developments illuminate.

The Mediterranean region experienced a dramatic summer in 2023, with the presence of heat waves, heavy rains and floods and - paradoxically for non-experts - extensive fires. The forecasts for 2024 are not optimistic and foresee similar events both in terms of intensity and geographical scope.

From a sustainability perspective, while in recent years the narrative on the impacts of climate change has focused mainly on the Arctic, considered the most affected area in the world particularly due to the phenomenon of ‘Arctic Amplification’, the Mediterranean scenario has had a relatively less impacting image on the public

opinion. Despite this perception, most of the Mediterranean countries have shown a limited level of resilience and adaptivity to climate change compared to the Arctic ones. This difference is very likely to increase in the future, with broad impacts not only at the environmental level, but increasingly on the socio-economic dimensions, bringing to the surface critical situations both at the national and subnational level.

ENERGY SECURITY

The energy scenarios for the Arctic region are well represented by the so-called "Arctic Paradox", characterized by the simultaneous attempt to increase the extraction of Arctic resources, and in particular energy resources, and by the decarbonisation process carried out at a regional and international level to purposes of containing climate change and combating maritime, terrestrial and atmospheric pollution – phenomena that tend to increase the accessibility of Arctic resources through mechanisms such as ice thaw.

Without a doubt, it is easily foreseeable that oil and gas extraction will remain a primary driver of energy dynamics in the Arctic region for the coming years. The approach carried out by Vladimir Putin's government at an economic level sees hydrocarbons as a fundamental asset and the Arctic area as a strategic basin for Russia's future developments, also considering the prospects of progressive opening and economically sustainable use of the NSR. From this perspective, for Moscow the development of relations with China will be important although, according to the declarations of the Beijing government, Xi Jinping intends on undertaking from 2035 onwards a path of decarbonisation and increased reliance on domestic consumption-fuelled growth of its economy. This sharply contrasts with Putin's expected continuation of hydrocarbon extraction as a strategic sector of Russian foreign trade and Moscow's long-term plans to direct their future exports to the "Dragon".

The strategic value of hydrocarbons will also remain central for Norway, which precisely because of the European decoupling from Russian oil and natural gas will continue to be called into question to guarantee energy supplies, particularly for EU countries, while the latter will aim to bring forward with the energy transition envisaged by the REPowerEU Plan launched in May 2022.

This process will be fundamental in the evolution of the energy dynamics of the Mediterranean region. As shown in one of the previous chapters, natural gas developments in the Eastern Mediterranean have been a key energy driver and the main factor of regional competition, with Egypt and Israel emerging as key suppliers and Turkey trying to play a role. Nevertheless, the forecasted limited GDP and demographic growth of EU countries, together with a potential oversupply of natural gas in the international markets for the coming years, will likely lead to a reconfiguration of the energy dynamics of the region, with scenarios currently difficult to define, especially vis-à-vis the southern shore of the Mediterranean.

A significant aspect to be highlighted from the perspective of the future energy scenarios of the Arctic region concerns indigenous communities and the development of RES, which could prove to be an emerging energy trend in the pursuit of indigenous and sustainable supply security, as well as resource justice within the region. Innovation in community-led, decentralized clean energy systems in remote and Indigenous communities might constitute a useful case study for the decarbonization and clean-tech transition of Mediterranean communities, especially in the path of Eastern and Southern Mediterranean powers to greener energy mixes.

DEFENCE AND SECURITY

The deterioration of the perception of security by the European Arctic countries following Russia's renewed military impetus and, above all, due to the latter's invasion of Ukraine, represents one of the factors most capable of determining future developments in the area. It is presumably that the European High North will become even more central in political reflection on defense and operational security in countries such as Norway and for NATO in general. Tensions between NATO and Russia will represent a key security and defense factor in future regional developments, in terms of deterrence, surveillance and the ability by NATO forces to deny Russian access to the North Atlantic and the Atlantic in general.

Furthermore, due to growing international competition in the region, tensions will likely continue and, at worst, increase, fueled by provocative statements, sanctions and occasional military demonstrations between the opposing actors.

A limitedly optimistic vision for the future is also emerging with regards to the Mediterranean framework. At least in the short to medium term, the region will continue to experience political and military instability, with the continuation of long-lasting and more recent tensions if not conflicts, with a general fragile context especially as regards the central-southern and eastern areas. From this perspective, the progressive emergence of geopolitical assertiveness on the part of some regional players, above all Turkey, constitutes a significant factor on which future regional developments will largely depend. Ankara is in fact important both as a south-eastern offshoot of NATO, and as a subject that has demonstrated the will (and ability) to dialogue with the Russian government, and, last but not least, as a key player in the dynamics of interdependence between the Middle Eastern area, Mediterranean system and Europe.

The Mediterranean will remain a fundamental hub for international trade and the center of significant geo-economic and energy dynamics, involving a growing number of players at a regional and international level.

As with the Arctic region, one of the aspects of greatest interest for the future evolution of security in the Mediterranean will concern the contents and methods of Russian-Chinese cooperation in the area. Two states with different strategies but pursuing the same objective. On one hand, China's economic and financial presence in the Mediterranean region will keep on increasing, in order to support Xi Jinping's "Belt and Road Initiative". On the other hand, the Mediterranean region will keep on representing an important spot for Russian foreign policy agenda, using the presence in Syria and Libya and integrating it with the relations that Moscow is developing on the African continent. While being justified by two different motivations, these two approaches aim to weaken the West influence in the region and assert themselves, in case of China, or reassert, in case of Russia, as a great power.

This will necessarily bring an increased presence and assertiveness by NATO but also a structured response by the EU, in order to manage the complexity of the scenario ahead.

SCENARIO ANALYSIS

Based on the analysis conducted in previous chapters, the following variables have been identified as vital inputs for Med-Arctic governance:

- Climate change (How climate change is expected to decrease, remain the same or increase)
- Hydrocarbons development (If the pace of hydrocarbons extraction and use will decrease, remain the same or increase)
- NATO activism (Will it be a lesser, similar or bigger NATO involvement/action/projection in the two regions)
- Great power competition (Will US, China, India and Russia experience a lesser, similar or bigger competition in the Arctic and the Mediterranean).

In order to identify emerging challenges for a dual approach to Med-Arctic governance, the authors have performed a sensitivity analysis using a 3x3 matrix based on intensity (Low-Medium-High), matching the 4 aforementioned variables. An illustrative visualisation is provided in Table 1.

Scenarios for Mediterranean and Arctic governance		**Rate of climate change**		
		LOW	MEDIUM	HIGH
Great power competition	LOW	Scenario	Scenario	Scenario
	MEDIUM	Scenario	Scenario	Scenario
	HIGH	Scenario	Scenario	Scenario

Table 1. Example of sensitivity analysis based on two variables and a three-step intensity scale

The authors have decided not to match variables that belong to the same domain to focus on emerging cross-sectoral challenges in the two regions. The following couples will be considered:

- Climate change - NATO activism
- Great power competition - Hydrocarbons development
- Climate change - Great power competition
- Hydrocarbons development - NATO activism

Definition of intensity in variables

All projections are considered in the timeframe of 2035.

Variable 1. Climate change

- **LOW**: rate consistent with 1.5ºC - 2.0ºC increase by 2050 in global average surface temperatures compared to pre-industrial averages (IPCC SSP1-2.6)
- **MEDIUM**: rate consistent with 2.0ºC – 2.7ºC increase by 2050 in global average surface temperatures compared to pre-industrial averages (IPCC SSP2-4.5)
- **HIGH**: rate consistent with ≥ 3.0ºC increase by 2100 in global average surface temperatures compared to pre-industrial averages (IPCC SSP3-8.5)

Variable 2. Hydrocarbons development

- **LOW**: no significative new licences or additional investments
- **MEDIUM**: business as usual (negative rate of change in yearly licences, new investments mainly in LNG and natural gas)
- **HIGH**: new licences for hydrocarbon extraction, additional CAPEX investments in extraction of hydrocarbons

Variable 3. Great power competition

- **LOW**: Less competition, less political engagement, no particular economic grievances
- **MEDIUM**: Competition is higher than cooperation, major powers seek to maintain or increase their geopolitical influence; geoeconomic competition is maintained
- **HIGH**: Competition is the only model, increased geopolitical activism, wider economic presence (example, new trade agreements or increased foreign direct investments)

Variable 4. NATO activism

- **LOW**: decrease of military presence, exercise and geo-strategic interest
- **MEDIUM**: militarization is progressively established, with more regional exercises and military expenditures

- **HIGH**: increased military presence, cooperation is strengthened and the security perspective overcome geoeconomic and geopolitical strategies

For each scenario, a brief qualitative description of the main implications resulting from the variable intensity pairing is provided for both the Arctic and the Mediterranean regions.

SCENARIO ANALYSIS

Impact-driven sensitivity analysis
*Climate change * Great power competition*

Scenario no.	*Climate change*	*Great Power Competition*	Arctic	Med
1	LOW	LOW	**Climate change**: NSR remains only seasonally viable due to sea ice; greenification of tundra slows down, keeping circumpolar population at current latitudes; ocean productivity increases. **Great Power competition:** Decreased tensions between Russia and USA; China and India show limited interest in the area.	**Climate change:** extreme weather events remain limited; rare instances of record-high heat, drought, and high-volume precipitations slightly damage agricultural businesses in littoral states; recovery in ocean productivity allows economic growth in coastal areas. **Great Power Competition:** Decreased tensions between US, China and Russia to focus on other arenas. The crises surrounding this area stabilize and the Mediterranean region becomes secondary compared to other theatres such as South China Sea for the confrontation

				between the US and China, the Arctic for Russia, and Red Sea for emerging actors supporting great powers like Iran and Saudi Arabia.
2	LOW	MEDIUM	**Climate change**: NSR remains only seasonally viable due to sea ice; greenification of tundra slows down, keeping circumpolar population at current latitudes; ocean productivity increases. **Great Power Competition:** The US and Russia maintain a competitive approach, China keeps its presence, India defines strategies to become a relevant player.	**Climate change**: extreme weather events remain limited; rare instances of record-high heat, drought, and high-volume precipitations slightly damage agricultural businesses in littoral states; recovery in ocean productivity allows economic growth in coastal areas. **Great Power Competition:** Russia and China continue their military activities in the Mediterranean region by passing submarines and continuing to challenge Western defence mechanisms through the dual-use of commercial fleets. The United States alternates between periods of total disinterest and others of greater intensity in the Mediterranean area
3	LOW	HIGH	**Climate change**: NSR remains only	**Climate change**: extreme weather

			seasonally viable due to sea ice; greenification of tundra slows down, keeping circumpolar population at current latitudes; ocean productivity increases. **Great Power Competition**: China increases its grip on Greenland; India expands its economic presence; spill-over of global tensions between US and China; Russia moves further to militarise its Arctic territories.	events remain limited; rare instances of record-high heat, drought, and high-volume precipitations slightly damage agricultural businesses in littoral states; recovery in ocean productivity allows economic growth in coastal areas. **Great Power Competition:** The situation of instability and conflict escalates, involving other State and No-State actors compelling great powers to intervene. The consequence is the creation of two separate fronts. On one hand the cooperation between Russia and China will also increase in the Mediterranean and North Africa, seeking to take advantage of the unstable and chaotic situations in the region and Western - US, British and French - retreat in this area. On the other hand, Western countries, in particular Med coastal States, must rely on NATO, and the EU is compelled to implement effective interventions to

				defend territorial integrity and institutional credibility.
4	MEDIUM	LOW	**Climate change**: NSR is viable 10/12 months a year; remote communities in the Arctic grow in population due to higher seasonal surface averages and greeter habitability; hydrocarbon resources available for extraction increase significantly due to ice thaw and warmer temperatures in spring-summer. **Great Power competition:** Decreased tensions between Russia and USA; China and India show limited interest in the area	**Climate change**: extreme weather events become frequent; decadal records of record-high heat, drought, and high-volume precipitation significantly damage agricultural production in littoral states; decline in ocean productivity causes mild economic downturn in coastal areas. **Great Power Competition:** Decreased tensions between US, China and Russia to focus on other arenas. The crises surrounding this area stabilize and the Mediterranean region becomes secondary compared to other theatres such as South China Sea for the confrontation between the US and China, the Arctic for Russia, and Red Sea for emerging actors supporting great powers like Iran and Saudi Arabia.
5	MEDIUM	MEDIUM	**Climate change**: NSR is viable 10/12 months a year; remote communities in the Arctic grow in population due to	**Climate change**: extreme weather events become frequent; decadal records of record-high heat, drought,

			higher seasonal surface averages and greeter habitability; hydrocarbon resources available for extraction increase significantly due to ice thaw and warmer temperatures in spring-summer. **Great Power Competition:** The US and Russia maintain a competitive approach, China keeps its presence, India defines strategies to become a relevant player.	and high-volume precipitation significantly damage agricultural production in littoral states; decline in ocean productivity causes mild economic downturn in coastal areas. **Great Power Competition:** Russia and China continue their military activities in the Mediterranean region by passing submarines and continuing to challenge Western defence mechanisms through the dual-use of commercial fleets. The United States alternates between periods of total disinterest and others of greater intensity in the Mediterranean area.
6	MEDIUM	HIGH	**Climate change**: NSR is viable 10/12 months a year; remote communities in the Arctic grow in population due to higher seasonal surface averages and greeter habitability; hydrocarbon resources available for extraction increase significantly due to ice thaw and warmer temperatures in spring-summer. **Great Power**	**Climate change**: extreme weather events become frequent; decadal records of record-high heat, drought, and high-volume precipitation significantly damage agricultural production in littoral states; decline in ocean productivity causes mild economic downturn in coastal areas. **Great Power Competition:**

			Competition: China increases its grip on Greenland; India expands its economic presence; spill-over of global tensions between US and China; Russia moves further to militarise its Arctic territories.	The situation of instability and conflict escalates involving other state/non-state actors compelling great powers to intervene. The consequence is the creation of two separate fronts. On one hand the cooperation between Russia and China will also increase in the Mediterranean and North Africa, seeking to take advantage of the unstable and chaotic situations in the region and Western - US, British and French - retreat in this area. On the other hand, Western countries, in particular Med coastal States, must rely on NATO, and the EU is compelled to implement effective interventions to defend territorial integrity and institutional credibility.
	HIGH	LOW	**Climate change**: NSR is completely icefree year-round; 90% of untapped natural resources are technically accessible due to ice thaw and warmer climate; significant reductions in fish stocks cause economic downturn	**Climate change**: extreme weather events cause billions in infrastructural damages and casualties increase yearly; century-high heat, drought, and high-volume precipitations significantly increase

			in coastal communities across circumpolar states. **Great Power competition:** Decreased tensions between Russia and USA; China and India show limited interest in the area	desertification and force the relocation of agricultural production in littoral states; profound changes in ice thick stocks resulting from increases in ocean temperatures deeply alter marine ecosystems and cause the closure of a sizeable share of fishing activities in coastal areas. **Great Power Competition:** Decreased tensions between US, China and Russia to focus on other arenas. The crises surrounding this area stabilize and the Mediterranean region becomes secondary compared to other theatres such as South China Sea for the confrontation between the US and China, the Arctic for Russia, and Red Sea for emerging actors supporting great powers like Iran and Saudi Arabia.
8	HIGH	MEDIUM	**Climate change**: NSR is completely icefree year-round; 90% of untapped natural resources are technically accessible due to ice thaw and warmer climate; significant reductions in fish stocks cause economic downturn	**Climate change**: extreme weather events cause billions in infrastructural damages and casualties increase yearly; century-high heat, drought, and high-volume precipitations significantly increase

			in coastal communities across circumpolar states. **Great Power Competition:** The US and Russia maintain a competitive approach, China keeps its presence, India defines strategies to become a relevant player.	desertification and force the relocation of agricultural production in littoral states; profound changes in ice thick stocks resulting from increases in ocean temperatures deeply alter marine ecosystems and cause the closure of a sizeable share of fishing activities in coastal areas. **Great Power Competition:** Russia and China continue their military activities in the Mediterranean region by passing submarines and continuing to challenge Western defence mechanisms through the dual-use of commercial fleets. The United States alternates between periods of total disinterest and others of greater intensity in the Mediterranean area.
9	HIGH	HIGH	**Climate change**: NSR is completely icefree year-round; 90% of untapped natural resources are technically accessible due to ice thaw and warmer climate; significant reductions in fish stocks cause economic downturn in coastal communities across	**Climate change**: extreme weather events cause billions in infrastructural damages and casualties increase yearly; century-high heat, drought, and high-volume precipitations significantly increase desertification and force the relocation

			circumpolar states. **Great Power Competition:** China increases its grip on Greenland; India expands its economic presence; spill-over of global tensions between US and China; Russia moves further to militarise its Arctic territories.	of agricultural production in littoral states; profound changes in ice thick stocks resulting from increases in ocean temperatures deeply alter marine ecosystems and cause the closure of a sizeable share of fishing activities in coastal areas. **Great Power Competition:** The situation of instability and conflict escalates involving other state/non-state actors compelling great powers to intervene. The consequence is the creation of two separate fronts. On one hand the cooperation between Russia and China will also increase in the Mediterranean and North Africa, seeking to take advantage of the unstable and chaotic situations in the region and Western - US, British and French - retreat in this area. On the other hand, Western countries, in particular Med coastal States, must rely on NATO, and EU is compelled to implement effective interventions to defend territorial integrity and

				institutional credibility.

*Rate of climate change * NATO Activism*

Scenario no.	*Climate change*	*NATO Activism*	Arctic	Med
10	LOW	LOW	**Climate change:** NSR remains only seasonally viable due to sea ice; greenification of tundra slows down, keeping circumpolar population at current latitudes; ocean productivity increases. **NATO activism:** low efforts by NATO to further engage due to conflict-free(er) relationships with Russia and China.	**Climate change:** extreme weather events remain limited; rare instances of record-high heat, drought, and high-volume precipitations slightly damage agricultural businesses in littoral states; recovery in ocean productivity allows economic growth in coastal areas. **NATO activism** The threats in the Red Sea and the situations surrounding the Mediterranean find a solution, stabilising the southern front of NATO.
11	LOW	MEDIUM	**Climate change:** NSR remains only seasonally viable due to sea ice; greenification of tundra slows down, keeping circumpolar population at current latitudes; ocean productivity increases. **NATO activism:** increased efforts by	**Climate Change:** extreme weather events remain limited; rare instances of record-high heat, drought, and high-volume precipitations slightly damage agricultural businesses in littoral states; recovery in ocean productivity allows economic

			European NATO states for collective response to growing militarization efforts by Russia.	growth in coastal areas. **NATO activism** The tension in the region rises mainly due to the strong interconnection that characterises this area concerning international crises. The tension in the Middle East does not find a solution, and the surrounding situations seriously endanger the commercial route from Asia, posing a serious threat to critical undersea infrastructure where NATO is poised for intervention.
12	LOW	HIGH	**Climate change:** NSR remains only seasonally viable due to sea ice; greenification of tundra slows down, keeping circumpolar population at current latitudes; ocean productivity increases. **NATO activism:** due to increasing tensions with Russia and China, NATO increases its presence in the region and modernises its Arctic capacities.	**Climate change:** extreme weather events remain limited; rare instances of record-high heat, drought, and high-volume precipitations slightly damage agricultural businesses in littoral states; recovery in ocean productivity allows economic growth in coastal areas. **NATO activism:** The tension in the region rises due to a real threat to Article 5 or a direct attack on critical infra-structure for members of the Atlantic Alliance. In this scenario, the

				bases of Gibraltar, Cyprus, and Naples become crucial in preparation for military interventions.
13	MEDIUM	LOW	**Climate change:** NSR is viable 10/12 months a year; remote communities in the Arctic grow in population due to higher seasonal surface averages and greeter habitability; hydrocarbon resources available for extraction increase significantly due to ice thaw and warmer temperatures in spring-summer. **NATO activism:** low efforts by NATO to further engage due to conflict-free(er) relationships with Russia and China	**Climate change:** extreme weather events become frequent; decadal records of record-high heat, drought, and high-volume precipitation significantly damage agricultural production in littoral states; decline in ocean productivity causes mild economic downturn in coastal areas. **NATO activism** The threats in the Red Sea and the situations surrounding the Mediterranean find a solution, stabilising the southern front of NATO.
14	MEDIUM	MEDIUM	**Climate change:** NSR is viable 10/12 months a year; remote communities in the Arctic grow in population due to higher seasonal surface averages and greeter habitability; hydrocarbon resources available for extraction increase significantly due to ice thaw and warmer temperatures in spring-summer.	**Climate change:** extreme weather events become frequent; decadal records of record-high heat, drought, and high-volume precipitation significantly damage agricultural production in littoral states; decline in ocean productivity causes mild economic downturn in coastal areas.

			NATO activism: increased efforts by European NATO states for collective response to growing militarization efforts by Russia	**NATO activism** The tension in the region rises mainly due to the strong interconnection that characterises this area concerning international crises. The tension in the Middle East does not find a solution, and the surrounding situations seriously endanger the commercial route from Asia, posing a serious threat to critical undersea infrastructure where NATO is poised for intervention.
15	MEDIUM	HIGH	**Climate change:** NSR is viable 10/12 months a year; remote communities in the Arctic grow in population due to higher seasonal surface averages and greeter habitability; hydrocarbon resources available for extraction increase significantly due to ice thaw and warmer temperatures in spring-summer. **NATO activism:** due to increasing tensions with Russia and China, NATO increases its presence in the region and modernises its Arctic capacities	**Climate change:** extreme weather events become frequent; decadal records of record-high heat, drought, and high-volume precipitation significantly damage agricultural production in littoral states; decline in ocean productivity causes mild economic downturn in coastal areas. **NATO activism** The tension in the region rises due to a real threat to Article 5 or a direct attack on critical infrastructure for members of the Atlantic Alliance. In this scenario, the bases of Gibraltar, Cyprus, and Naples become crucial in

				preparation for military interventions.
16	HIGH	LOW	**Climate change:** NSR is completely ice-free year-round; 90% of untapped natural resources are technically accessible due to ice thaw and warmer climate; significant reductions in fish stocks cause economic downturn in coastal communities across circumpolar states. **NATO activism:** low efforts by NATO to further engage due to conflict-free(er) relationships with Russia and China	**Climate change:** extreme weather events cause billions in infrastructural damages and casualties increase yearly; century-high heat, drought, and high-volume precipitations significantly increase desertification and force the relocation of agricultural production in littoral states; profound changes in ice thick stocks resulting from increases in ocean temperatures deeply alter marine ecosystems and cause the closure of a sizeable share of fishing activities in coastal areas. **NATO activism** The threats in the Red Sea and the situations surrounding the Mediterranean find a solution, stabilising the southern front of NATO.
17	HIGH	MEDIUM	**Rate of Climate Change:** NSR is completely ice-free year-round; 90% of untapped natural resources are technically accessible due to ice thaw and warmer	**Climate change:** extreme weather events cause billions in infrastructural damages and casualties increase yearly; century-high heat, drought, and high-volume

			climate; significant reductions in fish stocks cause economic downturn in coastal communities across circumpolar states. **NATO activism:** increased efforts by European NATO states for collective response to growing militarization efforts by Russia	precipitations significantly increase desertification and force the relocation of agricultural production in littoral states; profound changes in ice thick stocks resulting from increases in ocean temperatures deeply alter marine ecosystems and cause the closure of a sizeable share of fishing activities in coastal areas. **NATO activism** The tension in the region rises mainly due to the strong interconnection that characterises this area concerning international crises. The tension in the Middle East does not find a solution, and the surrounding situations seriously endanger the commercial route from Asia, posing a serious threat to critical undersea infrastructure where NATO is poised for intervention.
18	HIGH	HIGH	**Climate change:** NSR is completely ice-free year-round; 90% of untapped natural resources are technically accessible due to ice thaw and warmer climate; significant reductions in fish stocks cause	**Climate change:** extreme weather events cause billions in infrastructural damages and casualties increase yearly; century-high heat, drought, and high-volume precipitations significantly

			economic downturn in coastal communities across circumpolar states. **NATO activism:** due to increasing tensions with Russia and China, NATO increases its presence in the region and modernises its Arctic capacities	increase desertification and force the relocation of agricultural production in littoral states; profound changes in ice thick stocks resulting from increases in ocean temperatures deeply alter marine ecosystems and cause the closure of a sizeable share of fishing activities in coastal areas. **NATO activism** The tension in the region rises due to a real threat to Article 5 or a direct attack on critical infrastructure for members of the Atlantic Alliance. In this scenario, the bases of Gibraltar, Cyprus, and Naples become crucial in preparation for military interventions.

*Great power competition * Hydrocarbons development*

Scenario no.	Great power competition	Hydrocarbons development	Arctic	Med
19	LOW	LOW	**Great power competition:** Decreased tensions between Russia and US; China and India show limited interest in the area **Hydrocarbons**	**Great Power Competition:** Decreased tensions between US, China and Russia to focus on other arenas. The crises surrounding this

			development: no new licences are issued; no global demand for extracting resources; low feasibility due to low global prices and global competition.	area stabilize and the Mediterranean region becomes secondary compared to other theatres such as South China Sea for the confrontation between the US and China, the Arctic for Russia, and Red Sea for emerging actors supporting great powers like Iran and Saudi Arabia. **Hydrocarbons development:** The European market increases the pace of its decarbonization process; no new relevant licences in the Oil&Gas are issued in the Mediterranean; Natural Gas fails to establish as the main energy source; North African and Eastern Mediterranean Oil&Gas producers progressively diversify their economies and limit the role of energy exports.
20	LOW	MEDIUM	**Great power competition:** Decreased tensions between Russia and US; China and India show limited interest in the area. **Hydrocarbons development:** increased efforts in the European Arctic	**Great power competition** Decreased tensions between US, China and Russia to focus on other arenas. The crises surrounding this area stabilize and the Mediterranean region becomes secondary compared

			and Alaska due to increasing demand for gas/oil in Europe and the US.	to other theatres such as South China Sea for the confrontation between the US and China, the Arctic for Russia, and Red Sea for emerging actors supporting great powers like Iran and Saudi Arabia. **Hydrocarbons development:** The European countries keep the actual level of Hydrocarbons consumption (mainly natural Gas); The Eastern Mediterranean area experience an increasing level of investments in the natural gas exploration and exploitation; Countries like Israel and Egypt increase their natural gas production; Turkey keeps its plan to become a prominent actor in the energy dynamics of the Mediterranean.
21	LOW	HIGH	**Great power competition:** Decreased tensions between Russia and US; China and India show limited interest in the area. **Hydrocarbons development:** Arctic oil/gas rush due to increasing prices for those commodities on the global market and an	**Great power competition** Decreased tensions between US, China and Russia to focus on other arenas. The crises surrounding this area stabilize and the Mediterranean region becomes secondary compared to other theatres such as South China Sea for the

			exponential demand in Europe and Asia.	confrontation between the US and China, the Arctic for Russia, and Red Sea for emerging actors supporting great powers like Iran and Saudi Arabia. **Hydrocarbons development:** The EU Green Deal faces strong resistances by some of its member countries in fostering the energy transition; Electric automotive and transports aren't able to establish themselves; North African and Eastern Mediterranean countries increase their dependence on Oil&Gas production and exports.
22	MEDIUM	LOW	**Great power competition:** The US and Russia maintain a competitive approach, China keeps its presence, India defines strategies to become a relevant player. **Hydrocarbons development:** no new licences will be issued; no global demand for extracting resources; low feasibility due to low global prices and global competition	**Great power competition** Russia and China continue their military activities in the Mediterranean region by passing submarines and continuing to challenge Western defence mechanisms through the dual-use of commercial fleets. The United States alternates between periods of total disinterest and others of greater intensity in the Mediterranean area. **Hydrocarbons**

				development: The European market increases the pace of its decarbonization process; no new relevant licences in the Oil&Gas are issued in the Mediterranean; Natural Gas fails to establish as the main energy source; North African and Eastern Mediterranean Oil&Gas producers progressively diversify their economies and limit the role of energy exports.
23	MEDIUM	MEDIUM	**Great power competition:** The US and Russia maintain a competitive approach, China keeps its presence, India defines strategies to become a relevant player. **Hydrocarbons development:** increased efforts in the European Arctic and Alaska due to increasing demand for gas/oil in Europe and the US.	**Great power competition** Russia and China continue their military activities in the Mediterranean region by passing submarines and continuing to challenge Western defence mechanisms through the dual-use of commercial fleets. The United States alternates between periods of total disinterest and others of greater intensity in the Mediterranean area. **Hydrocarbons development:** The European countries keep the actual level of Hydrocarbons consumption (mainly natural Gas); The Eastern

				Mediterranean area experience an increasing level of investments in the natural gas exploration and exploitation; Countries like Israel and Egypt increase their natural gas production; Turkey keeps its plan to become a prominent actor in the energy dynamics of the Mediterranean.
24	MEDIUM	HIGH	**Great power competition:** US and Russia maintain a competitive approach, China keeps its presence, India defines strategies to become a relevant player. **Hydrocarbons development:** Arctic oil/gas rush due to increasing prices for those commodities on the global market and an exponential demand in Europe and Asia.	**Great power competition** Russia and China continue their military activities in the Mediterranean region by passing submarines and continuing to challenge Western defence mechanisms through the dual-use of commercial fleets. The United States alternates between periods of total disinterest and others of greater intensity in the Mediterranean area. **Hydrocarbons development:** The EU Green Deal faces strong resistances by some of its member countries in fostering the energy transition; Electric automotive and transports aren't able to establish themselves; North

				African and Eastern Mediterranean countries increase their dependence on Oil&Gas production and exports.
25	HIGH	LOW	**Great power competition:** China increases its grip on Greenland; India expands its economic presence; spill-over of global tensions between US and China; Russia moves further to militarise its Arctic territories. **Hydrocarbons development:** no new licences will be issued; no global demand for extracting resources; low feasibility due to low global prices and global competition	**Great Power Competition:** The situation of instability and conflict escalates involving other state/non-state actors compelling great powers to intervene. The consequence is the creation of two separate fronts. On one hand the cooperation between Russia and China will also increase in the Mediterranean and North Africa, seeking to take advantage of the unstable and chaotic situations in the region and Western - US, British and French - retreat in this area. On the other hand, Western countries, in particular Med coastal States, must rely on NATO, and the EU is compelled to implement effective interventions to defend territorial integrity and institutional credibility. **Hydrocarbons development:** The European market

				increases the pace of its decarbonization process; no new relevant licences in the Oil&Gas are issued in the Mediterranean; Natural Gas fails to establish as the main energy source; North African and Eastern Mediterranean Oil&Gas producers progressively diversify their economies and limit the role of energy exports.
26	HIGH	MEDIUM	**Great power competition:** China increases its grip on Greenland; India expands its economic presence; spill-over of global tensions between US and China; Russia moves further to militarise its Arctic territories. **Hydrocarbons development:** increased efforts in the European Arctic and Alaska due to increasing demand for gas/oil in Europe and the US.	**Great power competition** The situation of instability and conflict escalates involving other state/non-state actors compelling great powers to intervene. The consequence is the creation of two separate fronts. On one hand the cooperation between Russia and China will also increase in the Mediterranean and North Africa, seeking to take advantage of the unstable and chaotic situations in the region and Western - US, British and French - retreat in this area. On the other hand, Western countries, in particular Med coastal States, must rely on NATO, and

				the EU is compelled to implement effective interventions to defend territorial integrity and institutional credibility. **Hydrocarbons development:** The European countries keep the actual level of Hydrocarbons consumption (mainly natural Gas); The Eastern Mediterranean area experience an increasing level of investments in the natural gas exploration and exploitation; Countries like Israel and Egypt increase their natural gas production; Turkey keeps its plan to become a prominent actor in the energy dynamics of the Mediterranean.
27	HIGH	HIGH	**Great power competition:** China increases its grip on Greenland; India expands its economic presence; spill-over of global tensions between US and China; Russia moves further to militarise its Arctic territories. **Hydrocarbons development:** Arctic oil/gas rush due to increasing	**Great power competition** The situation of instability and conflict escalates involving other state/non-state actors compelling great powers to intervene. The consequence is the creation of two separate fronts. On one hand the cooperation between Russia and China will also increase in

			prices for those commodities on the global market and an exponential demand in Europe and Asia.	the Mediterranean and North Africa, seeking to take advantage of the unstable and chaotic situations in the region and Western - US, British and French - retreat in this area. On the other hand, Western countries, in particular Med coastal States, must rely on NATO, and the EU is compelled to implement effective interventions to defend territorial integrity and institutional credibility. **Hydrocarbons development:** The EU Green Deal faces strong resistances by some of its member countries in fostering the energy transition; Electric automotive and transports aren't able to establish themselves; North African and Eastern Mediterranean countries increase their dependence on Oil&Gas production and exports.

*NATO Activism * Hydrocarbons development*

Scenario no.	*NATO Activism*	Hydrocarbons development	Arctic	Med

28	LOW	LOW	**NATO activism:** low efforts by NATO to further engage due to conflict-free(er) relationships with Russia and China. **Hydrocarbons development:** no new licences will be issued; no global demand for extracting resources; low feasibility due to low global prices and global competition	**NATO activism** The threats in the Red Sea and the situations surrounding the Mediterranean find a solution, stabilising the southern front of NATO **Hydrocarbons development:** The European market increases the pace of its decarbonization process; no new relevant licences in the Oil&Gas are issued in the Mediterranean; Natural Gas fails to establish as the main energy source; North African and Eastern Mediterranean Oil&Gas producers progressively diversify their economies and limit the role of energy exports.
29	LOW	MEDIUM	**NATO activism:** low efforts by NATO to further engage due to conflict-free(er) relationships with Russia and China. **Hydrocarbons development:** increased efforts in the European Arctic and Alaska due to increasing demand for gas/oil in Europe and the US.	**NATO activism** The threats in the Red Sea and the situations surrounding the Mediterranean find a solution, stabilising the southern front of NATO **Hydrocarbons development:** The European countries keep the actual level of Hydrocarbons consumption (mainly natural

				Gas); The Eastern Mediterranean area experience an increasing level of investments in the natural gas exploration and exploitation; Countries like Israel and Egypt increase their natural gas production; Turkey keeps its plan to become a prominent actor in the energy dynamics of the Mediterranean.
30	LOW	HIGH	**NATO activism:** low efforts by NATO to further engage due to conflict-free(er) relationships with Russia and China. **Hydrocarbons development:** Arctic oil/gas rush due to increasing prices for those commodities on the global market and an exponential demand in Europe and Asia.	**NATO activism** The threats in the Red Sea and the situations surrounding the Mediterranean find a solution, stabilising the southern front of NATO **Hydrocarbons development:** The EU Green Deal faces strong resistances by some of its member countries in fostering the energy transition; Electric automotive and transports aren't able to establish themselves; North African and Eastern Mediterranean countries increase their dependence on Oil&Gas production and exports.
31	MEDIUM	LOW	**NATO activism:** increased efforts by European NATO	**NATO activism** The tension in the region rises mainly

			states for collective response to growing militarization efforts by Russia. **Hydrocarbons development:** no new licences will be issued; no global demand for extracting resources; low feasibility due to low global prices and global competition.	due to the strong interconnection that characterises this area concerning international crises. The tension in the Middle East does not find a solution, and the surrounding situations seriously endanger the commercial route from Asia, posing a serious threat to critical undersea infrastructure where NATO is poised for intervention. **Hydrocarbons development:** The European market increases the pace of its decarbonization process; no new relevant licences in the Oil&Gas are issued in the Mediterranean; Natural Gas fails to establish as the main energy source; North African and Eastern Mediterranean Oil&Gas producers progressively diversify their economies and limit the role of energy exports.
32	MEDIUM	MEDIUM	**NATO activism:** increased efforts by European NATO states for collective response to growing militarization efforts by Russia. **Hydrocarbons development:**	**NATO activism** The tension in the region rises mainly due to the strong interconnection that characterizes this area concerning international crises. The tension in the Middle East does

			increased efforts in the European Arctic and Alaska due to increasing demand for gas/oil in Europe and the US.	not find a solution, and the surrounding situations seriously endanger the commercial route from Asia, posing a serious threat to critical undersea infrastructure where NATO is poised for intervention. **Hydrocarbons development:** The European countries keep the actual level of Hydrocarbons consumption (mainly natural Gas); The Eastern Mediterranean area experience an increasing level of investments in the natural gas exploration and exploitation; Countries like Israel and Egypt increase their natural gas production; Turkey keeps its plan to become a prominent actor in the energy dynamics of the Mediterranean.
33	MEDIUM	HIGH	**NATO activism:** increased efforts by European NATO states for collective response to growing militarization efforts by Russia. **Hydrocarbons development:** Arctic oil/gas rush due to increasing prices for those commodities on the global market and an	**NATO activism** The tension in the region rises mainly due to the strong interconnection that characterises this area concerning international crises. The tension in the Middle East does not find a solution, and the surrounding situations seriously endanger the commercial route

			exponential demand in Europe and Asia.	from Asia, posing a serious threat to critical undersea infrastructure where NATO is poised for intervention. **Hydrocarbons development:** The EU Green Deal faces strong resistances by some of its member countries in fostering the energy transition; Electric automotive and transports aren't able to establish themselves; North African and Eastern Mediterranean countries increase their dependence on Oil&Gas production and exports.
34	HIGH	LOW	**NATO activism:** due to increasing tensions with Russia and China, NATO increases its presence in the region and modernises its Arctic capacities. **Hydrocarbons development:** no new licences will be issued; no global demand for extracting resources; low feasibility due to low global prices and global competition.	**NATO activism** The tension in the region rises due to a real threat to Article 5 or a direct attack on critical infrastructure for members of the Atlantic Alliance. In this scenario, the bases of Gibraltar, Cyprus, and Naples become crucial in preparation for military interventions **Hydrocarbons development:** The European market increases the pace of its decarbonization process; no new relevant licences in the Oil&Gas are

				issued in the Mediterranean; Natural Gas fails to establish as the main energy source; North African and Eastern Mediterranean Oil&Gas producers progressively diversify their economies and limit the role of energy exports.
35	HIGH	MEDIUM	**NATO activism:** due to increasing tensions with Russia and China, NATO increases its presence in the region and modernises its Arctic capacities. **Hydrocarbons development:** increased efforts in the European Arctic and Alaska due to increasing demand for gas/oil in Europe and the US.	**NATO activism** The tension in the region rises due to a real threat to Article 5 or a direct attack on critical infrastructure for members of the Atlantic Alliance. In this scenario, the bases of Gibraltar, Cyprus, and Naples become crucial in preparation for military interventions **Hydrocarbons development:** The European countries keep the actual level of Hydrocarbons consumption (mainly natural Gas); The Eastern Mediterranean area experience an increasing level of investments in the natural gas exploration and exploitation; Countries like Israel and Egypt increase their natural gas production; Turkey keeps its plan to

				become a prominent actor in the energy dynamics of the Mediterranean.
36	HIGH	HIGH	**NATO activism:** due to increasing tensions with Russia and China, NATO increases its presence in the region and modernises its Arctic capacities. **Hydrocarbons development:** Arctic oil/gas rush due to increasing prices for those commodities on the global market and an exponential demand in Europe and Asia.	**NATO activism** The tension in the region rises due to a real threat to Article 5 or a direct attack on critical infrastructure for members of the Atlantic Alliance. In this scenario, the bases of Gibraltar, Cyprus, and Naples become crucial in preparation for military interventions **Hydrocarbons development:** The EU Green Deal faces strong resistances by some of its member countries in fostering the energy transition; Electric automotive and transports aren't able to establish themselves; North African and Eastern Mediterranean countries increase their dependence on Oil&Gas production and exports.

SCENARIO SELECTION

The process generated a total of 36 scenarios.

The authors assigned a "probability level" to the 36 couples, defined as unlikely (1), probable but far (2), likely but not certain (3) and highly likely-nearly happening (4) and placed them in a grid.

Each author provided their own independent assessments, based on their knowledge and perception.

The results provided a probability score for each scenario.

Scenarios with "high probability" levels (from 13 up to 16) are extrapolated and used to define recommendations for policy-makers.

Scenario	Score	**Scenario**	Score	**Scenario**	Score	**Scenario**	Score
1	6	**10**	5	**19**	5	**28**	8
2	9	**11**	7	**20**	8	**29**	7
3	4	**12**	1	**21**	6	**30**	4
4	7	**13**	4	**22**	5	**31**	9
5	15	**14**	13	**23**	15	**32**	14
6	11	**15**	9	**24**	9	**33**	11
7	7	**16**	6	**25**	5	**34**	5
8	9	**17**	11	**26**	11	**35**	9
9	7	**18**	7	**27**	8	**36**	6

The selected scenarios were analyzed to define a holistic understanding of Arctic-Mediterranean policy and produce operational guidelines for decision makers.

Scenario 5 - Climate Change & Great Power Competition

This scenario is considered highly likely, with a rate of 15 out of 16.

The Arctic

Climate change: NSR is viable 10/12 months a year; remote communities in the Arctic grow in population due to higher seasonal surface averages and greeter habitability; hydrocarbon resources available for extraction increase significantly due to ice thaw and warmer temperatures in spring-summer.

Great Power Competition: The US and Russia maintain a competitive approach, China keeps its presence, India defines strategies to become a relevant player.

The Mediterranean

Climate change: extreme weather events become frequent; decadal records of record-high heat, drought, and high-volume precipitation significantly damage agricultural production in littoral states; decline in ocean productivity causes mild economic downturn in coastal areas.

Great Power Competition: Russia and China continue their military activities in the Mediterranean region by passing submarines and continuing to challenge Western defence mechanisms through the dual-use of

commercial fleets. The United States alternates between periods of total disinterest and others of greater intensity in the Mediterranean area.

Scenario 14 - Climate Change & NATO Activism

This scenario is considered highly likely, with a rate of 13 out of 16.

The Arctic

Climate change: NSR is viable 10/12 months a year; remote communities in the Arctic grow in population due to higher seasonal surface averages and greeter habitability; hydrocarbon resources available for extraction increase significantly due to ice thaw and warmer temperatures in spring-summer.

NATO activism: increased efforts by European NATO states for collective response to growing militarization efforts by Russia

The Mediterranean

Climate change: extreme weather events become frequent; decadal records of record-high heat, drought, and high-volume precipitation significantly damage agricultural production in littoral states; decline in ocean productivity causes mild economic downturn in coastal areas.

NATO activism: The tension in the region rises mainly due to the strong interconnection that characterises this area concerning international crises. The tension in the Middle East does not find a solution, and the surrounding situations seriously endanger the commercial route from Asia, posing a serious threat to critical undersea infrastructure where NATO is poised for intervention.

Scenario 23 - Great Power Competition & Hydrocarbons development

This scenario is considered highly likely, with a rate of 15 out of 16.

The Arctic

Great power competition: The US and Russia maintain a competitive approach, China keeps its presence, India defines strategies to become a relevant player.

Hydrocarbons development: increased efforts in the European Arctic and Alaska due to increasing demand for gas/oil in Europe and the US.

The Mediterranean

Great power competition: Russia and China continue their military activities in the Mediterranean region by passing submarines and continuing to challenge Western defence mechanisms through the dual-use of commercial fleets. The United States alternates between periods of total disinterest and others of greater intensity in the Mediterranean area.

Hydrocarbons development: The European countries keep the actual level of Hydrocarbons consumption (mainly natural Gas); The Eastern Mediterranean area experiences an increasing level of investments in the natural gas exploration and exploitation; Countries like Israel and Egypt increase their natural gas production; Turkey keeps its plan to become a prominent actor in the energy dynamics of the Mediterranean.

Scenario 32 - NATO Activism & Hydrocarbons development

This scenario is considered highly likely, with a rate of 14 out of 16.

The Arctic

NATO activism: increased efforts by European NATO states for collective response to growing militarization efforts by Russia.

Hydrocarbons development: increased efforts in the European Arctic and Alaska due to increasing demand for gas/oil in Europe and the US.

The Mediterranean

NATO activism: The tension in the region rises mainly due to the strong interconnection that characterizes this area concerning international crises. The tension in the Middle East does not find a solution, and the surrounding situations seriously endanger the commercial route from Asia, posing a serious threat to critical undersea infrastructure where NATO is poised for intervention.

Hydrocarbons development: The European countries keep the actual level of Hydrocarbons consumption (mainly natural Gas); The Eastern Mediterranean area experience an increasing level of investments in the natural gas exploration and exploitation; Countries like Israel and Egypt increase their natural gas production; Turkey keeps its plan to become a prominent actor in the energy dynamics of the Mediterranean.

CONCLUSIONS

There is no doubt: the Arctic region and the Mediterranean region are very different from each other. Let's just consider the demographic size: less than 5 million people compared to hundreds of millions who are constantly growing. Furthermore, the historical complexity of the Mediterranean, with more than 20 countries and a series of overlapping and often conflicting political, security, economic and social challenges, seems evidently far from the apparently "simple" Arctic situation, characterized by only 8 countries and increasingly oriented towards a NATO vs Russia geo-strategic scenario, considering Finland and Sweden's recent membership of the Atlantic Alliance.

That said, beyond the surface, there are many commonalities and interconnecting factors, which are pushing the two regions towards progressive interaction.

While the connection is clear and amply demonstrated in terms of climate change and its impacts, security and defense aspects and energy issues also show a close relationship between the two regions. This is even more true especially if we consider the interests and dynamics of two "macro-actors" such as the EU and NATO. Both these organization share a Southern and Northern dimension but with relevant differences.

For NATO, the relevance of these two geographic dimensions is not new, having been engaged throughout the past decades in the geo-strategic evolutions of both the Arctic and the Mediterranean. However, while the size of the threat in the Arctic – and the related strategies and actions to manage it – have almost always focused on Russia, in the Mediterranean the challenges have had multiple origins and Moscow has not always been the main source of concern for NATO leaders. In recent years and with the growing assertiveness of the Russian regime in the Arctic as well as in the Mediterranean, a strategic convergence has occurred which, in a certain sense, has turned the hands of time back to the Cold War era, albeit in a completely changed international. Today, in fact, for NATO there is growing attention on the role and influence that the People's Republic

of China is trying to develop in both regions, even if between Washington and some European governments the perception of the problem is different and the strategies diverge.

For the EU the issue presents itself in a significantly different way, with a strategic vision towards the Mediterranean that dates back to the 1990s – albeit with not always optimal results – while an EU policy towards the Arctic it is a relatively new experience and still being defined. This aspect is affected by the different weight that the two regions have so far had for the member countries and for the Brussels institutions. In fact, while in the Mediterranean the national interests of Spain, France, Italy, Malta, Greece and Cyprus – just to name a few – are projected as priorities, in the Arctic the geographic presence of the Union is limited to Denmark, Finland and Sweden, to which must be added states non-EU, such as Iceland and Norway, whose economic links with the European common market amplify the Union's involvement in the region.

Nevertheless, recent developments related to security, energy dynamics and, obviously, climate change have led the Brussels authorities to consider shared approaches for the management and development of these two regions, with a growing identification of the same as the North and South coasts of the EU.

It's indeed a crucial period with significant geopolitical developments impacting the security of the Arctic and the Mediterranean from a broader perspective. The outcomes of ongoing conflicts in Ukraine, the Eastern Mediterranean and the Red Sea / Gulf of Aden, as well as the intentions of key players like Russia and China in these regions, will contribute to shaping the future dynamics. The same can be affirmed in relation to the Climate change issue and the way European countries will address the multiple challenges related to it, with the energy transition process being a paramount factor. Energy security and the related economic and trade dynamics will define the future evolutions of both the Mediterranean and the Arctic, increasing the interconnections between them. From this point of view, as emerged in this publication, one of the main issues to take into consideration concerns the evolution of the submarine cable systems and their relevance from an economic and security point of view.

Considering all these aspects, the maritime dimension appears as a key environment where competition rather than cooperation will probably increase in the coming years, both from the security, energy and economic point of view. The "Command of the Sea", using the

Mahan concept, is no longer in the hands of a single power, as it happened in the past, but a plurality of actors is involved. Therefore, NATO and EU should consider addressing the developments and evolutions of both regions with a comprehensive approach to stimulate cooperation between the Alliance and the Union and let them be able to cope with nowadays and future challenges and risks.

The upcoming European Parliament elections in June 2024 will be a critical event, as the U.S. Presidential elections in November, potentially influencing EU and NATO guidelines and policies in the different areas of analysis covered in the course of this work. Between these two crucial events, the NATO summit in Washington in July could represent a step forward.

RECOMMENDATIONS

ITALY

As a member of NATO and the EU, Italy is fully invested in the security concerns and scenarios related to the perceived or actual threat coming from Russia's aggressive posturing in the Arctic theatre and in the High North in particular. Moreover, considering Moscow's activism in the Mediterranean region, the resulting scenario represents a systemic threat to Italian interests. A military escalation in the Arctic, with prospective violations of Article 5 of the North Atlantic Treaty, potentially triggering a collective defense response from all Alliance members, would directly involve Italy. Those evolutions happen in a peculiar geopolitical framework that should be attentively followed from the perspective of great power competition.

In the Arctic, it seems highly probable that the US and Russia will maintain a competitive approach, while China is expected to increase its geopolitical presence and continue focusing mainly on economic and trade opportunities. Moreover, India, the greater emerging actor at the world level, will potentially define its strategies to become a relevant regional player.

In the Mediterranean, the increasing level of tensions produced by the Gaza conflict and the regional confrontations in the Middle East, will produce potential space for Russian and Chinese challenges to Western influence, also in the security and defence realm. The United States difficulties in containing Israel’s reactions to Hamas and Iran’s threats and activities shows a sign of what could be its posture in the short to medium term, dwindling between a lower engagement and a greater intensity in the Mediterranean issues. From this perspective, many of Washington's future choices will depend on the outcome of the presidential elections in November 2024 even if, probably, radical changes of pace will not occur in the coming years.

Therefore, Italy must be prepared to defend the status quo and the significant national interests that would be put in danger by a possible conflict in the region.

From the point of view of energy security, Italy finds itself facing a constantly evolving scenario that is increasingly defined by the

commitments signed at EU and national levels to combat climate change and fight environmental pollution, with particular regard to energy efficiency and the decarbonisation of production, consumption and transport processes. The strategy carried out by the Italian government is to establish itself as an energy "hub" in the Mediterranean area, aiming to become the main connection between the resources of the African continent and the markets of Northern Europe.

This approach is potentially strongly linked with the EU Global Gateway. Precisely from this perspective, it appears necessary to consider the role that the Arctic area could play in the near future by making available a share of resources capable of satisfying Europe's energy needs.

Considering the imminent return of Russian hydrocarbons to the European market as unlikely and assuming that even in a future scenario of improved relations between European countries and Russia, European energy dependence on this country will be limited, attention must be paid to Norway and its role in contributing to future EU energy security. The December 2023 long-term gas deal between the Norwegian company Equinor and the German state energy company SEFE clearly epitomizes Norwegian attempts to play a vital role in the EU-wide diversification of energy suppliers.

Italian companies actively contribute to both extraction and production (E&P) activities in the Arctic, and in the Norwegian offshore, in particular, with ENI’s activities and investments, which have been identified in the Italian Arctic Strategy as valuable for the country's energy portfolio diversification.

Nonetheless, we highlight an evident clash between investments in the extraction of hydrocarbons and the greenhouse gas mitigation pathways that constitute a raison d'être of the Italian presence in the Arctic. Given the central role of energy issues in Arctic geopolitical governance, Italy's challenge for the next decades will likely be navigating its economic interests in the region particularly with Norway, while maintaining its strong support for environmental protection and sustainable development.

Although the Arctic does not constitute a primary national interest for Italy, the changing regional geopolitical situation and the overlap of this region's security and energy concerns with the Mediterranean system suggest that the Italian government and

institutions maintain, and possibly increase, the country's presence and role in the Arctic regional framework.

EUROPEAN UNION

The Arctic Council currently lacks the legal mechanisms necessary to effectively address the security challenges posed by the Russian Federation and the People's Republic of China. Compounding this issue, the growing role of institutions like the EU as promoters of peace and stability becomes increasingly important. Therefore, the European Commission, together with the European External Action Service should propose an update to the Union's Arctic policy that places greater emphasis on addressing the security and military challenges in the region while promoting enhanced cooperation with NATO. Similarly, the Member States should be urged to discuss Arctic matters within the Council, aiming to provide Conclusions to the 2021 Joint Communication on *A stronger EU engagement for a peaceful, sustainable and prosperous Arctic*.

Similarly, in the Mediterranean, there is also a lack of a unified strategy among EU countries to address security challenges, especially considering the growing presence of regional and global actors in the region. Furthermore, the complex network of political, economic, and military interests in the region requires increased engagement from institutions like the EU to promote peace and stability.

Therefore, it is essential for the EU to renew its Mediterranean strategic compass. Considering the emergence of new state and non-state actors in the region, along with the potential for partial disengagement by the United States in the area, addressing the security challenges in the Mediterranean becomes even more imperative, while increasing its political and economic stance.

A renewed Mediterranean policy should place greater emphasis on security and military challenges in the region while fostering closer cooperation with organizations like NATO. This would enable greater coordination and synergy among regional and global actors in the Mediterranean, thus helping to mitigate tensions and promote long-term security and stability.

One of the main goals that the EU and NATO should seek to pursue is to strengthen the northern flank alongside the southern flank, as the situation of global uncertainty and disorder requires both organizations to react unitedly, creating a unified front. This will be

one of the points on which the survival and integrity of these two organizations will hinge. Adapting to the times and to new crises also entails reshaping and readjusting their original objectives and structure.