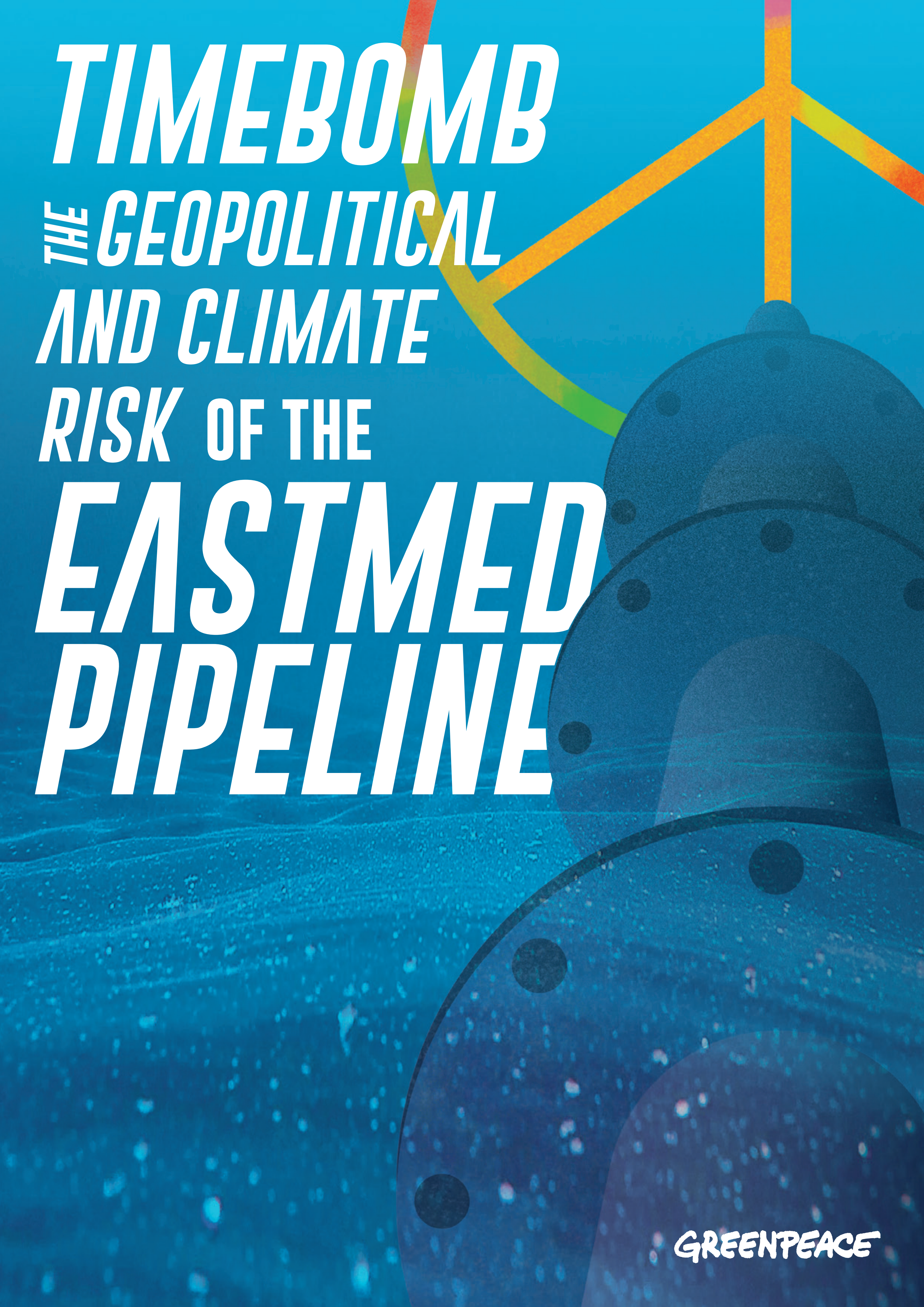
TIMEBOMB

THE GEOPOLITICAL AND CLIMATE RISK OF THE EASTMED PIPELINE



GREENPEACE

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by Domenico Gaudioso

Introductory sections by the Greenpeace Climate for Peace Team
(Simona Abbate, Sofia Basso, Lorelei Limousin, Oliver Salge).

Published by Greenpeace Onlus, Via della Cordonata, 7, 00187 Rome, Italy; +39 06 68136061

Graphics: B-Side Studio grafico, Rome

Publication 03/2023

INTRODUCTION

In the last year, we have seen how dependence on Russian gas and oil in the European Union has played a significant role in the invasion against Ukraine by financing Russia‘s military aggression. While imports of gas and oil from Russia have now decreased significantly compared to February 2022, the European Union and national governments have found it hard to wean themselves off completely and have been frantically seeking out new energy partners to plug the gap. Despite the rhetoric about energy savings, efficiency and renewables, the political priority has been to maintain flows of fossil fuels through new partners, irrespective of the geopolitical and environmental risks involved. For the most part, the lessons of Europe's reliance on unreliable regimes and the long-standing association of fossil fuels with conflict are being ignored.

Decisions being made by EU leaders now are determining not only energy policies, but also our future safety and security, kicking the consequences down the road for future generations and policymakers to deal with. EU leaders are reacting to the crisis-of-the-day with policies that seem to be aimed at mitigating the risk of political unpopularity for contemporary governing parties. On close inspection, the European Union continues to have a militarised and fossil-fuel-centric approach to energy security. EU decision-makers are still betting that their new partners will not present strategic risks. But at the same time, the EU is pursuing new dependencies that have the potential to shape human security – at home and abroad – for generations to come.

In order to facilitate the development of new energy infrastructure projects, the European Union creates a list of Projects of Common Interest (PCI list) every two years. It is now in the process of defining the upcoming sixth PCI list. Although the European Union is facing a war in the middle of Europe and has committed itself to the 1.5°C global heating limit in line with the Paris Agreement, it continues to support a fossil fuel infrastructure project of gigantic proportions. This project – the EastMed pipeline – will transport large volumes of fossil gas from the Eastern Mediterranean region to Europe for two decades and increase the potential for geopolitical conflicts in Europe. The EastMed pipeline, which has been on the PCI list since 2013, is a candidate for inclusion in the sixth PCI list.

According to Article 3 of the Lisbon Treaty,[1] the aim of the European Union is to promote peace. This report shows that the extraction of fossil fuels such as gas and the installation of fossil infrastructure projects, as can be seen in the Eastern Mediterranean, have been promoting the militarisation of an entire region for years and are fuelling geopolitical conflicts. Almost all the states in the region have invested heavily in armament, geared specifically to defending their maritime interests and to protecting their fossil fuel infrastructure. Several times, disputes over maritime borders and the exploitation of fossil fuels in the EastMed basin have prompted the deployment of military vessels, risking a full-scale war in Europe.

In addition to the enormous negative impact on the European Union‘s ability to achieve its climate goals, the aspect of peace must also be considered when assessing the feasibility of the EastMed pipeline. For this reason, it is necessary to produce an assessment of the geopolitical impact of cross-border infrastructure projects within the European Union. However, such a Conflict Risk Assessment is completely absent for those fossil fuel infrastructure projects that are considered strategic by the European Union and are eligible for funding, such as the EastMed pipeline.

The immense greenhouse gas contribution of the fossil gas transported by the pipeline would be devastating for the global climate and pose a serious threat to the European Union‘s greenhouse gas

[1] Article 3 Lisbon Treaty: The Union's aim is to promote peace, its values, and the well-being of its peoples.

reduction targets: at the same time, it would worsen the long-running conflict over the exploitation of fossil fuels and maritime borders between the neighbouring states in the Eastern Mediterranean Region.

According to the EU Commission,[2] the feasibility of the EastMed pipeline will depend on its contribution to achieving the objectives of the European Green Deal.[3] The GHG emissions from the consumption and leakage of gas transported by the pipeline will total more than 27 million tonnes CO_{2eq} annually, which is only slightly less than the annual emissions of the largest current polluting power plant in the European Union.

Reducing fossil gas consumption plays an important role for the European Union in reaching its climate targets. Currently, this reduction is predicted to be around 30% by 2030[4]. If constructed, the EastMed pipeline will only be completed by 2028, while Europe would need to stop using fossil gas by 2035 to be in line with the 1.5°C target[5]. However, the EastMed pipeline is conceived to be operational for more than two decades by the energy companies involved.[6]

This report produced by Greenpeace is the first analysis of the impact of a cross-border fossil fuel infrastructure project within the European Union on geopolitical conflicts. At the same time, it shows that the planned pipeline will drive the climate emergency and further weaken the European Green Deal. In light of Article 3 of the Lisbon Treaty and given the high risk that the construction of fossil infrastructure projects, such as the EastMed pipeline, poses to peace within the European Union, Greenpeace calls on the European Commission to make a comprehensive Conflict Risk Assessment mandatory for such projects.

This Greenpeace report indicates that existing geopolitical conflicts in the Eastern Mediterranean region could worsen if the plan to construct the EastMed pipeline is implemented.

Considering its incompatibility with the EU goal of reducing greenhouse gas emissions and its impact on the climate crisis as well as the high risk of destabilising the Eastern Mediterranean region and potentially triggering another war in Europe, the EastMed pipeline must not be funded by the European Commission and must not be included in the new list of Projects of Common Interest (PCI). With this report, Greenpeace voices its concerns and highlights a key value of the European Union – peace. Standing by this founding value must be a central consideration for Ursula von der Leyen, President of the European Commission, and the participating Commissioners when deciding on the feasibility of the EastMed pipeline.

[2] European Parliament, answer given by High Representative/Vice-President Borrell on behalf of the European Commission, 24 April 2022: https://www.europarl.europa.eu/doceo/document/E-9-2022-000714-ASW_EN.html

[3] According to Article 24 of the TEN-E Regulation, the European Commission must examine whether the EastMed pipeline infrastructure project will contribute to reducing greenhouse gas emissions in the European Union and not lead to a prolongation of the lifetime of fossil gas.

[4] European Commission, 2022, https://energy.ec.europa.eu/system/files/2022-05/SWD_2022_230_1_EN_autre_document_travail_service_part1_v3.pdf

[5] Climate Action network, 2021, https://caneurope.org/20-organisations-release-eu-fossil-gas-manifesto-2035-phase-out/

[6] Ecco, Do we really need the Eastmed Pipeline? 16 April 2022, https://eccoclimate.org/do-we-really-need-the-eastmed-pipeline/

Executive Summary

The EastMed pipeline project – which aims to transport fossil gas from Israel to Europe –– poses a deadly threat not only for its contribution to greenhouse gas emissions and the climate crisis, but also to peace in Europe. Yet, the European Union has been supporting this project for ten years, listing it as strategic in the EU list of Projects of Common Interest (PCI) since 2013. Oil and gas extraction in the Eastern Mediterranean basin and the plan to build the new pipeline are exacerbating geopolitical tensions in the region, promoting the militarisation of the entire area. This report shows that, if implemented, the EastMed pipeline will further fuel war and climate breakdown.

Despite promoting peace as a key value for the European Union, the European Commission has never assessed the geopolitical impact of the new cross-border fossil infrastructure projects it plans to support. With this report, Greenpeace not only provides solid evidence to argue that the EastMed pipeline would worsen the climate emergency and derail the European Union's green goals, it also supplies the first analysis of the negative impact of a cross-border fossil fuel infrastructure project on geopolitical conflicts within the European Union. The pipeline project constitutes a highly explosive security issue for the region, acting as a catalyst and amplifying pre-existing conflicts.

On the geopolitical side, the report finds that:

- The EastMed pipeline increases the danger of a military confrontation between Turkey and Greece on the demarcation of their respective maritime borders. Greece and Turkey have never agreed on their respective exclusive economic zones, and both countries have opted for military deterrence to enforce their respective claims. The route of the Greek-Cypriot section of the pipeline would cross through contested maritime zones. Its construction would fuel the maritime border dispute between Greece and Turkey and could favour Greece, effectively limiting Turkey's access to the eastern Mediterranean.
- The pipeline project is likely to add new heat to the unresolved conflict between the Republic of Cyprus (RoC) and the Turkish Republic of North Cyprus (TRNC) over control of the island of Cyprus. The project would exclusively benefit the Republic of Cyprus and cement its maritime claims. In recent years, gas exploration has led to increased tensions between both parties and an increased military presence in the maritime area, especially since the RoC and TRNC granted permits for fossil fuel companies to drill on overlapping maritime zones. Building the pipeline to transport gas from the region would weaken the position of the TRNC, effectively limiting its marine access and precluding any revenues from underwater exploitation. Any destabilisation of the TRNC increases the danger of Turkey resorting to military means.
- As demonstrated by the attack on the Nord Stream gas pipeline in 2022, the physical infrastructure of the EastMed pipeline may become a direct military target, both in the tense regional context and on the global scale, considering the escalating confrontation between Russia and the USA, NATO and the EU.
- The prospect of the EastMed gas pipeline being able to transport fossil gas to the European market contributes to overall insecurity in the region by fuelling the arms race and thereby increasing the risk of armed confrontations. Greece, Turkey, Israel and Egypt have all expanded their military capabilities since 2010 and committed to a substantial naval build-up. The number of military exercises directly related to the protection of maritime borders has increased, as well as the number of defense agreements with third countries.

On the climate side, this report calculated that:

- Total annual GHG emissions from fossil gas supplied through the EastMed pipeline – including the leakage of methane – would amount to 27.7 million tonnes CO_2 equivalent annually: an amount only slightly less than those of the largest polluter in the EU, the Belchatów coal power plant in Poland.

- In the 21 years between the likely completion of the EastMed pipeline (2028) and 2050, the year the European Union aims to achieve carbon neutrality, the pipeline would account for 11.5% of the remaining CO_2 budget available to the entire European Union to stay within the 1.5°C target.
- If the pipeline transported a mix of 80% fossil gas and 20% hydrogen, fugitive emissions would double those of the transport of fossil gas only. These would be in addition to the emissions due to the energy source and the hydrogen production process.
- This infrastructure project will not help Europe to reduce its dependence on Russian gas in the short- and mid-term, because its completion is not expected until 2028 at the earliest. By the time the EastMed pipeline is operational, the European Union's total gas demand is expected to be significantly lower and the additional delivery of the EastMed fossil gas would no longer be required to guarantee supplies to the European Union. In order to ensure full security of supply for a Russian gas phase-out while at the same time reducing its economic vulnerability and fighting the climate crisis, the EU needs to consider additional renewable energy investments and energy savings rather than new expensive gas infrastructure.

It is evident that the construction of the EastMed pipeline would move the European Union away from its emission reduction targets, threatening the Paris climate agreement's goal of limiting global heating to 1.5°C. If the European Union insists on planning this infrastructure, it will lock itself into a future dependent on fossil fuels, worsening the climate crisis, and increasing the risk of war in Europe instead of promoting peace.

This is why Greenpeace is calling on the European Commission to:

- make comprehensive Conflict Risk Assessments mandatory for high priority, cross-border fossil fuel projects;
- end support and funding for the EastMed fossil gas pipeline project;
- exclude the EastMed pipeline from the new list of Projects of Common Interest (PCI).

The EastMed pipeline

Egypt and Israel announced the discovery of potentially exploitable gas reserves in the eastern Mediterranean Sea at the end of the 1990s. The race to survey the gas fields then intensified in the 2000s, culminating in the announcement of the Tamar and Leviathan gas fields by Israel, the Zohr gas field by Egypt and the Aphrodite gas field by Cyprus between 2009-2011. While the confirmed extractable gas deposits in the eastern Mediterranean Sea are only estimated to amount to between 1.5-4% of the known gas deposits worldwide, they do promise a greater independence from energy imports and additional revenues from fossil gas exports for the three countries, all of them coping with the aftermath of the financial crisis.

Egypt was the first country to announce its intention to extract gas and registered its Exclusive Economic Zone (EEZ) of 200 nautical miles (nm) in accordance with the UN Convention on the Law of the Sea. Cyprus and Israel followed suit and all three reached some form of agreement on the delineation of their EEZs. Since then, a wide array of multinational oil and gas corporations have decided to participate and develop the gas fields. At first, the fossil gas was supposed to be transported by pipeline to the shore and then exported as liquified natural gas (LNG). But as the price of LNG rose steadily, the idea of building a pipeline gained more traction. In 2013, the European Commission included the EastMed pipeline in its first Project of Common Interest (PCI) list. Greece began to actively lobby for this project, regarding it as a means to reduce its energy dependence on Turkey as a transit country, earn revenues through transport fees itself and cement its maritime claims vis-à-vis Turkey. A series of agreements between 2018-2019 have been signed by the proposing countries, and in January 2020 Cyprus, Greece and Israel signed an “Intergovernmental Agreement Concerning a Pipeline System to Transport Eastern Mediterranean Natural Gas to the European Markets”, marking the official inception of the EastMed fossil gas pipeline project.

The EastMed-Poseidon gas pipeline is an infrastructure project designed to bring new fossil gas to Europe from the East Mediterranean gas reserves. In its present configuration, the EastMed pipeline would begin at the Tamar offshore gas field in Israel and run through the Leviathan and Aphrodite gas fields to a compressor station in Cyprus. From there, it would pass via undersea pipeline to another compressor station on Crete and then to mainland Greece, crossing the Peloponnese peninsula and Western Greece before feeding into the yet-to-be-constructed 210 km offshore section of the Poseidon fossil gas pipeline under the Adriatic Sea to Otranto, Italy.[7] The EastMed pipeline alone is expected to be 1,900 km long, with only up to 600 km running above sea level. Some sections will be laid across the seabed at a depth of 3,000 metres and through some seismically active areas.[8] Its planned route will cross parts of the Central Levantine Sea, which is an important deep water area of the Mediterranean Sea containing numerous seamounts and cold seeps. This area is a spawning ground for swordfish, a commercially important species in the Mediterranean and has been proposed as a protected marine reserve.[9]

If constructed, the EastMed pipeline will be one of the longest gas pipelines in Europe and one of the deepest offshore gas pipelines in the world. The EastMed pipeline is a challenging cross-border infrastructure project aiming to transport up to 10 billion cubic metres of fossil gas per year to the European market, with a possible expansion to 20 bcm annually at a later stage.

The main contractor for the EastMed pipeline is the Greek registered company IGI Poseidon S.A., a joint venture of the state-owned Greek company DEPA and the Italian company Edison SpA, belonging to Electricité de France, which is 84% owned by the French state. The pipeline project is supposed to be finished within five years with costs estimated at between € 5-7 billion.[10] A final investment decision by the promoter IGI Poseidon S.A. was due to be delivered in 2022 but had not yet been communicated by the end of that year.[11]

[7] The EastMed section of the project comprises: a 24” offshore pipeline from the “Leviathan” field to Cyprus; a compressor station in Cyprus. Total ISO Power 100 MW; a 26” offshore pipeline connecting Cyprus with the Greek Island of Crete; a compressor station on Crete. Total ISO Power 120 MW; a 26” offshore pipeline from Crete to South Peloponnese; a 42” onshore pipeline from South Peloponnese to Epirus; a short 42” offshore pipeline across the Patraikos Gulf and further to the rest of Europe.

[8] Istituto Nazionale di Geofisica e Vulcanologia, 2023, https://www.ingv.it/

[9] Greenpeace Report, 2006, Marine Reserves for the Mediterranean Sea.

[10] IGI Poseidon, https://igi-poseidon.com/

[11] IGI Poseidon, 2022, https://igi-poseidon.com/eastmed/files/IGI_Poseidon_press_release_confirmation_of_Feasibility_Statement.pdf

Some of the world's largest oil and gas corporations who already exploit fossil gas in the Eastern Mediterranean Sea or hold concessions will benefit from the EastMed pipeline as they will be able to sell its fossil gas to the European market. Italian ENI, French TotalEnergies, US based ExxonMobil and Chevron, UK based Shell and BP, Israel based Delek and Qatar Petroleum are actively working to exploit further fossil gas in the region. Their rush to exploit this fossil gas at all costs is a typical example of the fossil industry's legacy of choosing profit over people and our planet.[12]

One of the principal promoters of the exploitation of fossil gas in the Eastern Mediterranean and its distribution via the EastMed pipeline is the East Med Gas Forum (EMGF). Founded in 2020, this intergovernmental organisation comprises Cyprus, Egypt, Greece, Israel, Italy, Jordan and Palestine (France joined in 2021) and is promoting gas exploitation and gas infrastructure for the distribution of fossil gas from the Eastern Mediterranean region to the main market in Europe. The Forum regularly organises high-level meetings to foster cooperation between member states to manage the use of fossil gas. The EU has observer status and is participating at the Forum's regular ministerial meetings.

[12] Business and Human Rights Resource Centre, 2022, Trial in US lawsuit against ExxonMobil over alleged complicity in torture & beatings:
https://www.business-humanrights.org/en/latest-news/trial-in-us-lawsuit-against-exxonmobil-over-alleged-complicity-in-torture-beatings-by-military-in-indonesia-could-start-after-20-years/#timeline; Amnesty International, 2017, Nigeria: Shell complicit in the arbitrary executions of Ogoni Nine as writ served in Dutch court:
https://www.amnesty.org/en/latest/press-release/2017/06/shell-complicit-arbitrary-executions-ogoni-nine-writ-dutch-court/

The EU promoting the EastMed

Every two years, the European Commission compiles a list of high priority, cross-border energy infrastructure projects, which are seen as strategic for a resilient and integrated energy market in Europe – the PCI List. Projects on this list are eligible for EU funding and gain a fast-track permission process of up to three and a half years. The European Union has already supported the EastMed pipeline project for the past ten years, listing it as a strategic cross-border infrastructure project within the European Union on its list of Projects of Common Interest (PCI). The draft list of candidates for the 6th PCI list, published in December 2022, again includes both the EastMed fossil gas pipeline and its compressor stations as well as the Poseidon pipeline from Greece to Italy. The new EU rules on trans-European energy infrastructure, set in the TEN-E Regulation, exclude fossil fuel projects from PCI listing, but set a derogation for Malta and Cyprus, which are not yet interconnected to the trans-European gas network[13]. The process for the 6th PCI list started in October 2022 and will end in early 2024.

During the drafting process for the PCI list, the European Commission moderates and coordinates between the various stakeholders and is aligning the final PCI-list with the member states. During the one-year process to agree the PCI list, which involves the European Network of Transmission System Operators for Gas and various gas transmission companies advising the EU Commission, the European commission remains – together with the Member States – the only decision-making body for the final PCI list (Art. 3 TEN-E Regulation 2022/869). Then, the European Commission shares the final list with the European Parliament and the Council which can only approve or reject the list as a whole.

From 2015 - 2018, the EU funded the development of a feasibility study (FEED) for the EastMed pipeline, providing € 34.5 million for the completion of technical, economic and environmental studies for the project.[14]

On 15th June 2022, the EU Commissioner Kadri Simson signed a Memorandum of Understanding (MOU) with Egypt on cooperation

[13] European Commission, Trans-European Networks for Energy: Regulation (EU) 2022/869 https://energy.ec.europa.eu/topics/infrastructure/trans-european-networks-energy_en

[14] In 2015, the EU also provided € 2 million in support for the Pre-Feed study by the promoter Poseidon S.A for the EastMed pipeline. The funding originates from the EUs Connecting Europe Facility CEF. https://ec.europa.eu/inea/sites/default/files/cefpub/summary_7.3.1-0025-elcy-s-m-15_final.pdf

related to trade, transport and export of fossil gas to the European Union. According to the deal, fossil gas from Israel will be brought via a pipeline to the LNG terminal on Egypt's Mediterranean coast before being transported on tankers to European shores.

Answering a question from the European Parliament in April 2022, the EU-Commission communicated that *"the feasibility of the EastMed pipeline will depend on its commercial viability based on future demand dynamics, and its potential to contribute to the goals of the European Green Deal"*.[15] According to Article 24 of the TEN-E Regulation, the European Commission must examine whether the EastMed pipeline infrastructure project will contribute to reducing greenhouse gas emissions.

In this regard, the promoter IGI Poseidon S.A. must prove that the EastMed pipeline, primarily constructed for the transport of fossil gas, will contribute to emissions reductions and that it will *allow access to new energy markets, [...] in line with the Union's overall energy and climate policy objectives*.[16]

Since the EastMed pipeline project was first submitted to the PCI list in 2013, doubts and criticism regarding the necessity of the fossil fuel pipeline have grown, leaving the project in planning status for years. The high construction costs of up to € 5-7 billion[17] raised doubts of its economic viability and the fact that, once constructed, billions of euros would be locked into this infrastructure project. These financial resources are needed to boost the renewable energy sector. In 2021, the European Union set new greenhouse gas emission targets of at least a 55% reduction by 2030 (compared with 1990 levels)[18].

The criticism therefore remains that new fossil gas pipelines, such as the EastMed pipeline, are jeopardising the Union's own climate objectives.[19] The high greenhouse gas emissions of the fossil gas that will be transported to Europe through the EastMed pipeline must be considered. The pipeline's impact with regard to the Union's climate laws and its obligations under the Paris Agreement must also be measured. This is particularly important as the current climate targets of the European Union are not in line with the 1.5°C goal of the Paris Agreement.

Methane, the main component of fossil gas, has a global warming potential (GWP 20) that is 85-times greater than that of CO_2. The IPCC scientific experts state in the IPCC Sixth Assessment Report that [...] *continued investments in unabated high emitting infrastructure and limited development and deployment of low emitting alternatives prior to 2030 would act as barriers to this acceleration [of annual average global GHG emissions reduction rates]*[20].

Furthermore, this report's analysis of the scenarios currently considered by the EU for its greenhouse emissions target shows that the European Union must reduce its fossil gas consumption by 42% from the current level by 2030. According to this target, new fossil gas infrastructure to transport fossil gas to the European market will not be needed to meet European demand after 2025[21]. However, the gas supply shortage to the European Union, resulting from the Russian invasion of Ukraine in February 2022, has raised fresh hopes among promoters and supporters of the EastMed project that the pipeline will be built to supply Europe with fossil gas.

[15] Answer of the EU Commission of 29th April 2022 to the Parliamentary question - E-000820/2022(ASW). https://www.europarl.europa.eu/doceo/document/E-9-2022-000820-ASW_EN.html

[16] Ibid

[17] IGI Poseidon: https://igi-poseidon.com/. Hearing at the Italian Parliament, 2022,: https://www.camera.it/application/xmanager/projects/leg18/attachments/upload_file_doc_acquisiti/pdfs/000/007/591/Memoria_prof._Armaroli_slides.pdf. According to the European Network of Transmission System Operators for Gas, the EastMed pipeline will cost € 5.2 billion, the Poseidon (both the offshore and the onshore sectors) € 3.4 billion: https://entsog.eu/tyndp#entsog-ten-year-network-development-plan-2022

[18] European Commission, 2020c, 2030 Climate Target Plan. https://climate.ec.europa.eu/eu-action/european-green-deal/2030-climate-target-plan_en

[19] ClientEarth, 2022, https://www.clientearth.org/latest/press-office/press/environmental-groups-challenge-eu-support-for-30-fossil-gas-projects/

[20] Paragraph B 6.3, Intergovernmental Panel on Climate Change¸2022; Working Group III contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.

[21] Europe Gas Tracker Report, Global Energy Monitor, April 2022.

1. Increasing the Pressure – Eastern Mediterranean Pipeline and Security Threats

1.1. EastMed – Connecting conflicts

The eastern Mediterranean Sea region can be characterised as a patchwork of overlapping, interrelated regional conflicts and continually shifting alliances among the riparian states. The discovery of exploitable gas fields in the eastern Mediterranean Sea in the 2000's has added a new layer of complexity and risk. Since 2009/2010, Cyprus, Egypt, Greece, Israel, Lebanon, Libya and Turkey have been vying for a piece of the pie, abandoning the previously maintained uneasy truce on the extent of their respective maritime boundaries – with potentially serious consequences for regional security. The events of the Arab Spring, the ensuing war in Syria and the Russian annexation of parts of Ukraine have added yet more layers of security policy considerations to the question of fossil gas fields in the Mediterranean Sea. Furthermore, Russia's return to the region in 2013 reintroduced a highly explosive geostrategic dimension to the Mediterranean Sea. All in all, competing unilateral and bilateral moves towards the delimitation of Exclusive Economic Zones (EEZ), confrontations between research or drilling vessels and warships, reminiscent of gunboat diplomacy, have become a regular feature in the eastern Mediterranean Sea.

The Eastern Mediterranean Pipeline (EastMed) project, currently pursued by Cyprus, Greece and Israel, is certainly one of the most controversial and potentially explosive projects connected to the undersea gas discoveries in the region. As with any cross-border energy infrastructure project, EastMed has implications for the economic welfare, energy security and political leverage of the states involved vis-à-vis their neighbours, especially for Turkey. It threatens to reduce Turkey's revenues from energy transport to Europe, which the country needs to finance its high energy demand.[22] EastMed also affects the ongoing maritime border dispute between Cyprus and Greece on the one side and Turkey and the Turkish Republic of North Cyprus (TRNC) – which does not have international recognition – on the other side, including the still unresolved conflict on the overall status of Cyprus.

As the economic and political significance of energy infrastructure grows, so does the motivation to hold it to ransom – threatening to cause immediate environmental damage and having negative economic and social repercussions through the disruption of energy supply lines. The attacks on the Nord Stream fossil gas pipeline in the Baltic Sea on 26.9.2022 have demonstrated that undersea pipelines can no longer be considered invulnerable.[23] Therefore, the physical infrastructure of EastMed itself could become a target of armed attacks or sabotage, either in connection with the ongoing conflict between Israel and armed non-state actors, like Hamas or Hezbollah, or between Israel and other countries, or in a wider geopolitical power struggle involving the USA, NATO and Russia.

Considering these security challenges, the EastMed project could contribute further to regional insecurity.

[22] Galip Dalay (2021): Turkey, Europe, and the Eastern Mediterranean: Charting a Way out of the Current Deadlock. Brookings Center Policy Brief, January 2021, p.3-5. In 2022 Turkey's President Erdogan reaffirmed that if gas "will be transferred to Europe from here, it will only happen through Turkey". Middle East Strategic Perspectives (2022): The East Med Energy Report, No. 4/2022, p.2.

[23] The vulnerability of undersea pipelines is primarily determined by the depth in which the pipeline is laid. There, sensory information is often distorted and incomplete. Detection ranges are short, information transmission difficult and limited in comparison to above water three-dimensional vision, precise radar images, and unconstrained line-of-sight communications at the speed of light. For more information, see Laurence Reza Wrathall (2010): The Vulnerability of Subsea Infrastructure to Underwater Attack – Legal Shortcomings and the Way Forward. San Diego International Law Journal, Vol. 12 No. 1/2010. Presently, it can be assumed that only a few countries possess the technical and logistical capabilities for operations like these. Nevertheless, the speed of progress in the development of Unmanned (Autonomous) Underwater Vehicles is increasing and commercial off-the-shelf underwater vehicles are becoming available. The United Kingdom for instance plans to acquire commercial vehicles with the ability to manipulate objects and produce high resolution imagery down to a depth of 6,000m. Andrew Chuter (2022): UK military ups investments in undersea surveillance. Defense News, 16.11.2022.

Graph 1 Maps of the Aegean Sea comparing six and twelve Nautical mile territorial sea

Map of the Aegean Sea, with approximate extent of current 6nm territorial waters.

TURKISH TERRITORIAL SEA

DISTRIBUTION OF GREEK TERRITORIAL SEAS IN THE AEGEAN AT 6 NAUTICAL MILES

Map of the Aegean Sea, with approximate extent of current 12nm territorial waters.

TURKISH TERRITORIAL SEA

DISTRIBUTION OF GREEK TERRITORIAL SEAS IN THE AEGEAN AT 12 NAUTICAL MILES

EastMed encourages the involved states to adhere to the prevalent logic of military deterrence, further fuelling the regional arms race and thereby increasing the risk of armed confrontation.

1.2. The Triangle of Trouble – Greece, Turkey, and Cyprus

The multi-layered conflict between Greece and Turkey, including the issue of Cyprus, is the powder keg at the heart of the tension surrounding the Eastern Mediterranean pipeline. The discovery of gas fields and the EastMed pipeline-project have been seamlessly integrated into security rhetoric on both sides. The construction of an undersea pipeline to transport gas to Greece directly affects the current deadlock between Greece and Turkey on the delineation of their respective maritime boundaries. Similarly, the exploitation of fossil gas reserves around the island of Cyprus threatens to reignite the frozen conflict between the Republic of Cyprus, a European Union and UN member state and the Turkish Republic of North-Cyprus, supported by Turkey.

Overlapping maritime boundaries

For decades, the NATO member states Greece and Turkey have been locked in a territorial dispute, perceived as existential by both sides. Many Greek islands are situated just off the Turkish coast, creating overlapping claims on the extent of the respective territorial waters and Economic Exclusive Zones (EEZ). Any unilateral solution would have severe consequences for the other side. If Greece were to extend its territorial waters from 6 to 12 nautical miles (nm), as is permitted by the UN Convention on the Law of the Sea (UNCLOS), the Aegean Sea would de facto become a Greek inland sea[24] (see Graph 1). This would leave Turkey's naval vessels only the strip of sea directly off the Turkish coastline to navigate from the Black Sea to the Eastern Mediterranean without Greece's consent. In a similar fashion, if Greece decided to formally extend its EEZ of 200 nm from the contested islands, as UNCLOS permits, Turkey effectively would become land-locked on its southwestern shore (see Graph 1). Turkey asserts that only the main continental shelf should be applied to delineate maritime boundaries, making some Greek islands an extension of the Turkish mainland. This

[24] Greece signed UNCLOS in 1995. Turkey has neither signed UNCLOS of 1982 nor its predecessor Continental Shelf Convention of 1958. Turkey insists that bilateral territorial disputes with Greece need to be solved before both sides can join UNCLOS.

in turn would mean that Greek islands would be isolated, with Turkey controlling the many sea lanes between them.

This issue has already brought these two NATO members to the brink of war on three occasions, threatening to disrupt NATO'S internal cohesion. In 1976, the Greek armed forces were on full alert when a Turkish oceanographic vessel, escorted by a Turkish warship, entered waters near the island of Lesbos. In 1988, Greece deployed its navy to the island of Thasos and mobilised its land forces on the Greek-Turkish border because Turkey sent an oceanographic vessel to the same contested waters where a Greek drilling ship was already present. The third crisis erupted in 1995. In May 1995, the Greek Parliament had ratified the UNCLOS and authorised the Greek government to expand Greece's territorial waters to 12 nm. Turkey declared on 8.6.1995 that any such decision would be considered an act of war.[25] In these circumstances, a Turkish ship ran aground in December 1995 on an uninhabited islet (Kardak/Imia) claimed by Greece and 4 nm off the Turkish coast. After the Turkish captain refused Greek help, naval units of both sides deployed and repeatedly planted their flags on the island. Only after NATO and US mediation between 1995-1997 did Greece agree not to implement the 12 nm-zone and to refrain from signing a delimitation agreement with Cyprus on their EEZ.[26]

Thus, it can be seen that both countries tend to regard the deployment of oceanographic or drilling vessels to the contested waters as a belligerent action by the other side. Each side suspects the other of collecting undersea geological information to substantiate their continental shelf claims or to claim undersea natural resources – mainly fossil gas and oil. To match the expansion of surveying activities in the Eastern Mediterranean by companies on behalf of Cyprus and Greece, Turkey began to modernise its outdated maritime research capabilities: Between 2013-2017, two research vessels were purchased by the government and the national energy giant Türkiye Petrolleri Anonim Ortaklığı (TPAO) bought four deep-water drilling vessels between 2017-2021.[27] These were frequently deployed to the contested waters, escorted by the Turkish Navy. This led to increasing confrontations between both navies, especially inside the yet-to-be-demarcated Greek continental shelf area between Rhodes, Kastellorizo and south of Crete.[28] Only recently, TPAO filed for a hydrocarbon licence for an area off the islands of Rhodes, Karpathos, and Kasos in 2020. Greece responded by stating that this was "in blatant

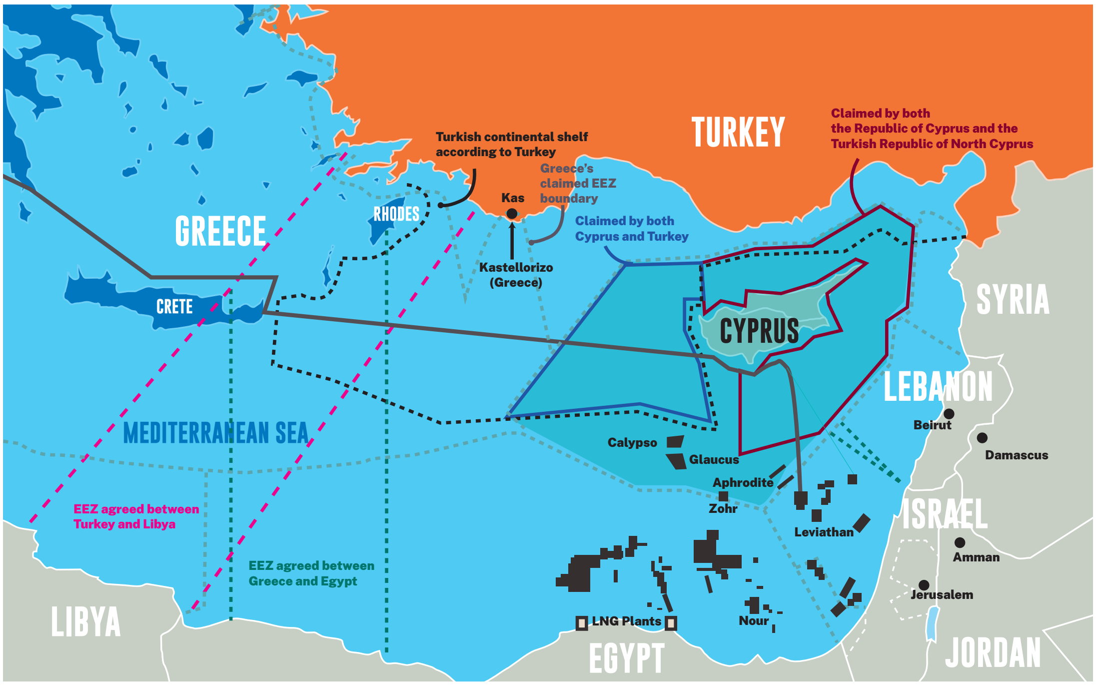
[25] International Crisis Group (2011): Turkey and Greece – Time to Settle the Aegean Dispute. ICG Policy Briefing Europe No. 64, 19.7.2011, p.3. The first such Turkish declaration was made in June 1974 regarding a dispute on the extent of the Greek continental shelf. CRS (1997): Greece and Turkey – Aegean Issues. Congressional Research Service Report for Congress, 21.8.1997, p.3. Since then, this was repeatedly reaffirmed by Turkish politicians, just recently by the Turkish foreign minister on 2.11.2022. Ekathimerini (2022): Cavusoglu issues fresh threat against Greece, 2.11.2022.

[26] For an overview of these three incidents: CRS (1997), see above, p.2ff, ICG (2011), see above, p.3f.

[27] Up until the 2010s, Turkey and Turkish energy company TPAO had no experience with offshore drilling and no drilling vessels. The Turkish Navy only owned one hydrographic research vessel ("Çeşme") built in 1964 as well as the outdated civilian research vessel "Piri Reis" (built in 1978 and equipped only with 2D seismic technology). Turkey acquired the 3D seismographic research vessel "Polarcus" from a Norwegian company (renamed "Barbaros Hayreddin Pasha") in 2013. It has been conducting exploration in the Mediterranean since April 2017. In 2017, the second new research vessel "MTA Oruc Reis", built in Turkey, was commissioned, and deployed to the Eastern Mediterranean repeatedly. The four deep-water drilling vessels were, in December 2017, "Fatih" (former Deepsea Metro II, built in 2011), in October 2018 "Yavuz" (former Deepsea Metro I, built in 2011), in January 2020 "Kanuz" (built in 2013) and "Abdülhamid Han" (built in 2013).

[28] Theodoris Tsakiris (2020): Inflammable Waters – Turkey's Strategic Objectives in the Eastern Mediterranean, in IEMed Mediterranean Yearbook 2020, 2020, p.1; ICG (2011), see above, p.4, Der Spiegel (2020): Streit zwischen Griechenland und Türkei spitzt sich zu, 22.7.2020. On 23.2.2021, Turkey reported that two Greek F-16 fighter aircraft were dispatched to discourage the "Çeşme" from surveys near the island of Lemnos. Daily Sabbah (2021): Greek F-16 fighter jets harass Turkey's TCG Çesme vessel in the Aegean, 23.2.2021; Greekcitytimes (2021): Ankara Complains Greek Air Force Harassed Turkish Ship Conducting Illegal Surveys in the Aegean, 24.2.2021.

GRAPH 2 COMPETING CLAIMS IN THE EASTERN MEDITERRANEAN



Eastern Mediterranean gas

EXCLUSIVE ECONOMIC ZONES (EEZ) — GASFIELD — CYPRUS GAS DRILLING BLOCKS

violation of international law, thus fuelling tension and threatening peace and stability in the region”.[29]

One of the focal points of the Greek-Turkish dispute is Kastellorizo Island, situated only 1 nm off the coast of Turkey. It is the easternmost Greek island and if its EEZ would start from there, it would effectively shut Turkey out on its south-western coastline. This is also where the most recent crisis erupted, leading to a 45-day standoff between the countries' respective navies. After the Turkish research vessel “Oruc Reis” entered the waters around the island together with a Turkish Navy escort, a Greek warship approached the “Oruc Reis” on 12.8.2020 and collided with the Turkish warship “Kemal Reis”. Subsequently, both sides increased their military presence there and only after diplomatic intervention by NATO and other heads-of-state did they agree to stand down, de-escalating the situation.[30]

The issue of territorial waters is also directly linked to the control of the air space above, the first basically outlining the latter. Greek islands are part of the Athens Flight Information Region (FIR), obliging other parties to submit their flight schedules in advance and wait for approval.[31] Since 1974, Turkey has refused to do so, regularly sending its aircraft over Greek territories to make its point of non-recognition. In numerous incidents, Greek fighter aircraft have confronted intruding Turkish fighter aircraft with air defence stations locking their targeting radar on them. This has led to some collisions and even to the shooting down of a Turkish aircraft in 1996. While connected to the unsolved maritime boundary issue, the disputed flight zones themselves have become a constant source of bilateral tension between the two NATO member states.[32]

[29] Kerry Herschelmann (2020): Turkish military conducts long-range Mediterranean exercise, in: Jane's Defense Weekly, 16.6.2020.

[30] See Sonia Krimi (2021): NATO and the Mediterranean Security Agenda. NATO Parliamentary Assembly Political Committee Report, 9.10.2021, p.6.

[31] CRS (1997), see above, p.1f.

[32] According to Choulis the number of airspace violations by Turkey has risen from around 1,500 in 2010 to 5,000 by 2019. Ioannis Choulis/ Marius Mehrl/ Kostas Ifantis (2021): Arms Racing, Military Build-Ups and Dispute Intensity – Evidence from the Greek-Turkish Rivalry 1985-2020. Defence and Peace Economics, published online 1.6.2021, p. 3. However, any numbers should be treated with caution. Both Greece and Turkey publish increasingly rising figures, reaching well into the 1.000s per year.

Status of Cyprus

Since the war in 1974, the island of Cyprus has remained divided into the Republic of Cyprus (RoC) controlling 2/3 of the island and inhabited predominantly by Greek Cypriots, and a Turkish part which later, in 1983, declared itself as the Turkish Republic of North-Cyprus (TRNC) with Turkey's support. While the RoC is a member of the UN and has been a member of the European Union since 2004, the TRNC is recognised only by Turkey and massively depends on Turkish aid.[33]

Until the 2000's, Cyprus was mostly regarded as a frozen conflict centering on an inland territorial dispute. This changed as interest grew in potential undersea gas reserves off the island's shores. The RoC began to reach out to other states in the region, namely Israel and Egypt, to pave the way for hydrographic surveys and explorations. In 2003, Egypt and the RoC concluded a preliminary agreement on their EEZ borders and hydrocarbon extraction. This was perceived as a direct challenge by Turkey for three reasons: First, a future delimitation agreement with Egypt would limit Turkey's access to wide swaths of the sea resources west and south of Cyprus. Second, it again raised the danger that Cyprus and Greece would also file a delimitation agreement of their EEZ at the UN. Third, any unilateral move by the RoC on resource extraction would severely diminish the possibility for the TRNC to secure a share of the natural resources underseas.[34]

Turkey and the TRNC claim that since the RoC excludes the Turkish Cypriot community in the negotiations on these international agreements, it lacks the legitimacy to sign any agreements on gas exploration ventures.[35] Therefore, after the RoC awarded exploitation rights to the U.S. company Noble Energy Inc. for exploration in Block 12 of the Aphrodite gas field in 2007/08, Turkey responded by giving permission to the Turkish energy company TPAO to conduct offshore explorations in the same areas.[36] In September 2011, when Noble Energy Inc. began to drill at the Aphrodite field, Turkey signed a continental shelf delineation agreement with the TRNC on 21.9.2011 to reaffirm its claims on these maritime territories.[37] The TRNC then awarded TPAO a licence for on- and offshore drilling, overlapping with seven of the 13 blocks that had already been awarded by Cyprus to other companies (blocks 1, 2, 3, 8, 9, 12 and 13). In addition, Turkey itself claims partial rights to five blocks (1, 4, 5, 6, – which basically cover the second largest gas field Calypso of Cyprus – and Block 7), leaving only Block 10 and 11 uncontested.[38]

[33] After a military coup supported by Greece and subsequent Turkish military intervention on behalf of the Turkish Cypriots in 1974, the island has remained divided, and the UN Peacekeeping Force in Cyprus (UNFICYP) monitors the ceasefire. As of 2022, around 40,000 Turkish troops are stationed in TRNC. In September 2022, President Erdogan announced that he would send additional troops. Nazlan Ertan (2022): Turkey pledges to boost military presence in Cyprus. al-Monitor.com, 29.9.22. On the other side, Greece permanently stations around 1,000 soldiers of the Hellenic Forces in Cyprus on the island. Recently, Turkey is also reported to have stationed TB-2 Bayraktar drones at the Geçitkale AirBase in Northern Cyprus, upgrading the base to house additional drones, surveillance aircraft, and fighter jets. Jonas Kjellén / Aron Lund (2022): From Tartous to Tobruk – The Return of Russian Sea Power in the Eastern Mediterranean. FOI, 2022, p.28

[34] The agreement with Egypt in 2003 undercut UN efforts for a reunification of the island. UN Secretary-General Kofi Annan began negotiations with both sides in 2002. One important aspect was that entering into international agreements and exploiting natural resources would become a federal competence to be decided by a joint RoC-TRNC body. ICG (2012): Aphrodite's Gift – Can Cypriot Gas Power a New Dialogue. International Crisis Group Europe Report No 216, 2.4.2012, p.4.

[35] Later initiatives by the TRNC along the same line were rejected by the Republic of Cyprus as infringements on its sovereign rights. The RoC Parliament only declared its intention to establish a fund for future generations based on gas revenues designed to benefit communities in both parts of the island. In later negotiations, Republic of Cyprus President Christofias only promised his "Turkish Cypriot compatriots that regardless of the circumstances, they will benefit from the possible discovery and extraction of hydrocarbons". ICG (2012), see above, p.4.

[36] ICG (2012), see above, p. 1,6.

[37] ICG (2012), see above, p.6

[38] ICG (2012), see above, p.11; Michael Tanchum (2015): A New Equilibrium – The Republic of Cyprus, Israel and Turkey in the Eastern Mediterranean Strategic Architecture. Friedrich Ebert Stiftung, Occasional Paper Series 1, 2015, p.11.

Since then, Turkey has been increasing its military presence off the southern coast of Cyprus. Turkish research vessels were sent to reaffirm its claims there, accompanied by the Turkish Navy. Frequently, larger detachments were deployed, including a mix of surface and submarine platforms, to monitor and sometimes obstruct drilling activities.[39] In February 2018, the Turkish Navy actively prevented a drillship leased by the Italian energy company ENI ("Saipem 1200") from reaching its site in Block 3, arguing that the same area had already been allocated to TPAO by the TRNC. The Italian company decided to halt its exploration activities around Cyprus.[40] Recently, in September and October 2021, the exploration vessel "Nautica Geo", conducting surveying operations for the EastMed pipeline route, was even intercepted twice by the Turkish Navy, at first 10 nm off Crete and then two weeks later again off the Coast of Cyprus.[41]

EastMed fosters military posturing

The discovery of gas fields and the preparations for EastMed have altered the landscape of regional security drastically. Greece and Cyprus seem adamant on pursuing the EastMed project, feeling they have successfully side-lined Turkey in the region. Greece and Cyprus have raised the political and military cost for Turkey to challenge their claims, especially by forging closer alliances with France. They also profit from Turkey's alienation from other key actors like the U.S., Israel, or Egypt on other issues. A strong sign of support was the EU Council Decision in 2019 to implement a sanctions regime against any unauthorised drilling activities in the EEZ of Cyprus in reaction to the incursion of Turkish drilling ships into its waters. Since then, these sanctions have been extended on a yearly basis, most recently in November 2022.[42] Another important step was the formal establishment of the international organisation East Mediterranean Gas Forum (EMGF) in September 2020 to coordinate the exploitation of fossil gas in the region: Turkey was explicitly not invited. The EMGF brings together the EastMed-countries Cyprus, Greece and Israel with Egypt, Jordan, the Palestine Authority and two other EU member states, Italy, and France. The European Union and USA have observer status.

From the outset, the EastMed-countries have also intensified their security cooperation among each other and with other key actors, such as Egypt, France and the US.[43] In 2012, Cyprus and Israel deepened their military ties, signing two agreements that granted the Israeli Air Force the right to use Cyprus airspace and territorial waters to protect energy infrastructure and improved the exchange of classified information.[44] Between 2015-2016, Greece and Cyprus concluded Status of Forces Agreements with Israel and both signed agreements with Egypt

[39] Ibrahim Sünnetçi (2019): Turkish Navy's Current Fleet and the Role of Turkish Naval Industrial Capabilities, in: Defense Turkey, Vol 14, No. 95/2019, p.53.

[40] Daily News Egypt (2018): Turkish warships halt Eni's Saipem 12000 from operation in Cyprus' EEZ. 24.2.2018; Reuters (2018): Turkish blockade of ships off Cyprus is out of Eni's control. 16.2.18. Similar threats have been made against Exxonmobil and Qatar Petroleum, which have received drilling rights in Block 5 and Block 10 (Glaucus-1 and Glaucus-2). Upstream online (2021): Turkey again threatens drilling plans as ExxonMobil awarded prize block offshore Cyprus, 3.12.2021.

[41] Maritime Executive (2021): Turkish Navy Intervenes in EastMed Pipeline Survey, 29.9.21; Daily Sabbah (2021): Turkish navy intercepts Greek vessel violating continental shelf, 4.10.2021.

[42] EU Council Decision 13262/19 concerning restrictive measures in view of Turkey's unauthorised drilling activities in the Eastern Mediterranean, 8.11.2019.

[43] In 2019, the United States and Greece agreed to expand U.S. basing rights in Alexandroupolis in western Thrace. Through the 2019 Eastern Mediterranean Security and Energy Partnership Act, the US Congress lifted the US arms embargo on Cyprus. Kjellén (2022), see above, p.50. A move that prompted Turkey to announce reinforcements to its force stationed on Cyprus.

[44] Andreas Stergiou (2016): Turkey-Cyprus-Israel relations and the Cyprus conflict. Journal of Balkan and Eastern Studies, Vol. 18, No. 4/2016, p.382.

covering cooperation on security and defense issues, preparing the ground for joint military exercises. Since then, Cyprus, Greece and Egypt have intensified their military cooperation to include joint training initiatives.[45]

France has also been striving to forge closer ties with Cyprus and Greece. This is likely due in part to the growing involvement of French energy company Total in the exploitation of the fossil gas fields in the Eastern Mediterranean. Furthermore, France wants to consolidate its power base in this region, especially in Lebanon, Libya, and Syria, and keep the regional power Turkey in check.[46] In 2017, it signed a defense agreement with Cyprus that entered into force in 2020. Two years later, in May 2019, both sides agreed to modernise the Evangelos Florakis Naval Base so that it can host French warships.[47] Two years later, in September 2021, France and Greece signed a bilateral defense agreement, including a mutual defense clause should either be attacked by a third country.[48]

As part of the closer military cooperation, the number of regular military exercises among these states also increased, many having a format and purpose directly related to the protection of maritime borders and offshore installations as well as defense against invasions. Greece and Egypt began conducting joint exercises in 2015, one of them known as "Medusa". Since then, "Medusa" has evolved into a regular series of joint exercises for naval and air force units, also integrating Cyprus, and inviting other countries like Israel and France.[49] Similarly, Cyprus initiated the annual "Nemesis" exercise series in 2013 with regular participation by Egypt, Greece and Israel as well as military delegations from France, Italy and the United Kingdom. The official aim of the "Nemesis" series is to develop safety and security procedures to respond to emergency situations within Cyprus EEZ and affirm Cyprus' sovereignty.[50]

Due to its growing political isolation and the lack of any promising political and legal means to challenge the Greek and Cypriot initiatives, Turkey has resorted increasingly to demonstrations of military power. This is mirrored by the fact that the nationalistic "Blue Homeland" idea (Mavi Vatan) is gaining ever greater traction in Turkish security policy discourse[51] (see Graph 3). According to this idea, most of the Aegean Sea, including some Greek islands, the Black Sea and the area around Cyprus historically belong to

[45] On 18.5.2017 Greece and Egypt agreed on a Military Cooperation Program. Sünnetçi (2019), see above, p.50. On 6.4.2021, the three countries signed the Tripartite Military Cooperation Program to improve the interoperability of their armed forces, see Al-Monitor (2021): Egypt, Greece, Cyprus edge closer militarily, but may be risking face-off with Turkey. 12.04.2021. On 21.9.2022, Egypt and Greece signed a bilateral agreement to improve cooperation in military training. Middle East Monitor (2022): Egypt, Greece sign protocol to support bilateral military cooperation. 22.9.2022.

[46] For more information see Toni Alaranta (2022): France in the Eastern Mediterranean and the MENA region's geopolitical competition. FIIA Briefing Paper No.337/2022; Jana Jabbour (2021): France vs. Turkey in the EastMed. IFRI Briefing, 6.5.2021; Aleksandra Pecinar (2019): Total in Eastern Mediterranean Waters. MEER, 7.10.2019.

[47] Tasos Kokkinidis (2019): France to Upgrade Naval Base in Cyprus. Greekreporter.com, 16.5.19. France also sent its flagship, the nuclear-powered aircraft-carrier Charles De Gaulle, to Cyprus in February as a show of support to protect Cyprus maritime zones. It sailed close to the Turkish research vessel Yavuz, which entered Cyprus EEZ. Financial Mirror (2020): France backs Cyprus in energy row with Turkey, 18.2.20; Cyprus News Agency (2020): French aircraft carrier "Charles de Gaulle" sails through EEZ Block 8. 5.2.2020.

[48] Bruno Tertrais (2021): Reassurance and Deterrence in the Mediterranean – The Franco-Greek Defense Deal. Institut Montaigne, 17.11.2021. In October 2021, France issued a statement to clarify that this does not extend to the EEZ.

[49] Antonia Dimou (2021): Trilateral Partnerships drive East Mediterranean security and prosperity. Modern Diplomacy, 18.8.2021.

[50] Government of Cyprus (2022): Address by Minister of Defense, Mr. Charalambos Petrides, at Nemesis Exercise 2022. Press Release, 3.11.2022. Other annual military exercises include the multilateral "Eunomia" and "Noble Dina" and the Cyprus-Israel exercises "Agapinor", "Iason", "Onisilos-Gideon" based on the bilateral agreement of 2012. Eunomia was initiated by Greece, Cyprus, France and Italy in 2020. Since 2011 Israel, Greece and the U.S. have conducted the Noble Dina naval exercise. In 2021 Cyprus and France were invited to join.

[51] It was first outlined by Admiral Cem Gürdeniz in 2006 as a response to a perceived affirmation by the EU of the maritime borders declared by the RoC. For more information on "Blue Homeland" see Aurélien Denizeau: Mavi Vatan, the "Blue Homeland", IFRI, April 2021.

Graph 3 Turkey's Projected Maritime Boundaries, According to the Architects of the Blue Homeland Doctrine

Turkey.[52] In 2019, Turkey began to launch the annual naval exercises "Mavi Vatan" in the Black Sea and the Mediterranean, named in honour of this doctrine as an unequivocal message to Greece and Cyprus.[53]

1.3. Israel: Adding more unresolved conflicts to the security mix

The third country participating in EastMed, Israel, brings a different set of security risks to the table. While there has been some rapprochement between Israel and its neighbouring states, it remains locked in conflict with regional military powers, such as Iran and Syria. Officially, Israel is still at war with neighbouring Lebanon, where the armed group Hezbollah, backed by Iran, is a declared enemy of the state of Israel.[54] In addition, Israel faces armed opposition from Hamas, operating mainly from the Palestine territories (Gaza and West Bank). While it is difficult to assess their actual military capabilities, both armed groups have demonstrated their willingness and ability to target critical infrastructure. Hezbollah, in particular, is assumed to have acquired weapons capable of targeting offshore platforms. During the Israel-Lebanon war in 2006, Hezbollah already successfully fired a Chinese C-802 anti-ship missile, damaging an Israeli Sa'ar 5 corvette.[55] Since then, it is suspected also to have acquired long-range supersonic anti-ship missiles, like the Yakhont (P-800 Onyx) systems.[56] Israel claims that Hezbollah is even developing new supersonic land-to-sea missiles itself and possesses unmanned aerial vehicles (UAV). According to Israel, Hamas has set up a naval commando unit in preparation for attacking targets at sea.[57]

The EastMed project is supposed to begin at the Tamar field, 80km off the Israeli coast near Haifa.

[52] Denizeau (2021), see above, p.6f.

[53] Denizeau (2021), see above, p.29; Kjellén (2022), see above, p.40. In 2021 it involved 87 vessels, 27 aircraft, 20 helicopters and UAVs.

[54] Hezbollah ("Party of God") was founded in 1982 as a reaction to the invasion of southern Lebanon by the Israeli army. It is assumed to be primarily an Iran-backed Lebanese Shi'a organisation. Over the years it has become anchored in Lebanese society, gained Parliament seats and in 2005 joined the government cabinet for the first time. It has held one to three seats in each Lebanese government since then. CRS (2021): Lebanese Hezbollah. Congressional Research Service, In Focus, 1.2.2021, p.1f.

[55] Kjellèn (2022), see above, p.60.

[56] Yaakov Lappin (2015): Israel corvette gets counter-attack capability. Jane's Defense Weekly, 4.9.2015; Yaakov Lappin (2020): First new Israeli corvette is set to arrive in December. Jane's Defense Weekly 5.11.2020; Kjellén (2022), see above, p.60.

[57] Lappin (2020), see above.

While a considerable distance away from the shore, there have been several attempted attacks by Hamas on the Tamar drilling platform since 2019 according to Israel. The last missile attacks were reported in May 2021, leading to a temporary shut-down of the drilling rig.[58] A similar distance from the coast as the Tamar gas field, the Karish-Qana gas field is located in an area disputed by Israel and Lebanon. The Lebanese Hezbollah has repeatedly threatened Israel over any unilateral Israeli gas exploration of the Karish-Qana gas field.[59] In June 2022, Hezbollah released video footage showing an Israeli drilling platform in its targeting sights.[60] According to the Israeli Navy, three unarmed drones, presumably launched by Hezbollah, were shot down as they approached the drilling platform of the Greek Energean company at the Karish gas field in July 2022.[61]

Currently, though, the situation seems to have deescalated. On 27.10.2022, both Israel and Lebanon agreed to set their dispute aside and permit exploration and extraction at the Karish/Qana gas field.[62] With Hezbollah being part of the Lebanese cabinet that reached the U.S. brokered deal with Israel, the threat of attacks should be off the table. The same could be assumed regarding Hamas. The Palestine Authority (PA) has joined the East Mediterranean Gas Forum (EMGF) in 2019, paving the way for the development of its own offshore Gaza Marine gas field discovered in 2000. The PA registered its EEZ with the UN and has negotiated a Memorandum of Understanding with Egypt for the extraction of gas in the Gaza Marine Gas Field. In October 2022, Israel also gave its general consent to the development of the gas field.[63]

Nevertheless, to assume that these developments will negate the danger of attacks, ignores the nature of the conflict between Israel, Hamas, and Hezbollah. It is a realistic possibility that the interests of the actors will change again in the coming years. The fundamental differences between Israel on the one side and Hamas and Hezbollah on the other are likely to outweigh shares in the profits from gas production. Even if both are connected in some way to the respective parties now cooperating with Israel on fossil gas exploitation, they will pursue their own agendas aiming for higher stakes than shares in gas extraction.[64] Drilling platforms remain potential targets for these groups to threaten Israel. An offshore gas drilling platform can be severely damaged even by an unarmed commercial marine vessel ramming into it.

[58] Judah Ari Gross (2021): Hamas attempting to hit the Tamar offshore rig with rockets. Times of Israel 16.5.2021; Reuters (2019): Israel to resume Tamar gas field production after Gaza truce, 6.5.2019; Archana Rani (2021): Chevron halts production at Tamar field offshore Israel. Offshore-Technology 13.5.2021.

[59] Energy Intelligence (2022): Risk of Conflict Rises in Gas-Rich East Med Region. 10.6.2022; Middle East Monitor (2022): Lebanon's Hezbollah warns Israel against drilling in disputed maritime border area, 17.11.2022. For background on Gaza Marine gas field and Karish-Qana dispute see Stocker (2012): No EEZ Solution – The Politics of Oil and Gas in the Eastern Mediterranean. Middle East Journal, Vol. 66, No.4/2012, pp. 579-597.

[60] Emanuel Fabian (2022): Hezbollah renews threats on Israeli gas fields, Times of Israel, 31.7.2022.

[61] Seth J. Frantzman (2022): Israel-Lebanon Maritime Deal Juggles Region's Security, Energy Targets. Defense News, 25.10.22; Middle East Strategic Perspectives (2022): Israel shoots down Hezbollah drones heading to Karish field. The East Med Energy Report, No. 9/2022, p.1.

[62] Hamzah Rifaat Hussein (2022): Lebanon's Maritime Deal with Israel. Carnegie Endowment for International Peace, 31.10.22.

[63] Reuters (2022): Egypt oil minister says framework agreement in place on Gaza Marine field. 25.10.2022; Adam Khalil (2022): Egypt nears deal with Israel and PA to revive Gaza offshore gas production. Middleeasteye, 20.10.2022. While Israel might not object to gas extraction by the Palestine Authority, it does not want to forfeit its control over the Gaza strip and maritime zone. Any proof that some share of the gas revenues will be handed over to Hamas could lead to a withdrawal of support. Ben Gale (2022): Israel green lights gas field off Gaza but concerned Hamas will use revenue for terror. JNS, 14.11.2022. Nevertheless, Hamas seems to have been involved in negotiations in Egypt in December 2022. See Middle East Monitor (2022): PA, Egypt, Israel Hamas make Gaza Marine breakthrough, 9.12.2022.

[64] In October 2022, Hamas warned the PA to conclude an agreement with Egypt on the Gaza Marine gas fields demanding that first the Israeli blockade needs to be lifted. Furthermore, it needs to be ensured that Israel does not profit from the deal. Tzvi Joffre (2022): Jerusalem Post 20.10.2022.

1.4. Russia's Maritime Task Force – The Geostrategic Dimension

The last decade has seen increased Russian efforts to rebuild its military presence in the Mediterranean Sea.[65] This is part of a broader strategy to establish a chain of naval bases linking the Mediterranean Sea, the Red Sea and the Indian Ocean.[66] Russia seems intent on creating so-called "Anti-Access/ Area-Denial" zones (A2/AD) on its western flank to discourage NATO forays and retain air-defense zones outside Russia.[67]

The Syrian civil war that erupted in 2011/2012 confirmed Russia's assessment of its inherent limitation for power projection. Without a military escort, Russian civilian freight vessels transporting military equipment to Syria were obstructed at least twice by NATO during the first half of 2012.[68] Furthermore, the continuing military tensions with Turkey in Syria and recently in Libya underscored the Russian need to break the Turkish grip on its Black Sea Fleet.[69] If Turkey permanently closes off the Dardanelles Straits, the Russian Navy will only have the ports in the Baltic Sea left as a viable passage to the west and south[70].

In 2013, Russia reached an agreement with Syria to expand and modernise its naval base at Tartus to house a larger naval squadron. In the same year, Russia established the Standing Operative Task Force in the Mediterranean Sea (Maritime Task Force / MTF) and committed the navy to sustaining a permanent force there, comprising at least ten vessels.[71]

Russia's decision to actively intervene in the Syrian war on behalf of the Syrian government in September 2015, underscores the importance of the MTF. It safeguarded the military supply route from the Black Sea to Syria, discouraging any NATO blockades. That year, Russia added four civilian freight ships to the MTF to increase its transport capacity by more than 20,000 tonnes and deployed S-300 anti-aircraft systems to Tartus.[72] The MTF even participated directly in the initial attacks in Syria. On 8 December 2015, a Kilo-Class submarine stationed at Tartous conducted Russia's first submarine-launched Kalibr (3M-14) cruise missile strike in Syria.[73] Fighter aircraft

[65] Officially, the military presence of the Soviet Union in the Mediterranean ended in 1993 when the "Mediterranean Squadron", based in Tartus, Syria, was disbanded. On 23.11.1999, Prime Minister Vladimir Putin signaled a turn-around, announcing that the Russian Navy will again begin to expand its operations in the south. But for various reasons, not the least a lack of naval capacity and funding, the Russian naval presence in the Mediterranean remained sporadic. See BBC (2004): Russia's rusting navy, 23.3.2004; Reuters (2007): Russian navy to start sorties in Mediterranean, 5.12.2007; and https://nuke.fas.org/guide/russia/agency/mf-med.htm.

[66] Until the invasion of Ukraine in 2022, Russia had access to Limassol in Cyprus. So far, Russia has acquired a naval base in Berbera (Somalia) and Port Sudan (Sudan). Reportedly, it is close to acquire a "logistics centre" in Eritrea. Negotiations are also reportedly being conducted with Algeria, Yemen and Libya. Blank (2021), p.464.

[67] This means establishing an interlocking network of radar, surface-to-air and anti-ship missile systems. Andrea Beccaro (2021): Russia, Syria and hybrid warfare. Comparative Strategy, Vol. 40, No.5/2021, p.493.

[68] Kjellén (2022), see above, p.78. To prevent future interference, these shipments had to be conducted by Russian Navy landing ships, which required a separate functioning military infrastructure in the Mediterranean. From mid-2012 onward, they would shuttle back and forth between the Russian Black Sea port of Novorissiysk and Tartus in Syria.

[69] The Russian-Turkish confrontation on Syria in February/March 2020 illustrates the still volatile position of the Russian MTF but also shows that Russia has become a military factor in the eastern Mediterranean Sea. When Turkish armed forces retaliated in Syria against a Russian-backed Syrian offensive, Russian aircraft were involved in the killing of Turkish soldiers. As tensions rose, President/Prime Minister Erdogan threatened to close-off the Dardanelles. This prompted Russia to immediately dispatch five vessels (frigates & destroyers), plus an amphibious landing vessel, from the Black Sea to the Turkish-Syrian coast to reassert its position of power there. Stephen Blank/ Younkyoo Kim: The Mediterranean Eskadra and Russia's military political strategy in the Mediterranean Basin. Defense & Security Analysis, Vol. 37, No. 4/2021, p.453f.

[70] As happened at the end February 2022, shortly after the Russian aggression against Ukraine happened. https://www.navalnews.com/naval-news/2022/02/turkey-closes-the-dardanelles-and-bosphorus-to-warships/

[71] Kjellén (2022), see above, p.6. In February 2014, just prior to the invasion of Ukraine, Russia announced its intention to strengthen the MTF by adding Varshavyanka-class submarines for a period of time. Blank (2021), see above, p.463.

[72] Kjellén (2022), see above, p.80f; Damien Sharkov (2016): Russia announces plans for permanent naval base in Syria. Newsweek, 10.10.2016.

[73] Nicolas de Larrinaga (2015): Russian submarine fires cruise missile into Syria. Jane's Defense Weekly, 9.12.2015.

from the aircraft carrier Admiral Kutznezov off the Syrian coast have flown numerous sorties over Syrian opposition troops since then.[74]

In January 2017, Russia and Syria agreed to extend the 49-year-old lease, signed in 1971, to use Syrias's Hmeymim air base.[75] A year later, Russian President Putin stated that Russian troops would remain in Syria "as long as it benefits Russia and in pursuance of our international commitments".[76] He also indicated that cruise-missile capable vessels would always be present in the MTF. Furthermore, minesweeping and anti-diversion vessels designed for protection of naval bases were permanently assigned to Tartus. While the Dardanelles remain a bottleneck for Russian power projection in the region, Russia has achieved a minimum degree of sustainability for its naval forces in the Mediterranean through the modernisation of Tartus. New naval service and repair facilities are under construction. This will eliminate the need to constantly keep an Amur-Class floating workshop in Tartus – freeing mooring berths, expanding capacity for minor repairs locally and reducing the need for time-consuming trips back to the Black Sea ports. Improved stationary facilities will also benefit submarine operations in the region.[77]

EastMed as a leverage point

The Russian military presence has become a factor in the region, also affecting EastMed and the wider regional security setting.[78] Now capable of sustaining a long-term military presence, Russia has the means to engage in gunboat diplomacy, pressuring riparian states to reconsider certain policies. The first indications of this are Russia's attempts to counter Turkey's influence in the eastern Mediterranean and reports of Russian involvement in the civil war in Libya – the latter being denied by the Russian government.[79] In this context, energy infrastructure, like EastMed, could become a viable target to pressure the countries involved. Currently, though, there are no indications that Russia is considering such an option regarding the EastMed pipeline project. Since 2016, Russian companies, such as Novatek and Rosneft, have instead tried to join the western multinational corporations and participate in the exploitation of the gas fields in the region.[80] This calculation might change, though, if the Russian companies cannot gain a foothold in the gas fields and the European Union successfully reorients its gas supply away from Russia.

The most complex factor regarding the connection between Russia's military presence and the EastMed project is the overall U.S.- and NATO-Russia

[74] Between November 2016 and January 2017 at least 420 sorties were conducted with MiG-29K and Su-33 aircraft from the Admiral Kuznetsov. Kjellén (2022), p.82). Until 2017, several cruise missile attacks followed, using Kilo-Class submarines, Grad Sviiazhsk-Class missile ships and Grigorovich-Class frigates.

[75] Business Standard, 2017: https://www.business-standard.com/article/international/russia-signs-deal-to-use-syria-air-base-for-49-years-117072701238_1.html

[76] Kjellén (2022), see above, p.83.

[77] Kjellén (2022), see above, p.83.

[78] Russia has also conducted a series of military exercises with regional powers such as Egypt (in 2015) but also inviting the Chinese Navy into the Mediterranean for the "Joint Sea" Exercise. Kjellén (2022), see above, p.80; Romy Yahchouchi (2021): Maritime Security in the Mediterranean Sea, Konrad Adenauer Stiftung, 2021, p.35.

[79] For Russian denial see Interfax (2020): No Russian fighter jets in Libya – head of Federation Council defense committee, 27.5.2020. One example was Russian support for Cyprus vis-à-vis Turkey. Russia considers Cyprus an important foothold in the region and has tried to forge closer ties. When the Turkish Navy threatened Cyprus because of the gas drilling agreement with Noble Energy in October 2011, Russia dispatched its sole aircraft carrier and a submarine as a show of support for Cyprus. Blank (2021), see above, p.460. In 2015, Russia and Cyprus then signed an agreement, permitting Russian warships to use Limassol harbour. BBC (2015): Cyprus signs deal to allow Russian navy to use ports, 26.2.2015.

[80] In 2018 Novatek joined Total and Eni in a consortium for exploration and production at two blocks of the offshore Lebanese gas fields. In August 2022, Novatek announced its withdrawal from the consortium. Energy Intelligence (2022): Novatek Exits Offshore Lebanon Blocks, 29.8.2022. In 2016, Russian energy company Rosneft acquired a 30% share in the ENI-led consortium for the exploration of the Egyptian Zohr gas fields. Arabnews (2016): Eni sells 30% stake in Egypt's Zohr gas field to Rosneft, 13.12.2016.

relationship. Russian "Anti-Access/Area-Denial"-zones (A2/AD) and Russian capacities to patrol the high seas in the Mediterranean and, for example, to unilaterally declare and enforce no-fly-zones are increasingly perceived as a strategic challenge by NATO and the USA.[81] Furthermore, the current war in Ukraine underlines the volatility of the overall situation and how it affects other regions, such as the Baltic Sea with attacks on the Nord Stream pipeline, and the eastern Mediterranean Sea. Since February 2022, the latter has seen an increased presence of Russian warships, as well as a higher frequency of NATO- and U.S. aircraft carriers deployments.[82]

In this tense security environment, actions in one theatre of operations have the risk of spilling into an entirely different theatre.[83] Therefore, under certain conditions, the energy infrastructure in the Mediterranean Sea could also move into the focus of these military powers. Moreover, the present security discourse between NATO and Russia is inherently escalatory. An assumed threat – in this case Russia targeting pipelines – could lead to "pre-emptive" and "proactive" security measures by NATO. This in turn could contribute to the ongoing militarisation of the Mediterranean Sea and increases the likelihood of intentional or unintentional provocation, preparing the next steps of escalation.

1.5. The role of Libya

Currently, the civil war in Libya has reached a stalemate. The UN-recognised Government of the National Accord (GNA), backed by Turkey and Qatar, holds the capital, and controls the central and western parts of Libya. On the other side stands the Haftar-led Libyan National Army (LNA), currently holding the eastern parts of Libya and according to the UN Panel of Expert on Libya Reports to the UN Security Council, actively supported by Egypt, Russia, United Arab Emirates (UAE).[84]

At first a bystander in the race for the Mediterranean gas fields, Libya now has become a factor that could also shape the future of the EastMed and affect regional security. To challenge the maritime claims of Greece and the RoC, Turkey decided to forge closer ties with the GNA in Tripoli. On 25.11.2019, the two parties signed a Maritime Boundary Treaty, effectively delimiting their EEZ and creating a large wedge between the territorial waters of Greece, Cyprus and Egypt, thereby challenging the EastMed pipeline route (see Graph 2, page 13). While this treaty was opposed by the Libyan House of Representatives and regarded as a violation of Art. 8 of the Libyan Political Agreement of 17.12.2015, the GNA still filed the agreement with the UN.[85]

[81] After 9/11, NATO launched Operation Active Endeavour (OAE), mandating itself to act as a permanent maritime police force of the international waters in the Mediterranean, controlling any ships it deems necessary. OAE ran from 2001-2016 and was then supplemented by Sea Guardian.

[82] For more information on naval presence in the eastern Mediterranean Sea and the tracking of naval vessels see www.itamilradar.com. In a latest show of force, NATO-countries initiated Operation Antares, involving five Carrier Strike Groups in the Atlantic and Mediterranean. U.S. Navy Press Release (2022): Standing NATO Maritime Group Two Commander Meets with Allied Strike Group Commander at Sea. 23.11.2022.

[83] For a fictitious scenario of how the Mediterranean might be linked to a different theatre of operation see Jonathan Altman (2016); Russian A2/AD in the Eastern Mediterranean – A Growing Risk. Naval War College Review, Vol. 60, No.1/2016, pp. 78-79.

[84] For more information on the armed groups active in Libya see Congressional Research Service (2022): Libya – Transition and U.S. Policy. CRS Report RL 33142, 3.1.2022. According to the Reports of the Panel on Experts to the UN Security Council, Russia supplied the private military company ChVK Wagner in Libya with MIG-29 and SU-24 fighter aircraft as well as conducting more than 500 military cargo flights in 2020 alone. The reports also conclude that the United Arab Emirates supplied the LNA with Pantsir and Hawk close air-defence systems, 155mm ammunition and Chinese-made UAVs. See UN Security Council (2021): Letter dated 8 March 2021 from the Panel of Experts on Libya established pursuant to resolution 1973 (2011) addressed to the President of the Security Council, Doc S/2021/229, 8.3.2021, and UN Security Council (2019): Letter dated 29 November 2019 from the Panel of Experts on Libya established pursuant to resolution 1973 (2011) addressed to the President of the Security Council, Doc.S/2019/914, 9.12.2019. Egypt has permitted the UAE to use its military bases for incursions into Libya and is reported to have trained LNA military and provided them with vehicles, night vision equipment and jamming systems. Middleeastmonitor (2019): Increasing Egyptian military support for Haftar forces in the Battle of Tripoli. 25.4.2019.

[85] See UN Database for any maritime boundaries agreements at https://www.un.org/depts/los/LEGISLATIONANDTREATIES/. For the LPA see https://unsmil.unmissions.org/sites/default/files/Libyan%20Political%20Agreement%20-%20ENG%20.pdf

In return for supporting Turkish maritime claims vis-à-vis Greece, the GNA has received valuable military aid. Turkish support in 2019 is regarded as having been crucial in stopping the military advances of the Haftar-led LNA on Tripoli. Turkey deployed fighter aircraft and provided the GNA-forces with drones. In January 2020, Turkish ground forces started operating alongside the GNA military. Furthermore, the Turkish Navy escorts Libyan cargo vessels through the Mediterranean to discourage interceptions by EU Operation Irini and NATO's Sea Guardian, who are trying to enforce the arms embargo against Libya. In at least six cases, the Turkish Navy refused to permit inspections by EU Operation Irini.[86] In one instance, on 10.6.2020, a Greek frigate was shadowing a Tanzanian vessel suspected of carrying weapons to Libya and escorted by two Turkish frigates. Turkey prevented the boarding, claiming that the freighter was under their protection and carrying medical supplies for a Turkish hospital in Libya.[87] A week later, on 17.6.2020, France reported that a Turkish frigate targeted the French frigate Courbet with their fire-control radar three times as the French vessel attempted to inspect a Libyan ship suspected of smuggling arms.[88] Since then, Turkey and Libya have continued to forge closer ties. In May 2022, Turkey agreed to provide the Libyan Air Force with Hürkus light combat aircraft.[89] In October 2022, Turkey and the GNA signed a MoU on hydrocarbon and gas cooperation as well as further unspecified "security arrangements".[90]

Turkey's alliance with the GNA in Libya increases the danger of a direct military confrontation with Russia.[91] In June 2020, Russia supplied the Russian private military company ChVK Wagner operating in Libya in support of Haftar's LNA with fighter aircraft to stop the GNA counter-offensive.[92] This in turn raised U.S. qualms that Russia, if the LNA succeeds, would be able to establish another anti-access/area denial (A2/AD) 'bubble' in the central Mediterranean, possibly establishing a naval base at Benghazi or an air base at Tobruk.[93] Beyond that, the outcome of the proxy-wars in Libya could also directly increase the insecurity surrounding EastMed. If the GNA consolidates its power in Libya and improves its naval capacities, it might use the Turkish-Libyan Maritime Boundary Treaty as a pretext for physically seizing these maritime territories and thereby risk an armed conflict with Egypt and Greece. Referring to the treaty above, the GNA already has laid claims to sea territories for offshore exploration south of Crete.[94]

1.6. More arms – more insecurity

Despite the financial crisis and the repercussions of the Arab Spring, the military expenditures of Greece, Turkey, Israel and Egypt have basically remained constant and in the case of Israel practically doubled (see Table 1). In total, these countries have allocated more than $570 billion to their defence budgets between 2010-2021. While it is not possible to identify

[86] Jeremy Binnie (2020): France says Turkish Navy is blocking enforcement of Libyan arms embargo, 18.6.2020.
[65] Middleeastmonitor (2022): Türkiye, Libya signs agreements on hydrocarbon, gas, 3.10.2022.

[87] Binnie (2020), see above.

[88] Binnie (2020), see above; Lund (2022), see above, p.57.

[89] Military Africa (2022): Libya orders Hürkus-C light combat aircraft from Turkey, 8.6.2022; Aron Lund (2022): The Turkish Intervention in Libya. FOI, March 2022, p.21f.

[90] Middleeastmonitor (2022): Türkiye, Libya sign agreements on hydrocarbon, gas, 3.10.2022.

[91] Reuters (2020): France 'will not tolerate' Turkey's role in Libya, Macron says, 22.6.2020; Daily Sabbah (2020): FM Çavuşoğlu slams French President Macron for remarks on Libya, 25.6.2020.

[92] See UN Security Council (2021), p.25.

[93] CRS (2022), see above, p.11; Jane's Defense Weekly (2020): Russian deployment blocks Turkish victory in Libya, 26.8.2020. On Russian interest & actions in Libya see Beccaro (2021), see above, p.494.

[94] K.S. Strigunov / A.V. Manoilo / B.A. Rozhin / G. Simons (2022): Energy market wars as a factor of military-political escalation in the Eastern Mediterranean region – a Russian perspective, in: Cogent Social Sciences, Vol. 8, No.1/2022, p.8.

the exact share devoted to arms procurement, it can be observed that Greece, Turkey, Israel and Egypt have embarked on expanding and modernising their military capabilities, spending billions of euros on new weapon systems since 2010.[95] France and Germany, in particular, but also Italy and the U.S. have profited from this, their defence companies selling aircraft, naval vessels, submarines, missiles and expensive subsystems. While not the sole reason for the increase in military procurement, the undersea gas discoveries have affected the scale and direction of the arms race in the region. Egypt, Greece, Israel and Turkey are committed to a substantial naval build-up. They want to improve their so-called "blue-water navy" capabilities, i.e. develop a naval force that is able to operate in deep waters.[96] Compared to coastal protection, power projection at sea, sustainable monitoring and protection of offshore platforms and patrolling of maritime boundaries require a different set of capabilities. Frigates, submarines, helicopter carriers, and landing ships enable navies to project power beyond their own territories. Corvettes and offshore patrol boats are needed for long-term patrolling missions, including guarding floating installations. They have lower operation costs and require less support to maintain operability than frigates (see Table 1).

Table 1

	Egypt	Greece	Israel	Turkey
Military expenditures (in million $)				
2010	4407,3	7073,6	13875,2	17560,5
2021 (or last year available)	5165,4	7.743,9	24341,0	15478,9
cumulative 2010-2021	52.162,1	66.476,4	217.130,2	212.717,5
Total Military Strength	438.500	143.000	169.500	355.200
Navy	18.500	16.400	9.500	45.000
Coast Guard & comparable units	(2000)*	4.000		4.700
Navy				
Frigates (Principal Surface Combattants)	11	13	0	16
Submarines	8	11	5	12
Patrol & Coastal Combattants	73	37	49	45
of these Corvettes	10	0	7	5
Mine- / Anti-Mine-Ships	14	3	0	15
Amphibious Landing Ships	17	20	3	35
Logistics & Support	23	28	1	35
Naval Aviation				
aircraft	3	11		21
helicopter	0	18		29
UAV	2	0		8
Coast Guard Patrol Boats	89	124		108

* = part of Navy

Sources: Militaary Balance 2022, SIPRI-Database on military expenditures accessed on 19.11.22 (based on Current (2020) USD

[95] It is particularly difficult to assess Egypt's actual military expenditures. According to SIPRI, many expenditure items are hidden outside the official military budget. For more information,n see Alexandra Kuimova (2020): Understanding Egyptian Military Expenditure. SIPRI Background Paper, October 2020.

[96] While on paper almost on a par with each other in 2010, Turkey's Navy did have an advantage, fielding more deep-water capable modern vessels and commanding a defence industrial base capable of producing modern armaments. The Greek Navy was primarily oriented toward protecting the inner Aegean Sea ("Green-Water Navy") and suffered from the financial crisis – similar to the Egyptian Navy, while Israel so far has only focused on the control of its immediate coastal waters.

Greece

Only recently, Greece signed a contract with the French Naval Group to purchase three FDI frigates for an estimated €3.2 billion to join the four MEKO 200 frigates bought from German company ThyssenKrupp Marine Systems (TKMS).[97] In November 2022, Greece announced its decision to procure three new corvettes with an option for a fourth corvette and to modernise the MEKO 200 frigates for a total of €2.5 billion.[98] Further acquisitions in recent years included seven Super Vita Fast Attack Craft from the United Kingdom, three used Island-Class littoral vessels from the US and six Alkmaar-Class minehunters from the Dutch Navy.[99]

To improve its naval power projection capabilities, Greece has bought five U214 submarines and one upgraded U2019/1200 from Germany since 2010, along with at least 44 DM2A4 torpedoes for an estimated cost of more than €2 billion. To improve its capabilities in defending against foreign submarine incursions into the Aegean Sea, Greece has ordered seven MH-60 Romeo Anti-Submarine-Warfare (ASW) helicopters from Lockheed Martin to raise its total number to 18 helicopters.[100]

Turkey

Turkey's naval expansion programme is even more ambitious. Between 2017-2034, its navy and coast guard are scheduled to receive a total of 88 new naval vessels.[101] Some have already arrived, such as two of the four ADA-Class corvettes of the MilGem Project. Other prestigious projects are currently underway, e.g. the four TF-100 frigates (€400-500 million per ship), and the building of another six German U214 AIP submarines with an estimated cost of €2 billion.[102]

One of the more important procurement projects is the TCG Anadolu, a Landing Helicopter Dock platform suitable for amphibious assaults based on the "Juan Carlos I" design by the Spanish defence company Navantia S.A. It has been redesigned to carry not only helicopters but also fighter aircraft and potentially also Bayraktar TB2 UAV, giving the Turkish Navy a new level of maritime power projection in the region.[103]

Israel

Compared with the three countries listed above, Israel is a latecomer to the naval arms race. The discovery of offshore fossil gas has motivated Israel to increase its naval capabilities slowly but steadily, primarily with German weapon systems. The two priorities are improving coastal protection and strengthening its capacity to field submarines in order to deter larger foreign fleets. In 2015, Israel ordered four MEKO PC-IN (Sa'ar 6) corvettes from German ThyssenKrupp Marine Systems for an estimated $430 million[104].

[97] Defense Mirror (2022): Greece Naval Group Starts Assembling HDI HN Frigate for Greece, 22.10.2022.

[98] Vassilis Nedos (2022): Regional power competition in the Eastern Mediterranean. Hellenic Foundation for European & Foreign Policy, March 2022, p.4; Keeptalkinggreece (2022): Greece to acquire new corvettes, 10.11.2022.

[99] The Super Vita FAC comes with German MTU-engines and 140 RIM 116A RAM close protection missile systems. Italy supplies 76mm Super Rapid naval guns and France has delivered 20 Exocet MM-40-3 missiles.

[100] RUSI (2021): The Coming Naval Arms Race in the Eastern Mediterranean, 22.7.2021.

[101] Sünnetçi (2019), see above, p.8.

[102] Sünnetçi (2019), see above, p.22. The TF-100 (Istanbul Class) frigates are the second part of a long-term procurement plan of indigenously manufactured naval vessels launched a decade ago and then expected to cost up to $7 billion. The TF-100 is supposed to also feature vertical-launch-missile slots. Naval Analyses (2015): Ada class corvettes of the Turkish Navy, 26.6.2015; Hurriyet Daily News (2012): Turkish Navy set to build its own frigate, 21.12.2012. The order for the submarines was placed in 2011, with TKMS supplying the material packages for the Turkish shipyard.

[103] Nedos (2022), see above, p.5.

[104] Lappin (2015), see above.

The Sa'ar 6 corvettes delivered since then have been equipped with the air defence system C-Dome, including a new radar that extends the surveillance range to 100-200 km. These corvettes are primarily designed to guard strategic infrastructure, such as offshore gas platforms.[105] Since 2010, Israel has also built up a credible modern submarine fleet. Three Dolphin Type-800 submarines were bought from Germany for more than €1.5 billion and another three were ordered in 2021 for €3 billion.[106]

Egypt

Egypt began restructuring its navy in 2013 with a clear priority on being able to safeguard maritime borders and natural gas assets, protect Suez and Red Sea shipping lanes, and create a capability for out-of-area maritime power projection and amphibious operations. The new naval base Ras Gargoub being built near the Libyan border is a case in point. It is intended to assert Egypt's power vis-à-vis Libya and serve as a support point for better management of patrolling activities and defence of its offshore oil and gas fields, as well as protecting its maritime borders against Turkish challenges.[107]

Since 2012, Egypt has invested heavily and acquired a wide array of frigates to improve its deep-water reach and the sustainability of its maritime operations, including air-defence and anti-submarine capabilities: three FREMM frigates have been ordered from France and Italy for an estimated cost of €1.3 billion, four French-built Gowind-2500 frigates were ordered for €1.5 billion and, in 2019, Egypt ordered four MEKO 200A frigates from Germany for more than €1 billion.[108] During the same period, the Egyptian Navy has doubled its submarine fleet, buying four U209/1400 from Germany for €1.6 billion to be added to its four older Chinese submarines. Other prestigious procurements were the two French Mistral-Class Helicopter Landing Docks in 2016 for a reported €950 million.[109] Egypt is the first Arab navy to possess this type of amphibious projection and landing capability.

For patrolling its maritime borders and guarding assets, Egypt purchased three corvettes, one from South Korea and two from Spain.[110] Germany supplied the navy with nine Fast Patrol Boats and one IPV-60 Offshore Patrol Vessel from German shipyard Lürssen Werft GmbH after an arms embargo was imposed on the original customer, Saudi-Arabia.[111]

1.7. Main findings on geopolitical and security threats

The EastMed project has evolved into a highly explosive security issue for the region. Its implementation will affect pre-existing conflicts in the Eastern Mediterranean Sea, potentially amplifying them.

1. EastMed increases the danger of a military

[105] Lappin (2020), see above. For safety reasons, Israel decided not to place Iron Dome air defence systems on oil and gas rigs. Instead, the advanced C-Dome configuration was developed for the Sa'ar 6 ships. Anna Ahronheim: Israel successfully tests naval Iron Dome air defence missile system. Jerusalem Post 17.11.2022.

[106] AP (2022): Israel inks multi-billion-dollar submarine deal with Germany, 20.1.2022.

[107] Flavia Troisi (2021): Egypt and the development of its national Navy. Centro Studi Internazionali (CeSI), 14.4.2021.

[108] Troisi (2021), see above. In this context, the Egyptian Navy also received more than 200 MICA-missiles and 60 Exocet MM-40-3 missiles for these ships.

[109] RUSI (2021), see above; Troisi (2021), see above. This sale only became possible after an arms embargo was imposed against the original customer, Russia, because of its annexation of the Crimea.

[110] Nedos (2022), see above, p.4.

[111] Troisi (2021), see above.

confrontation between Turkey and Greece on the demarcation of their respective maritime borders. For the past sixty years, both sides have opted for rearmament and military deterrence to enforce their respective claims. Since the 1970's, the Turkish government has repeatedly declared that a unilateral Greek expansion of its territorial waters would be treated as a declaration of war. The EastMed project has been seamlessly integrated into their belligerent discourse and without doubt, its implementation would likely shift the maritime border dispute in favour of Greece and effectively limit Turkey's access to the eastern Mediterranean. In the past, the fact that both countries are NATO member states has repeatedly helped to deescalate the situation. Now, with Turkey becoming increasingly isolated within NATO (and vis-à-vis the EU), it remains to be seen whether the military alliance is still able to mediate and prevent a further escalation, especially with France actively taking sides against Turkey.

2. The pipeline project is likely to reheat the unresolved conflict over Cyprus. Turkey considers the TRNC and its territories as an important pillar of its political and military strategic interests. EastMed would exclusively benefit the Republic of Cyprus and cement its maritime claims. This threatens to weaken the position of the TRNC, effectively limiting its access and precluding any revenues from underwater resource exploitation. Any destabilisation of the TRNC and threat to reunify the island under terms specified by the RoC increases the danger of Turkey supporting the TRNC authorities with military means, due to a lack of alternative instruments.

3. The physical infrastructure of the EastMed pipeline threatens to become a direct military target in other regional and global conflict settings. In a regional context, non-state armed groups, such as Hamas and Hezbollah, could see attacks on the pipeline infrastructure as a feasible option to reaffirm their ability and intent to act militarily against the enemy. On a global scale, considering the escalating confrontation between Russia and the USA and NATO, there is a growing danger that the EastMed infrastructure could become a potential target and collateral damage in this geopolitical power struggle.

4. The prospect of the EastMed gas pipeline being able to transport fossil gas resources from the Eastern Mediterranean region to the European gas market contributes to the overall insecurity in the region by fuelling the arms race and thereby increasing the risk of armed confrontations. The pipeline project serves as a further justification for the respective governments to redirect funds urgently needed for social welfare and overall economic stability to the modernisation of their armed forces and, in particular, the purchase of new naval weapon systems. In such a volatile environment as the eastern Mediterranean, with frequently shifting alliances and many layers of conflict and rivalries, the availability of these new arms may increase the temptation for riparian states to pursue their goals by a show of force, setting off a spiral of escalation that leads to an outright armed conflict.

2. The impact of the EastMed pipeline – A climate bomb supported by the European Union

2.1. A project that will lock the European Union into a fossil future

Russia's invasion of Ukraine has caused global disruption in energy markets. Europe has been hit by a sharp rise in energy prices since the second half of 2021, and by deliberate decisions by Russia in 2022 to cut energy supplies in response to sanctions decided by the European Union. Several countries have been cut off altogether in recent months[112], jeopardising the security of supply for households and industry and putting Europe at risk of plunging into its worst recession in decades. In some countries (e.g. Germany, Italy), gas shortages have been used as a justification for reviving coal-based power generation, thus leading to significantly higher emissions.

The EU has long been heavily dependent on Russia for its energy imports: the share of Russian energy imports to the EU was quite stable until the first quarter of 2022 (between 26% and 27.6%). However, this share declined sharply between the first and second quarters of 2022 and the downward trend continued between the second and third quarters[113] (and even more markedly between the third and fourth quarters, although official data are not yet available[114]). Overall, Russia's share of EU energy imports fell by more than 10 percentage points between the first and third quarters of 2022, from 25.5% to 15.1%. The REPowerEU package stresses the EU's need to become independent from Russian fossil fuel imports "well before 2030". The package emphasises energy savings through improved efficiency and an accelerated roll-out of renewable energy to reduce and replace the consumption of fossil gas in power generation, industry, and heating (EC, 2022a). However, these short-term EU targets to reduce gas and electricity demand are not binding, but rather depend on the revision of other relevant pieces of legislation (such the Energy Efficiency Directive and the guidance to Member States for preparing their National Energy and Climate Plans). Furthermore, as we will show later in this report, these targets do not ensure that the EU will be in a position to meet its emissions reduction objectives for 2030 (min. 55% reduction in overall greenhouse gas emissions compared to 1990 levels), let alone the more stringent targets that are needed to limit global warming to no more than 1.5°C, as set out in the Paris Agreement.

The third pillar in the REpowerEU package is the diversification of supplies to substitute Russian gas imports. In particular, many countries are considering LNG (liquefied natural gas) as a viable alternative to importing fossil gas from Russia. For instance, the US and the EU have announced an agreement, which will increase LNG export volumes to the EU (+15 bcm in 2022, +50 bcm/year until 2030), and the EU will work on accelerating regulatory procedures for approval of LNG import infrastructure, such as land-based LNG terminals and Floating Storage and Regasification Units (FSRU) (Artelys, 2022).

On top of the gas infrastructure projects already included in the EU's 5th Projects of Common Interest (PCI) list, such as the EastMed project, several Member States have announced their ambition to invest in new LNG terminals and pipelines as a way to guarantee their security of gas supply in case of the complete phase-out of Russian gas. Most notably, countries such as Germany, France, Italy, Greece,

[112] Russian gas producer Gazprom has said it has stopped sending gas to Latvia after accusing it of violating supply conditions, a move the Baltic country said would have little impact on its gas supplies; Russia has already cut off gas supplies to Poland, Bulgaria, Finland, Netherlands and Denmark, which refused to pay for gas in line with an order by President Vladimir Putin requiring ruble accounts to be set up in a Russian bank (Al-Jazeera, 2022).

[113] Eurostat (2022c) Russian energy imports fell by €6.1 billion.

[114] The Guardian (2023) How Putin's plans to blackmail Europe over gas supply failed.

Poland, Estonia and the Netherlands have set out plans to invest in floating and stationary LNG import capacities. However, the IEA has noted that the EU might face a serious supply-demand gap in the short term (especially in 2023) if Chinese LNG demand rebounds to 2021 levels (IEA, 2022).

Any increase in the supply of fossil gas through dedicated infrastructure is destined to prove useless, if the EU implements the full range of actions on energy efficiency and renewable sources considered in the "Fit-for-55" and Repower EU packages. Furthermore, it would lead the EU away from its emission reduction target.

In general, all new fossil fuel projects must be avoided because they are not in line with 1.5 °C[115]. In fact, the IPCC Working Group 3 to the Sixth Assessment Report concluded that "greatly reduced" fossil fuel use would be "fundamental" to limiting warming and warned that existing fossil fuel infrastructure puts us on course to breach the 1.5°C global heating limit (IPCC, 2022).

In addition to that, an expansion of fossil gas infrastructure capacities exceeding demand would risk (Euractiv, 2022):

- wasting money on "stranded assets" that would be better spent elsewhere;
- creating an oversupply of fossil gas production and transport capacities in a few years, as European demand dwindles, making fossil gas attractive again as a "bridge technology" in Europe and abroad, leading to long-lasting higher global consumption and easing the pressure to decarbonise;
- damaging Europe's international credibility on climate protection;
- and in many cases, it would come too late to address the current supply shortage.

2.2. Fugitive Emission and Combustion Analysis

The supply of fossil gas is expected to contribute to the increase in GHG emissions globally, through fugitive emissions related to the production, transportation and distribution of fossil gas and emissions related to the use of fossil gas, both for energy and non-energy uses. Please note that, unless otherwise specified, emission estimates reference a one-year period and a gas pipeline capacity of 10 bcm. According to the promoters, the capacity of the pipeline may reach 20 bcm in a later construction stage.

Estimate of fugitive emissions from the EastMed fossil gas pipeline

The IPCC defines fugitive emissions as "intentional or unintentional release of greenhouse gases [that] may occur during the extraction, processing, transformation and delivery of fossil fuels to the point of final use" (IPCC, 2019). For fossil gas systems, the term is broadly applied to mean all greenhouse gas emissions from oil and gas systems except contributions from fuel combustion. This is the reason why GHG emissions from fossil gas systems may include other gases such as CO_2 and N_2O, in addition to methane (CH_4) and non-methane volatile organic compounds (NMVOCs) which are the main components of fossil gas.

The 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (IPCC, 2019) provides different methodologies (tiers) to estimate fugitive emissions from gas infrastructures. In the absence of detailed production statistics and infrastructure data (e.g. information regarding the numbers and types of facilities and the amount and type of equipment used at each site), a Tier 1

[115] The Guardian, 2021, No new oil, gas or coal development if world is to reach net zero by 2050, says world energy body.

approach can be used as a last resort option, although it is susceptible to substantial uncertainties and may easily be in error by an order-of-magnitude or more.

Tier 1 estimates fugitive emissions from fossil gas infrastructures by applying appropriate default emission factors to a representative activity parameter (usually throughput) for each applicable section of fossil gas systems. The default emission factors used for the estimation are those presented in Table 4.2.4 of the energy volume of the 2019 IPCC Guidelines.

Table 1 shows the details of the calculation of annual fugitive emissions from the EastMed gas pipeline and the relevant results: CH_4 emissions amount to 0.228 Mt, CO_2 emissions to 0.229 Mt, NMVOC emissions to 0.039 Mt and N_2O emissions to 3.86E-06 Mt.

Estimate of GHG emissions from the use of transported fossil gas

After reaching the European Union distribution network, the fossil gas transported by the EastMed pipeline will be used as a fossil fuel in different economic sectors (energy production, industry, residential and services, agriculture) or as a raw material in industrial processes (production of fertilisers, methanol and other chemicals).

To calculate the greenhouse gas emissions associated with these uses of fossil gas, we have used the GHG emission factors for fossil gas in the energy sector, as stated in the EU inventory submission to the UNFCCC for the year 2022 (EU CRF, 2022).

Table 1: Estimation of fugitive emissions from the EastMed gas pipeline

Segment	Sub-segment	Emission source	CH_4 emission factor	CO_2 emission factor	NMVOC emission factor	N_{20} emission factor	Units of measure	CH_4 emission estimate (Mt)	CO_2 emission estimate (Mt)	NMVOC emission estimate (Mt)	N_2O emission estimate (Mt)
			Value	Value	Value	Value					
Gas production	Offshore	All	2.94	4.8	0.7	8.2E-05	Tonnes/million m^3 offshore gas produced	0.136416	0.222720	0.032480	3.8048E-06
Processing	Without LDAR, or with limited LDAR, or less than 50% of centrifugal compressors have dry seals	All	1.65	0.11	0.13	1.2E-06	Tonnes/million m^3 gas produced	0.076560	0.005104	0.006032	5.568E-08
Gas transmission and storage	Transmission: Limited LDAR or less than 50% of centrifugal compressors have dry seals	All	4.1	0.28	0.06	NA	Tonnes/km pipeline	0.008676	0.000592	0.000127	NA
	Storage: Limited LDAR or most activities occurring with higher-emitting technologies and practices	All	0.67	0.06	0.0094	NA	Tonnes/million m^3 gas consumption	0.006700	0.000600	0.000094	ND
Gas distribution	Less than 50% plastic pipelines, or limited or no leak detection and repair programmes	All	1.1E-03	1.1E-03	1.6E-05	ND	Tonnes/million m^3 gas consumption	0.000008	0.000008	0.000000	ND
Total								**0.228359**	**0.229024**	**0.038733**	**3.8605E-06**

Table 2: GHG emissions from the use of fossil gas supplied through the EastMed pipeline

	CO_2	CH_4	N_2O
GHG emission factors, kg/TJ	56,366.5	11.8	0.5
GHG emissions, Mt	19.824	0.0041	1.811 E-04

Annual GHG emissions from the use of transported fossil gas amount therefore to 19.824 Mt CO_2, 0.0041 Mt CH_4 and 1.811 E-04 Mt N_2O.

Estimate of total emissions from fossil gas supplied by the EastMed gas pipeline

Total GHG emissions related to the gas transported by the EastMed gas pipeline, for a period of one year, are therefore represented by the sum of fugitive emissions and emissions deriving from the use of fossil gas in combustion processes and chemical processes, as shown in Table 3.

Table 3: Total GHG emissions from fossil gas supplied through the EastMed pipeline (Mt)

	CO_2	CH_4	N_2O	NMVOC
Fugitive emissions	0.229	0.228	3.86 E-06	0.039
Emission from combustion and chemical processes	19.824	0.004	1.811 E-04	-
Total emissions	**20.053**	**0.232**	**1.85 E-04**	**0.039**

Total annual emissions from fossil gas supplied through the EastMed pipeline amount to 20.053 Mt CO_2, 0.232 Mt CH_4, 1.85 E-04 Mt N_2O and 0.039 Mt NMVOCs.

Total GHG emissions from fossil gas supplied through the EastMed pipeline (expressed as CO_2 equivalent)

The evaluation of the climate impact of these emissions requires the consideration of the Global Warming Potential (GWP) of each gas, which is based on the findings of the IPCC's Sixth Assessment Report.

GWPs are multipliers applied to greenhouse gases such as methane (CH_4) and nitrous oxide (N_2O) to equate the impact they have on the Earth's temperature with that of carbon dioxide (CO_2). In the IPCC's Sixth Assessment Report (AR6), GWP values have been refined since the Fifth Assessment Report (AR5) to account for changes in radiative properties, atmospheric lifetimes, and indirect contributions of the different gases (IPCC, 2021a).

Table 4 contains the updated AR6 values for the three main greenhouse gases alongside the values reported in the AR4 and AR5 reports for comparison. In the AR6 report, an additional GWP for methane has been

Table 4: IPCC Sixth Assessment Report Global Warming Potentials

Greenhouse Gas	100 Year Time Period				20 Year Time Period				
	AR4 2007	AR5 2014		AR6 2021	AR4 2007		AR5 2014		AR6 2021
	Feedback Not Included		Feedback Included		Feedback Not Included			Feedback Included	
CO_2	1	1	1	1	1	1		1	1
CH_4 fossil origin	25	28	34	29.8	72	84		86	82.5
CH_4 non fossil origin				27.2					80.8
N_2O	298	265	298	273	289	264		268	273

Source: ERCE Evolution, 2021; IPCC, 2021 included to differentiate between methane which originates from fossil fuel sources, and methane from non-fossil fuel sources, such as agriculture.

For non-methane volatile organic compounds (NMVOCs), which have negligible radiative properties, we have assumed that, at the end of their lifetime, they are totally transformed into CO_2. In line with the approach suggested by the 2006 IPCC Guidelines, taking into account that the main component of NMVOCs is ethane (MW=30), we have multiplied NMVOC emissions by 12/30 (ratio of the molecular weights of carbon and ethane) and then by 44 (molecular weight of CO_2), in order to obtain the corresponding CO_2 emissions (IPCC, 2006).

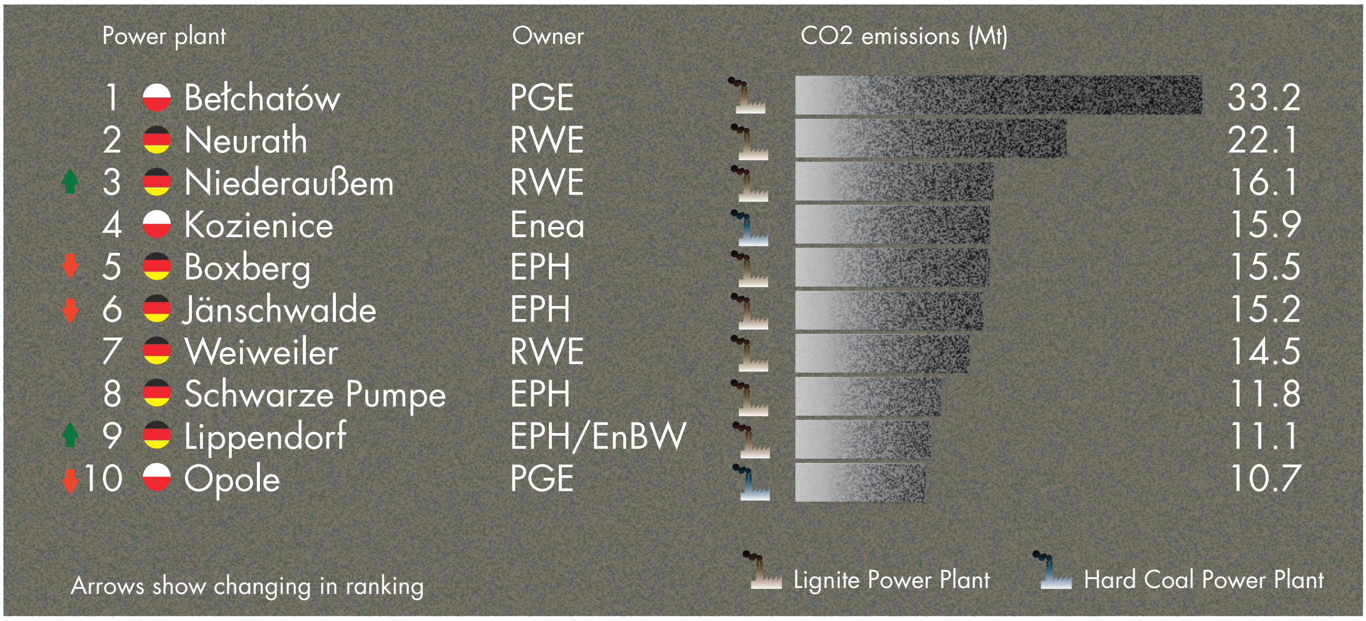
Table 5: Total GHG emissions from fossil gas supplied through the EastMed pipeline, expressed as Mt CO_2 equivalent (for 1 year and for 21 years period)

	GWP 100	GWP 20
1 year period, all GHGs	27.703	39.930
21 years period (2029-2050), all GHGs	581.774	838.528

Total annual GHG emissions from fossil gas supplied through the EastMed pipeline, expressed in terms of CO_2 equivalent, amount therefore to 27.7 Mt CO_2eq. using 100-year GWP and 39.9 Mt CO_2eq. using 20-year GWPs. For a period of 21 years between the planned completion of the pipeline and the year 2050, by which the EU has committed to achieve carbon neutrality, these two quantities amount to 581.774 Mt CO_2 equivalent using 100-year GWP and to 838.528 Mt CO_2 equivalent using 20-year GWPs.

Considering annual GHG emissions resulting from transport leakage and consumption of fossil gas delivered by the EastMed pipeline, the pipeline would emit only slightly less than the largest single European emitter, the Belchatów coal power plant in Poland (see Fig. 1).

Fig. 1 Largest CO_2 polluters in the European Union in 2021 (in Mt of CO_2)



Source: EMBER, 2023

2.3. A pipeline that would represent 11.5% of the entire remaining European Union carbon budget

Under the Paris Agreement, countries have agreed to a goal of limiting global warming to well below 2 C, and preferably to 1.5 °C, compared to pre-industrial levels.

Since the IPCC's first publication of global carbon budget estimates, huge scientific progress has been made in tackling the uncertainties associated with the use of this concept. The latest numbers contained in the WG I contribution to the IPCC's Sixth Assessment Report are now much more robust. This report calculates the EU's carbon budget under currently agreed targets and compares this to the remaining global carbon budget. The conclusion is that the EU aims to emit at least double the amount of its per capita share of the remaining global 1.5°C compatible carbon budget. It is thus fair to say that the EU's targets are not consistent with a 1.5°C pathway. EU decision-makers must acknowledge that current policies are not in line with the 1.5°C target of the Paris Agreement.

According to the IPCC's most recent assessment reports, there is a robust scientific understanding that the rise in global temperatures is near-linearly proportional to the total amount of CO_2 that the world emits. This knowledge has led to the development of the global carbon budget concept, which identifies the cumulative amount of total CO_2 that can be emitted while remaining within a certain temperature limit.

The WG I of the IPCC's Sixth Assessment Report from August 2021 considers that to have a higher than 50% likelihood of limiting temperature rise to 1.5°C, global CO_2 emissions between 2020 and the moment global emissions reach net zero should be limited to 300 to 400 $GtCO_2$ (IPCC, 2021, Table SPM.2).

Based on the effects of current policies, the cumulative emissions from the EU-27 for the period from 2020 until the moment it reaches net zero emissions have been estimated at approximately 40 $GtCO_2$ (AirClim, 2022). This is (more than) double the per capita share of the global remaining budget for staying within the 1.5°C limit. It represents 10% of the remaining global budget for a 67% likelihood of staying within the 1.5°C limit and 13% of the remaining budget for an 83% likelihood. However, the EU accounted for only 5.78% of the global population in 2020, with this share predicted to fall to 4.36% in 2050 (Airclim, 2022). Thus, it can be safely concluded that the EU's currently proposed and/or agreed targets and policies are not in line with a 1.5°C pathway.

In fact, if the global carbon budget was divided across countries on an equal per capita basis, the EU's currently proposed and/or agreed targets and policies would need a global carbon budget of approx. 800 $GtCO_2$, which would correspond to a global temperature rise of 1.8°C (with a 67% likelihood) or 1.9°C (with an 83% likelihood) according to the IPCC's AR6.

Following this approach, in line with the main goal of the Paris Agreement, the Climate Action Network (CAN) Europe, the European federation of climate NGOs, believes the EU needs to do more than currently planned if it is to make a fair contribution to efforts to limit temperature rise to 1.5°C. It therefore calls for:

- greenhouse gas emissions to be reduced by at least 65% by 2030;
- carbon removals through LULUCF to be increased to at least 600 Mt CO_2 by 2030;
- climate neutrality to be achieved by 2040;
- total greenhouse gas emissions to be reduced by at least 90% by mid-century.

An equitable carbon budget estimate for the EU-27 based on the above data for the period 2020 to 2050, when fully implementing CAN Europe's proposals, would be 19 $GtCO_2$ (AirClim, 2022).

The carbon budget concept can be useful for assessing the extent to which emissions from the EastMed pipeline run counter to the EU's emissions reduction target. If we limit our assessment to the 2029-2050 period, the total amount of GHG/CO_2 emissions and removals for this period is presented in Table 6.

Table 6: EU total amounts of greenhouse gas/CO2 emissions and removals under a 1.5°C warming aligned scenario for the period 2029 to 2050, in Mt CO_2e

	Greenhouse gas emissions	CO_2 emissions (4)	CO_2 removals (5)	Total carbon budget
2029-2030 (1)	4,521.4	3,684.6	-1,163.3	2,521.3
2031-2040 (2)	11,058	9,011	-6,000	3,011
2041-2050 (3)	5,065	4,127	-6,000	-1,873
Total	**20,644.4**	**16,822.6**	**-13,163.3**	**3,659.3**

(1) calculation made on the basis of a linear reduction from the EU's 2020 emissions of 3,377 Mt CO_2e to a 65% reduction by 2030;

(2) calculation made on the basis of a linear 65% reduction by 2030 to a total maximum amount of emissions of 600 Mt CO_2e (equal to the foreseen total removals through LULUCF in 2040);

(3) calculation made on the basis of a linear reduction from a total amount of 600 Mt CO_2e in 2040 to a 90% reduction by 2050;

(4) calculated on the basis of a stable share of CO_2 in total greenhouse gas emissions of 81.49%;

(5) calculated assuming that from 2030 onwards total removals from LULUCF would remain stable at 600 Mt CO_2 /year

Given that the total CO_2 burden of the EastMed pipeline for the 2029-2050 period amounts to 421.1 Mt (see Table 3 above for annual emission calculation), one can conclude that the pipeline alone represents 11.5% of the carbon budget available to the entire EU-27 under a scenario compatible with 1.5°C warming.

2.4. THE POTENTIAL CONTRIBUTION OF HYDROGEN TO CLIMATE CHANGE

The role of hydrogen and other renewable gases in the energy transition

The European Commission expects hydrogen to play an important role in achieving the EU objectives of reducing greenhouse gas emissions by a minimum of 55% by 2030 and reaching net zero emissions by 2050. As an energy carrier, feedstock and fuel, hydrogen can facilitate the large-scale integration of renewables, enabling grid balancing and seasonal storage.

Hydrogen may be produced through a variety of processes. These production pathways are associated with a wide range of emissions, depending on the technology and energy source used and have different costs, implications and material requirements. In its "Hydrogen strategy for a climate neutral Europe", published in July 2020, the European Commission states that only renewable hydrogen, produced using mainly wind and solar energy, is compatible with climate neutrality and zero pollution goals in the long term. However, it also gives a role to "low-carbon hydrogen" in the short term, a piece of terminology that is still under discussion at the time of writing and that could also include fossil based hydrogen (EC, 2020a).

In the Staff Working Document that accompanies the REPowerEU plan, the European Commission outlines a 'hydrogen accelerator' concept to scale up the deployment of renewable hydrogen. This will contribute to accelerating the EU's energy transition and decarbonising the EU's energy system (EC, 2022b). The REPowerEU plan's ambition is to produce 10 Mt and import 10 Mt of renewable hydrogen into the EU by 2030 – a substantial increase from the 5.6 Mt foreseen within the revised Renewable Energy Directive, published in July 2021.

According to the European Hydrogen Strategy, published in July 2020, the growth of a low-emission hydrogen market is associated with major technological, economic and social challenges. This prospect of profound change in the continental energy horizon has raised numerous questions both in terms of the evolution of technologies for the production, transport and consumption of this commodity. It also has implications for infrastructure financing and the regulation of this new area, market opportunities and consequences for related sectors, in particular that of fossil gas.

Relevant issues include the provision of transport and dedicated infrastructures that can connect production points with consumers. The choice of the type of infrastructure will naturally depend on the location of the production and consumption centres and the most convenient technologies available for transporting the hydrogen. These may vary according to the end user for which the hydrogen is destined. Initially, the market will probably have a local or even internal dimension based on individual industrial clusters. However, it is expected that, in the medium- and long-term, the hydrogen market will take on a national and then EU-wide dimension, and be open to exchanges with some non-European countries.

Hydrogen transport and distribution through fossil gas pipelines

Hydrogen can be transported in various ways. Typically, it is either compressed or liquefied. Less common options include conversion of hydrogen to a more complex chemical that allows for easier transport (e.g., NH_3, CH_4, CH_3OH) or the utilisation of hydrogen carriers (e.g. metal hydrides or liquid hydrogen organic carriers). The compression of hydrogen entails additional equipment costs as well as energy and hydrogen losses. Hydrogen transport through pipelines is presented by the Oil & Gas sector as the most cost-effective option for large gas volumes, as it avoids the need for high-pressure compression or liquefaction to allow transport by truck, rail, or ship (Navigant, 2021). Modifying existing (fossil) gas pipelines is expected to be cheaper due to the higher land opportunity costs, permitting and regulation, and pipeline construction costs for new pipelines. It also provides a second life to existing assets, which prevents possible decommissioning costs. Others (Cesi, 2021) argue that transporting the electricity over long distances and then producing hydrogen locally is the best option. It is worth noting that 1 m^3 of hydrogen contains about ⅓ of the energy of methane, therefore it has higher transportation costs per unit of energy in gaseous form.

Regarding the initial development of the market, much discussion has focused on the possibility of reusing existing fossil gas pipelines for the transport of hydrogen in mixed or pure form. Several gas network operators have already joined forces to propose their vision for a possible European hydrogen network, largely based on commitments to the repurposing of the existing gas networks and with the introduction of some new dedicated transport lines.

Recent research shows that, at the global level, the current gas infrastructure is fit for the introduction of hydrogen blended with fossil gas (Quintino et al., 2021). A hydrogen content of between 20 and 30% should not require dramatic modification of the current gas infrastructure. End-use applications, however, will likely limit hydrogen blending to around 20% by volume.

Potential climate impact of hydrogen emissions

Most analyses of climate risks related to hydrogen are limited to GHG emissions from various hydrogen production processes and energy sources — a point highlighted by the attempt to colour-code these processes according to their footprint range (Fan et al., 2022).

Current efforts to promote the production and use of hydrogen do not consider that hydrogen could itself be a significant "indirect" contributor to the greenhouse effect when it leaks through infrastructure and interacts with methane in the atmosphere.

Scientists have long known and cautioned that hydrogen has indirect warming impacts (Field and Derwent, 2021): when it escapes into the atmosphere, it warms the Earth by affecting chemical reactions that increase the amount of greenhouse gases including methane, tropospheric ozone, and stratospheric water vapour.

When it is released, hydrogen extends the lifetime of methane in the atmosphere, causing it to persist for longer; it reacts to form tropospheric ozone; and it breaks down into water vapour in the stratosphere, which also contributes to the greenhouse effect (Euractiv, 2021).

Hydrogen's radiative efficiency – considering both tropospheric and stratospheric effects – has been estimated at more than 200 times that of carbon dioxide per unit mass, although using the traditional GWP formulas, this estimate of hydrogen's radiative efficiency translates to a GWP-100 of around 10 (Derwent et al. , 2020; Ocko & Hamburg, 2022).

Since the role of hydrogen as an indirect greenhouse gas[116] has not yet been recognised by the IPCC in its Assessment Reports (see for instance IPCC, 2021, Chapter 6), its effect on the climate has so far remained largely unexplored.

According to some recent research, even when hydrogen is produced with renewable electricity, "hydrogen leakage may have the potential to considerably undermine any near- and mid-term climate benefits when replacing fossil fuel systems with zero- and low-carbon hydrogen applications; (...) the extent of the near- and mid-term warming effects from hydrogen leakage – and the extent to which they could limit or offset the anticipated slowdown in the rate of warming from replacing fossil fuel systems with hydrogen depends on how much hydrogen is ultimately deployed to replace fossil fuel systems and the magnitude of leak rates" (Ocko & Hamburg, 2022).

Common figures for methane leakage range between 0.5% and 3%[117] (Ueckerdt et al., 2021). Since hydrogen molecules are significantly smaller than methane, one tonne of hydrogen consumption could leak between 5-30kg of the gas. That 5-30kg range would have the same climate impact as 1-6 tonnes of CO_2-equivalent, based on the 200-times larger greenhouse effect potency put forward by Hamburg and Ocko.

Yet, there is reason to believe that hydrogen leakage will be much more limited, in particular due to the fact that safety protocols for hydrogen are higher than for fossil gas, because of the high flammability of hydrogen (Euractiv, 2021).

A quantification of the climate impact of fugitive hydrogen emissions

For a pipeline transporting different CH_4/H_2 mixtures, fugitive emissions have been calculated with reference to the following three configurations: 100% CH_4, 80% CH_4 and 20% H_2, 100% H_2.

It has been assumed that one tonne of hydrogen could leak between 5-30 kg of the gas (Ueckerdt et al., 2021), and that its Global Warming Potential could be 200 times higher than carbon dioxide (Ocko & Hamburg, 2022).

Fugitive emissions from the EastMed gas pipeline

[116] Indirect greenhouse gases do not exert climate effects through their radiative forcing, but rather being precursors of direct climate forcers (IPCC, 2021a, Chapter 6).

[117] For instance, leakages from large pipelines can be as low as 0.5%, in percentage points; the EPA estimates that 1.4% of all fossil gas produced in the U.S. is leaked into the air.

have been estimated for a mixture of 80% CH_4 / 20% H_2 (transport of mixtures with higher hydrogen content would be feasible only with dramatic modification of the infrastructure) and for the theoretical case of a pure H_2 stream.

The results of the calculation, presented in Table 7, show that, if we assume the higher value in the range of hydrogen's GWP, the fugitive emissions from the EastMed gas pipeline expressed as CO_2 equivalent, for an 80% CH_4 / 20% H_2 mixture, would be double those for the transport of fossil gas only since, for hydrogen, both the leakages from the pipeline losses and the Global Warming Potential are much higher than for methane.

2.5. A LATE AND UNNECESSARY INFRASTRUCTURE PROJECT

Between 2020 and 2021, gross domestic consumption of fossil gas in the EU-27 rose by 4.3%, increasing from 362.6 to 378.2 Mt (or from 379.7 to 396.0 bcm). Imports of fossil gas from countries outside the EU rose from 276.0 to 294.7 Mt (or from 289.0 to 308.6 bcm) (Eurostat, 2022a). Russia was the largest supplier of fossil gas to the EU with a share of 44.5 % in 2021, followed by Norway (18.7 %) and Algeria (12.6 %). After Russia's invasion of Ukraine, and in the light of various sanctions imposed by the European Union, the supply of fossil gas from Russia steadily decreased during 2022. Compared with 2021, the import of fossil gas in net mass from Russia dropped by 66 percentage points (pp) in the third quarter of 2022, while the share of other partners increased by 53% (Eurostat, 2022b).

As already mentioned, in addition to the gas infrastructure projects already included in the EU's 5th Projects of Common Interest (PCI) list, such as the EastMed project, a number of Member States (such as Germany, France, Italy, Greece, Poland, Estonia and the Netherlands) are investing in floating and stationary LNG import capacities, regardless of the threats that these projects represent for the global climate.

The number of newly proposed or revived projects for gas infrastructure across Europe since February 2022 has already exceeded 20, with a planned capacity of more than 150 bcm/year, not counting planned upstream and transportation investment in the MENA region and elsewhere. In comparison, the total annual EU demand is approximately 400 bcm, 150 bcm of which were supplied by Russia in 2020 and 2021 (Euractiv, 2022).

Yet, by the time all of the new and revived projects come into operation, total EU gas demand will be considerably lower than it is now: the European Commission projects that the proposals of the "Fit-for-55" package, such as renewable energy and increased efficiency, will lead to fossil gas consumption in Europe decreasing sharply by 30%, equivalent to 116 bcm, by 2030. More than a third

Table 7: Fugitive emissions for CH_4/H_2 mixtures

	1 year	21 years (2029-2050)	1 year	21 years (2029-2050)	1 year	21 years (2029-2050)
	Mt	Mt	Mt CO_2eq. GWP 100	Mt CO_2eq. GWP 100	Mt CO_2eq. GWP 20	Mt CO_2eq. GWP 20
100% CH_4	0.228	4.796	6.805	142.907	18.840	395.632
80% CH_4, 20% H_2 (lowest value)	0.183	3,841	6,805	142.907	18.840	395.632
80% CH_4, 20% H_2 (highest value)	0.184	3,865	13,610	285.814	37.679	791.264
100% H_2 (lowest value)	0.001	0.024	6.805	142.907	18.840	395.632
100% H_2 (Highest value)	0.007	0.144	40.831	857.443	113.038	2373.793

of these savings will come from meeting the EU energy efficiency target. The REPowerEU package, as well as national measures, will reduce demand further. Specifically, energy saving measures could allow fossil gas savings of 59 bcm, while promoting electricity generation from renewable sources (solar & wind) could contribute 21 bcm. (EC, 2022). High gas prices will constitute an additional "push" effect towards using alternative energy sources/carriers.

By as early as 2025, the combined effect of the measures envisaged by the "Fit-for-55" package and the energy saving and renewables measures of the REPowerEU package will therefore make it possible to reduce the consumption of fossil gas in the EU by an amount well in excess of the quantity that used to be imported from Russia. This can be achieved without the need to resort to new infrastructure, as further independent studies (Artelys, 2022; Ember et al., 2022) have also shown.

The EU is thus in a position to reduce its fossil gas consumption in 2025 by well over 150 bcm – the amount supplied by Russia in 2021 – and thus become independent of Russian imports.

The promoters of the EastMed project were supposed to make a final investment decision by 2022 and, as of May 2021, complete the project by 2025 (GEM, 2023). According to other sources, the construction of the EastMed gas pipeline will take at least 4 years; if work starts in 2023, the pipeline will only be fully operational in 2027-2028 (ECCO, 2022). Consequently, this infrastructure will not help the EU to reduce its dependence on Moscow in the short term, in particular if we consider that the most critical period for EU gas supplies will be around 2023 (IEA, 2022).

2.6. A PROJECT INCONSISTENT WITH THE EU CLIMATE OBJECTIVES

In order to study the policy options required to reach the desired min. 55% reduction target by the year 2030 compared to 1990, the European Commission has defined a set of scenarios (EC, 2020; EC, 2021) comprising:

- a baseline scenario (BSL) which consists of the agreed climate and energy targets as well as the main policy tools for implementing these, including the climate legislation that implements the "min. 40% GHG targets": this scenario does not allow the EU to reach its target;
- a number of variants of the baseline scenario, built around specific policy options, aiming at exploring the impact of specific policy tools and the interactions of combinations of them.

Table 8 shows the GHG emission reductions that can be achieved under each scenario, together with the interaction with renewable energy share and energy savings.

Each of the scenarios mentioned above is characterised by a specific mix of primary energy sources, which is

Table 8: Key indicators for 2030 EU GHG scenarios

Scenarios	Total GHG vs 1990		Renewable share – Overall	Energy savings	
	Including LULUCF	Excluding LULUCF		Primary energy consumption	Final energy consumption
BSL	-46.9%	-45.1%	32.0%	-34.2%	-32.4%
MIX-50	-51.0%	-49.0%	35.1%	-36.8%	-34.4%
REG	-55.0%	-52.8%	38.7%	-40.1%	-36.6%
MIX	-55.0%	-52.8%	38.4%	-39.7%	-35.9%
Variant MIX-non-CO_2	-55.1%	-52.8%	37.5%	-39.3%	-35.9%
CPRICE	-55.0%	-52.8%	37.9%	-39.2%	-35.5%
ALLBNK	-57.9%	-55.5%	40.4%	-40.6%	-36.7%

Table 9: Energy system impacts for the EU GHG scenarios (Mtoe)

	BSL	MIX-50	REG	MIX	MIX nonCO_2 variant	CPRICE	ALLBNK
GIC	1201	1158	1103	1109	1116	1117	1094
- Solid fossil fuels	96.1	81,1	66.2	55.5	67.0	55.9	43.8
- Oil	396.3	382.1	364.0	377.1	379.4	379.8	372.0
- Fossil gas	264.2	231.6	220.6	221.8	223.2	223.4	218.8
- Nuclear	156.1	150.6	121.3	122.0	133.9	122.9	120.3
- Renewables	288.2	301.1	330.9	332.7	323.6	323.9	339.1
Final energy demand	795.5	771.0	743.4	753.0	752.9	757.8	743.7

the element of greatest interest in the context of this study. Table 9 presents the mix of energy sources underlying each scenario.

Table 9 shows that, according to the scenarios which are currently being considered by the EU in defining its policy choices for achieving its 2030 greenhouse gas emission reduction objectives, fossil gas consumption must be reduced from 378.2 Mtoe in 2021 to a value in the range between 218.8 and 223.4 Mt in 2030. This corresponds to a reduction of between 154.8 and 159.4 Mt, or equivalently between 162.1 and 166.9 bcm (corresponding to a reduction of between 40.9% and 42.1% compared to current consumption levels).

This reduction in fossil gas consumption can be reached by fully implementing the measures envisaged by the “Fit-for-55” and energy savings and renewable sources measures of the REPowerEU package, which will result respectively in 116 bcm and 124 bcm fossil gas savings, as shown under point 6.

Any increase in the supply of fossil gas through dedicated infrastructure (either gas pipelines or LNG terminals), in addition to being unnecessary, would lead the EU away from its emission reduction target. This would be even more problematic if the EU were to set its reduction targets based on the global target of limiting global warming to no more than 1.5°C, as pursued by the Paris Climate Agreement.

2.7. Main findings on climate impacts

Total annual GHG emissions from fossil gas supplied through the EastMed pipeline would amount to 27.7 Mt CO_2 equivalent using 100-year GWP. Considering annual GHG emissions resulting from transport leakage and consumption of fossil gas delivered by the EastMed pipeline, the pipeline would emit only slightly less than the largest single European emitter, the Belchatów coal power plant in Poland.

For a period of 21 years between the likely completion of the EastMed pipeline and the year 2050, by which the EU plans to achieve carbon neutrality, GHG emissions would be equal to 581.8 Mt CO_2 equivalent, using 100-year GWP. This means that the pipeline alone would represent 11.5% of the carbon budget available to the entire EU to stay within the 1.5°C target.

If the pipeline were to be used to carry a mix of 80% fossil gas and 20% hydrogen, which is the maximum hydrogen content compatible with current gas infrastructure (Quintino et al., 2021), fugitive emissions would be double those for the transport of fossil gas only.

The implementation of the measures proposed in the Fit-for-55 package and in the REPower EU Plan would enable the EU to largely exit Russian gas, even by 2025, through the foreseen large-scale deployment of renewables, heat pumps and energy efficiency measures bringing down Europe’s gas demand.

However, even if Europe were already well placed to cope with a complete phase-out of fossil gas imports from Russia and if all the planned gas infrastructure projects under consideration were to be built, the following circumstances would occur:

- Europe would continue to rely on a large amount of potentially expensive LNG imports, up to approx 100 bcm and would experience increased vulnerability to LNG market price volatility and competition with Asian economies due to a lack of global export capacity (Artelys, 2022);
- Overall fossil gas demand (including LNG) would exceed the maximum levels foreseen under the GHG scenarios currently studied by the EU in order to meet the desired min. 55% GHG emission reduction target;
- The GHG emission trend would be even more problematic if the European Union were to set its reduction targets based on the target of limiting global warming to no more than 1.5°C, in line with the Paris Agreement.

For these reasons, in order to ensure full security of supply for a Russian gas phase-out while at the same time reducing its economic vulnerability and meeting its climate objectives, the EU needs to consider additional clean energy investments and to reduce its energy consumption further rather than building expensive gas infrastructures.

References

AirClim (2022): Counting the numbers: EU carbon budget not compatible with 1,5°C target, Briefing No.21, May 2022, https://www.airclim.org/publications/counting-numbers-eu-carbon-budget-not-compatible-15°c-target

Al-Jazeera (2022): Russia's Gazprom cuts off gas supplies to Latvia, 30 July 2022, https://www.aljazeera.com/news/2022/7/30/russias-gazprom-cuts-off-gas-supplies-to-latvia

Alaranta, Toni (2022): France in the Eastern Mediterranean and the MENA region's geopolitical competition. FIIA Briefing Paper No.337/2022.

Al-Monitor online (2021): Egypt, Greece, Cyprus edge closer militarily, but may be risking face-off with Turkey. 12.04.2021.

Altman, Jonathan (2016): Russian A2/AD in the Eastern Mediterranean – A Growing Risk. Naval War College Review, Vol. 60, No.1/2016.

Amnesty International (2017): Nigeria - Shell complicit in the arbitrary executions of Ogoni Nine as writ served in Dutch court. https://www.amnesty.org/en/latest/press-release/2017/06/shell-complicit-arbitrary-executions-ogoni-nine-writ-dutch-court/

Arab News online (2016): Eni sells 30% stake in Egypt's Zohr gas field to Rosneft, 13.12.2016,

Artelys (2022): Does phasing-out Russian gas require new gas infrastructure? – Briefing note, prepared by Artelys with funding from the European Climate Foundation, 2022, https://www.artelys.com/wp-content/uploads/2022/05/Artelys-Russian-gas-phase-out-Briefing-note.pdf

Associated Press (AP) (2022): Israel inks multi-billion-dollar submarine deal with Germany, 20.1.2022.

BBC (2004): Russia's rusting navy, 23.3.2004.

BBC (2015): Cyprus signs deal to allow Russian navy to use ports, 26.2.2015.

Beccaro, Andrea (2021): Russia, Syria and hybrid warfare. Comparative Strategy, Vol. 40, No.5/2021.

Binnie, Jeremy (2020): France says Turkish Navy is blocking enforcement of Libyan arms embargo, 18.6.2020.

Blank, Stephen / Kim, Younkyoo (2021): The Mediterranean Eskadra and Russia's military political strategy in the Mediterranean Basin. Defense & Security Analysis, Vol. 37, No. 4/2021.

Business and Human Rights Resource Centre (2022): Trial in US lawsuit against ExxonMobil over alleged complicity in torture & beatings. https://www.business-humanrights.org/en/latest-news/trial-in-us-lawsuit-against-exxonmobil-over-alleged-complicity-in-torture-beatings-by-military-in-indonesia-could-start-after-20-years/#timeline.

Business Standard (2017): Russia signs deal to use Syria air base for 49 years 27. July 2017

https://www.business-standard.com/article/international/russia-signs-deal-to-use-syria-air-base-for-49-years-117072701238_1.html

CESI Studies (2021): Strategia italiana sull'idrogeno: quale impatto sul sistema elettrico italiano? - 2021. https://www.cesi.it/app/uploads/2021/10/CESI-Studies-Strategia-Italiana-sullIdrogeno.pdf

Choulis, Ioannis/ Mehrl, Marius / Ifantis, Kostas (2021): Arms Racing, Military Build-Ups and Dispute Intensity – Evidence from the Greek-Turkish Rivalry 1985-2020. Defence and Peace Economics, published online 1.6.2021.

Chuter, Andrew (2022): UK military ups investments in undersea surveillance. Defense News, 16.11.2022.

ClientEarth (2022): Press release 7 June 2022, Environmental groups challenge EU support for 30 fossil gas projects, https://www.clientearth.org/latest/press-office/press/environmental-groups-challenge-eu-support-for-30-fossil-gas-projects/

Climate Action network (2021): Press Release, 20 organisations release an EU fossil gas manifesto for a 2035 phase out. https://caneurope.org/20-organisations-release-eu-fossil-gas-manifesto-2035-phase-out/

Congressional Research Service (CRS) (1997): Greece and Turkey – Aegean Issues. CRS Report for Congress, 21.8.1997.

Congressional Research Service (CRS) (2021): Lebanese Hezbollah. Congressional Research Service, In Focus, 1.2.2021.

Congressional Research Service (CRS) (2022): Libya – Transition and U.S. Policy. CRS Report RL 33142, 3.1.2022.

Cyprus News Agency (2020): French aircraft carrier "Charles de Gaulle" sails through EEZ Block 8, 5.2.2020.

Daily News Egypt online (2018): Turkish warships halt Eni's Saipem 12000 from operation in Cyprus' EEZ, 24.2.2018.

Daily Sabbah online (2020): FM Çavuşoğlu slams French President Macron for remarks on Libya, 25.6.2020.

Daily Sabbah online (2021a): Greek F-16 fighter jets harass Turkey's TCG Çesme vessel in the Aegean, 23.2.2021.

Daily Sabbah online (2021b): Turkish navy intercepts Greek vessel violating continental shelf, 4.10.2021.

Dalay, Galip (2021): Turkey, Europe, and the Eastern Mediterranean: Charting a Way out of the Current Deadlock. Brookings Center Policy Brief, January 2021.

Defense Mirror (2022): Greece Naval Group Starts Assembling HDI HN Frigate for Greece, 22.10.2022.

Denizeau, Aurélien (2021): Mavi Vatan "The Blue Homeland". IFRI, April 2021.

Derwent et al. (2020): Derwent, R. G., Stevenson, D. S., Utembe, S. R., Jenkin, M. E., Khan, A. H., and Shallcross, D. E.: Global modelling studies of hydrogen and its isotopomers using STOCHEM-CRI: Likely radiative forcing consequences of a future hydrogen economy, Int. J. Hydrogen Energ., 45, 9211–9221, https://doi.org/10.1016/j.ijhydene.2020.01.125, 2020.

Dimou, Antonia (2021): Trilateral Partnerships drive East Mediterranean security and prosperity. Modern Diplomacy, 18.8.2021.

DW (2022): Deutsche Welle, COP27: Germany's 2030 climate goals in peril, experts warn, 11/04/2022, https://www.dw.com/en/cop27-germanys-2030-climate-goals-in-peril-experts-warn/a-63652965

EC (2020a): European Commission, "Hydrogen Strategy for a climate neutral Europe", Brussels, 8.7.2020, COM (2020) 301 final, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0301&from=EN

EC (2020b): European Commission, Commission Staff Working Document Impact Assessment accompanying the document "Stepping up Europe's 2030 climate ambition - Investing in a climate-neutral future for the benefit of our people", Brussels, 17.9.2020, SWD (2020) 176 final

EC (2020c): European Commission, 2030 Climate Target Plan, COM/2020/562 final, 17.9.2020. https://climate.ec.europa.eu/eu-action/european-green-deal/2030-climate-target-plan_en

EC (2021): European Commission, Directorate-General for Climate Action, Directorate-General for Energy, Directorate-General for Mobility and Transport, De Vita, A., Capros, P., Paroussos, L., et al., EU reference scenario 2020: energy, transport and GHG emissions: trends to 2050, Publications Office, 2021, https://data.europa.eu/doi/10.2833/35750

EC (2022a): European Commission, Communication to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, "REPowerEU Plan", Brussels, 18.5.2022, COM(2022) 230 final, https://eur-lex.europa.eu/resource.html?uri=cellar:fc930f14-d7ae-11ec-a95f-01aa75ed71a1.0001.02/DOC_1&format=PDF

EC (2022b): European Commission, Commission Staff Working Document "Implementing the RepowerEU Action Plan: investment needs, hydrogen accelerator and achieving the bio-methane targets" accompanying the document "RepowerEU Plan", Brussels, 18.5.2022, SWD(2022) 230 final, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52022SC0230&from=EN

EC (2022c): European Commission, Trans-European Networks for Energy, Regulation (EU) 2022/869 of the European Parliament and of the Council of 30 May 2022 on guidelines for trans-European energy infrastructure. https://energy.ec.europa.eu/topics/infrastructure/trans-european-networks-energy_en

ECCO (2022): Do we really need the EastMed pipeline? https://eccoclimate.org/do-we-really-need-the-EastMed-pipeline/, 16 May 2022

Ekathimerini (2022): Cavusoglu issues fresh threat against Greece, 2.11.2022.

Ember et al. (2022): EU can stop Russian gas imports by 2025 – Accelerating clean energy avoid fossil lock-in, prepared by Ember, Bellona-Europa, RAP, E3G, 2022, https://ember-climate.org/app/uploads/2022/03/EU-can-stop-Russian-gas-imports-by-2025.pdf

EMBER (2023): Top 10 EU emitters of all coal power plants in 2021. 8 April 2022, https://ember-climate.org/insights/research/top-10-emitters-in-the-eu-ets-2021/

Energy Intelligence online (2022a): Risk of Conflict Rises in Gas-Rich East Med Region. 10.6.2022.

Energy Intelligence online (2022b): Novatek Exits Offshore Lebanon Blocks, 29.8.2022.

ERC Evolution (2021): IPCC Sixth Assessment Report Global Warming Potentials, Posted by ERCE on 26/08/2021, updated 03/10/2022, https://www.ercevolution.energy/ipcc-sixth-assessment-report/

Ertan, Nazlan (2022): Turkey pledges to boost military presence in Cyprus. al-Monitor.com, 29.9.22.

EU Council (2019): EU Council Decision 13262/19 concerning restrictive measures in view of Turkey's unauthorised drilling activities in the Eastern Mediterranean, 8.11.2019.

EU CRF (2022): 2022 Common Reporting Format (CRF), submitted by the European Union to the UNFCCC Secretariat, Submission date 26 May 2022, https://unfccc.int/documents/461929

Euractiv (2021): "Scientists warn against global warming effect of hydrogen leaks", by Nikolaus J. Kurmayer, 14 October 2021 (updated 19 October 2021), https://www.euractiv.com/section/energy/news/scientists-warn-against-global-warming-effect-of-hydrogen-leaks/

Euractiv (2022): “Europe must coordinate infrastructure plans to secure gas supply, avoid fossil lock-ins”, by Friederike Altgelt and Martin Albicker, 15 July 2022, https://www.euractiv.com/section/energy/opinion/europe-must-coordinate-infrastructure-plans-to-secure-gas-supply-avoid-fossil-lock-ins/

Eurostat (2022a): Natural gas supply statistics – Statistics Explained, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Natural_gas_supply_statistics#Consumption_trends

Eurostat (2022b): EU imports of energy products - recent developments – Statistics Explained, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_imports_of_energy_products_-_recent_developments#Trend_in_extra-EU_imports_of_energy_product

Eurostat (2022c): Russian energy imports fell by € 6.1 billion, https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20221122-3

Fan et al. (2022): Hydrogen Leakage: A Potential Risk for the Hydrogen Economy, by Zhiyuan Fan, Hadia Sheerazi, Amar Bhardwaj, Anne-Sophie Corbeau, Kathryn Longobardi, Dr. Caleb. M. Woodall, Mahak Agrawal, Dr. Julio Friedmann, Adalberto Castaneda, Ann-Kathrin Merz and Sebastian Orozco-Sanchez, Columbia/SIPA – Center on Global Energy Policy, 5 july 2022, https://www.energypolicy.columbia.edu/research/commentary/hydrogen-leakage-potential-risk-hydrogen-economy

Fabian, Emanuel (2022): Hezbollah renews threats on Israeli gas fields, Times of Israel, 31.7.2022.

Field & Derwent (2021): Field, R. A. and Derwent, R. G.: Global warming consequences of replacing natural gas with hydrogen in the domestic energy sectors of future low-carbon economies in the United Kingdom and the United States of America, Int. J. Hydrogen Energ., 46, 30190–30203, https://doi.org/10.1016/j.ijhydene.2021.06.120, 2021.

Financial Mirror (2020): France backs Cyprus in energy row with Turkey, 18.2.2020.

Frantzman, Seth J. (2022): Israel-Lebanon Maritime Deal Juggles Region’s security, energy targets. Defense News, 25.10.2022.

Gale, Ben (2022): Israel green lights gas field off Gaza but concerned Hamas will use revenue for terror. JNS, 14.11.2022.

GEM (2023): East Med Gas Pipeline, by Global Energy Monitor, https://www.gem.wiki/East_Med_Gas_Pipeline#cite_note-19

Global Energy Monitor (2022): Europe Gas Tracker Report, April 2022.

Government of Cyprus (2022): Address by Minister of Defence, Mr. Charalambos Petrides, at Nemesis Exercise 2022. Press Release, 3.11.2022.

Greekcitytimes online (2021): Ankara Complains Greek Air Force Harassed Turkish Ship Conducting Illegal Surveys in the Aegean, 24.2.2021.

Gross, Judah Ari (2021): Hamas attempting to hit Tamar offshore rig with rockets. Times of Israel 16.5.2021.

Guardian (2021): No new oil, gas or coal development if world is to reach net zero by 2050, says world energy body.https://www.theguardian.com/environment/2021/may/18/no-new-investment-in-fossil-fuels-demands-top-energy-economist

Guardian (2023): How Putin's plans to blackmail Europe over gas supply failed, https://www.theguardian.com/world/2023/feb/03/putin-russia-blackmail-europe-gas-supply-ukraine

Herschelmann, Kerry (2020): Turkish military conducts long-range Mediterranean exercise, Jane's Defence Weekly, 16.6.2020.

Hurriyet Daily News (2012): Turkish Navy set to build its own frigate, 21.12.2012.

Hussein, Hamzah Rifaat (2022): Lebanon's Maritime Deal with Israel. Carnegie Endowment for International Peace, 31.10.2022.

IEA (2022): How to Avoid Gas Shortages in the European Union in 2023 - A practical set of actions to close a potential supply-demand gap, December 2022, https://www.iea.org/reports/how-to-avoid-gas-shortages-in-the-european-union-in-2023

Istituto Nazionale di Geofisica e Vulcanologia (2023): https://www.ingv.it/, 2023

Interfax (2020): New Russian fighter jets in Libya – head of Federation Council defense committee, 27.5.2020.

International Crisis Group (ICG) (2011): Turkey and Greece – Time to Settle the Aegean Dispute. ICG Policy Briefing Europe No. 64, 19.7.2011.

International Crisis Group (ICG) (2012): Aphrodite's Gift – Can Cypriot Gas Power a New Dialogue. International Crisis Group Europe Report No 216, 2.4.2012.

IPCC (2019): 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Calvo Buendia, E., Tanabe, K., Kranjc, A., Baasansuren, J., Fukuda, M., Ngarize, S., Osako, A., Pyrozhenko, Y., Shermanau, P. and Federici, S. (eds). Published: IPCC, Switzerland.

IPCC (2021a): IPCC, 2021: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 2391 pp. doi:10.1017/9781009157896.

IPCC (2021b): IPCC, 2021: Annex VII: Glossary [Matthews, J.B.R., V. Möller, R. van Diemen, J.S. Fuglestvedt, V. Masson-Delmotte, C. Méndez, S. Semenov, A. Reisinger (eds.)]. In Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 2215–2256, doi:10.1017/9781009157896.022.

IPCC (2022): IPCC, 2022: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: 10.1017/9781009157926

Jabbour, Jana (2021): France vs. Turkey in the EastMed. IFRI Briefing, 6.5.2021.

Jane's Defence Weekly (2020): Russian deployment blocks Turkish victory in Libya, 26.8.2020.

Joffre, Tzvi (2022): Jerusalem Post 20.10.2022.

Keep Talking Greece (2022): Greece to acquire new corvettes, 10.11.2022.

Khalil, Adam (2022): Egypt nears deal with Israel and PA to revive Gaza offshore gas production. Middleeasteye, 20.10.2022.

Kjellén, Jonas / Lund, Aron (2022): From Tartous to Tobruk – The Return of Russian Sea Power in the Eastern Mediterranean. FOI, 2022.

Krimi, Sonia (2021): NATO and the Mediterranean Security Agenda. NATO Parliamentary Assembly Political Committee Report, 9.10.2021.

Kuimova, Alexandra (2020): Understanding Egyptian Military Expenditure. SIPRI Background Paper, October 2020.

Lappin, Yaakov (2015): Israel corvette gets counter-attack capability. Jane's Defence Weekly, 4.9.2015.

Lappin, Yaakov (2020): First new Israeli corvette is set to arrive in December. Jane's Defence Weekly 5.11.2020.

Larrinaga, Nicolas de (2015): Russian submarine fires cruise missile into Syria. Jane's Defence Weekly, 9.12.2015.

Lund, Aron (2022): The Turkish Intervention in Libya. FOI, March 2022.

Maritime Executive (2021): Turkish Navy Intervenes in EastMed Pipeline Survey, 29.9.2021.

Middle East Monitor (2019): Increasing Egyptian military support for Haftar forces in the Battle of Tripoli. 25.4.2019.

Middle East Monitor (2022a): Egypt, Greece sign protocol to support bilateral military cooperation. 22.9.2022.

Middle East Monitor (2022b): Lebanon's Hezbollah warns Israel against drilling in disputed maritime border area, 17.11.2022.

Middle East Monitor (2022c): PA, Egypt, Israel Hamas make Gaza Marine breakthrough, 9.12.2022.

Middle East Monitor (2022d): Türkiye, Libya signs agreements on hydrocarbon, gas, 3.10.2022.

Middle East Strategic Perspectives (2022a): The East Med Energy Report, No. 4/2022.

Middle East Strategic Perspectives (2022b): Israel shoots down Hezbollah drones heading to Karish field. The East Med Energy Report, No. 9/2022.

Military Africa (2022): Libya orders Hürkus-C light combat aircraft from Turkey, 8.6.2022.

Naval Analyses online (2015): Ada class corvettes of the Turkish Navy, 26.6.2015.

Navalnews (2022): Turkey Closes The Dardanelles And Bosporus To Warships, 28.2.2022, https://www.navalnews.com/naval-news/2022/02/turkey-closes-the-dardanelles-and-bosphorus-to-warships/

Navigant (2019): Gas for Climate - The optimal role for gas in a net zero emissions energy system, prepared for GAS FOR CLIMATE, A path to 2050, 18 March 2019, https://gasforclimate2050.eu/wp-content/uploads/2020/03/Navigant-Gas-for-Climate-The-optimal-role-for-gas-in-a-net-zero-emissions-energy-system-March-2019.pdf

Nedos, Vassilis (2022): Regional power competition in the Eastern Mediterranean. Hellenic Foundation for European & Foreign Policy, March 2022.

Ocko & Hamburg (2022): Ocko I. B., Hamburg S.P. Climate consequences of hydrogen leakage, Atmospheric Chemistry and Physics, 22, 9349–9368, 2022, https://doi.org/10.5194/acp-2022-91

Pecinar, Aleksandra (2019): Total in Eastern Mediterranean Waters. MEER, 7.10.2019.

Quintino et al. (2021): Quintino F.M., Nascimento N., Fernandes E.C., Aspects of hydrogen and biomethane introduction in natural gas infrastructure and equipment, Hydrogen 2021, 2(3), 301-318; https://doi.org/10.3390/hydrogen2030016

Rani, Archana (2021): Chevron halts production at Tamar field offshore Israel. Offshore-Technology 13.5.2021.

Reuters (2007): Russian navy to start sorties in Mediterranean, 5.12.2007.

Reuters (2018): Turkish blockade of ships off Cyprus is out of Eni's control. 16.2.2018.

Reuters (2019): Israel to resume Tamar gas field production after Gaza truce, 6.5.2019.

Reuters (2020): France 'will not tolerate' Turkey's role in Libya, Macron says, 22.6.2020.

Reuters (2022): Egypt oil min says framework agreement in place on Gaza Marine field. 25.10.2022.

RUSI (2021): The Coming Naval Arms Race in the Eastern Mediterranean, 22.7.2021.

Sharkov, Damien (2016): Russia announces plans for permanent naval base in Syria. Newsweek, 10.10.2016.

Spiegel (2020): Streit zwischen Griechenland und Türkei spitzt sich zu, am 22.7.2020.

Statista (2023): Biggest polluters in the European Union in 2021, https://www.statista.com/statistics/1130785/biggest-polluters-european-union/

Sterigou, Andreas (2016): Turkey-Cyprus-Israel relations and the Cyprus conflict. Journal of Balkan and Eastern Studies, Vol. 18, No. 4/2016.

Stocker, James (2012): No EEZ Solution – The Politics of Oil and Gas in the Eastern Mediterranean. Middle East Journal, Vol. 66, No.4/2012.

Strigunov, K.S. / Manoilo, A.V. / Rozhin, B.A. / Simons, G. (2022): Energy market wars as a factor of military-political escalation in Eastern Mediterranean region – a Russian perspective, in: Cogent Social Sciences, Vol. 8, No.1/2022.

Sünnetçi, Ibrahim (2019): Turkish Navy's Current Fleet and the Role of Turkish Naval Industrial Capabilities, in: Defence Turkey, Vol 14, No. 95/2019.

Tanchum, Michael (2015): A New Equilibrium – The Republic of Cyprus, Israel, and Turkey in the Eastern Mediterranean Strategic Architecture. Friedrich Ebert Stiftung, Occasional Paper Series 1, 2015.

Tertrais, Bruno (2021): Reassurance and Deterrence in the Mediterranean – The Franco-Greek Defense Deal. Institut Montaigne, 17.11.2021.

Troisi, Flavia (2021): Egypt and the development of its national Navy. Centro Studi Internazionali (CeSI), 14.4.2021.

Tsakiris, Theodoris (2020): Inflammable Waters – Turkey's Strategic Objectives in the Eastern Mediterranean, IEMed Mediterranean Yearbook 2020, 2020, p. 283-287.

Ueckerdt et al. (2021): Ueckerdt, F., Bauer, C., Dirnaichner, A., Everall, J., Sacchi, R., and Luderer, G.: Potential and risks of hydrogen-based e-fuels in climate change mitigation, Nature Climate Change, 11, https://doi.org/10.1038/s41558-021-01032-7, 2021.

U.S. Navy Press Release (2022): Standing NATO Maritime Group Two Commander Meets with Allied Strike Group Commander at Sea, 23.11.2022.

UN Security Council (2019): Letter dated 29 November 2019 from the Panel of Experts on Libya established pursuant to resolution 1973 (2011) addressed to the President of the Security Council, Doc. UN S/2019/914, 9.12.2019.

UN Security Council (2021): Letter dated 8 March 2021 from the Panel of Experts on Libya established pursuant to resolution 1973 (2011) addressed to the President of the Security Council, Doc. S/2021/229, 8.3.2021.

Upstream online (2021): Turkey again threatens drilling plans as ExxonMobil awarded prize block offshore Cyprus, 3.12.2021.

Wrathall, Laurence Reza (2010): The Vulnerability of Subsea Infrastructure to Underwater Attack – Legal Shortcomings and the Way Forward. San Diego International Law Journal, Vol. 12 No.1/2010.

Yahchouchi, Romy (2021): Maritime Security in the Mediterranean Sea, Konrad Adenauer Stiftung, 2021.

Greenpeace is an independent global campaigning network that acts to change attitudes and behaviour, to protect and conserve the environment and to promote peace.