

Climate Change and Geopolitical Dynamics in the Middle East and North Africa

Navigating Challenges and
Opportunities for Regional Security

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Introduction

Climate change, as a critical and multifaceted issue with increasingly palpable effects, is compounding the intricate set of challenges and geopolitical dynamics in the Middle East and North Africa (MENA) region. Climate change impacts, such as rising temperatures, shifting precipitation patterns, and more frequent extreme weather events, are exacerbating existing vulnerabilities in the region. Moreover, this evolving environmental landscape has direct and indirect implications for the security and stability of the MENA region, encompassing a broad spectrum of political, social, and economic dimensions. And while climate change often is not a direct cause of such challenges, it acts as a contributing factor – a factor that has at times been overlooked or underreported, as arguably is the case in coverage of the wars in Libya, Syria, and Yemen, for example.

Changes in the availability of natural resources are already impacting regional dynamics of competition and cooperation around resource distribution in the region. Among others, dwindling water resources are creating competition among nations and communities and are heightening the potential for conflict over access to this vital resource. Moreover, socio-economic grievances related to the loss of arable land and livelihoods due to climate change increase the risk of political instability within countries in the region. With agriculture-dependent economies of many MENA countries being highly vulnerable to climate-induced disruptions, this also presents a threat to food security.

Simultaneously, climate change is set to heavily impact the energy sector in the region, which has traditionally underpinned economic stability and energy security for both regional and international actors. Beyond threats to the safety of existing energy infrastructures by extreme weather, the shift to renewable energies linked to global climate and decarbonization ambitions will have major implications for current fossil energy exporters and the regional balance of power. With economic and political systems reliant on the income generated from fossil fuel exports, these countries will have to accelerate their energy transition and economic diversification to remain competitive and stable.

Another issue affecting regional security and stability is the rise of climate-induced displacement, as communities leave their homes with desertification, sea-level rise, and extreme weather events. This development is creating a range of questions concerning the stability of host and transit countries and human security in general. The concept of human security captures the many challenges that can be related to climate, such as extreme poverty, hunger, political violence, and civil strife, and it helps us understand how insecurity affects people, communities, and states.

The paper is based on discussions during a closed-door workshop on “Geopolitics of Climate Change in the Middle East and North Africa”, which brought together security and climate experts in order to assess climate-related vulnerabilities and their implications for security and stability in the MENA region; to explore interconnections between climate change, resource scarcity, food security, migration, and energy dynamics; and to discuss necessary adaptations in the security approaches of states as well as regional and international actors.

Between competition and cooperation: The changing geopolitical landscape in the MENA region under conditions of climate change

Already today, the MENA region is faced with ever-increasing impacts of climate change, such as extreme temperatures, water stress, and natural disasters. With climate change intensifying, the MENA region is projected to suffer from extreme heatwaves and increasingly challenging living conditions, emphasizing the urgent need for climate action to mitigate these risks. In Doha and Kuwait City, for example, temperatures have increasingly exceeded 50 degrees Celsius in the past decade, contributing to concerns about the cities' future habitability¹. Similarly, in Iraq, 60% of farmers have reported cultivating less land or using less water due to extreme drought further exacerbated by mismanagement of resources². This situation raises concerns about the future of agriculture and the potential for land becoming non-arable in the coming years. Climate change can put at risk the resilience of fragile communities and other vulnerable groups, but it can also have wider knock-on effects for economic development, political stability, and regional relations. In unlucky scenarios, in which climate stressors marry up with violence, poor governance, and opportunism, this can risk not only the stability of countries but can also create new geopolitical tensions in the region.

Fields of contention around resources

Water is a major site of potential conflict, even if the threshold has not yet been reached to spark outright inter-state conflict within the MENA region. Up until now, the costs of going to war over water are deemed too high for countries. But with a lack of clear rules and policies regarding, for example, usage of shared groundwater reservoirs and little enforcement of the rules that do exist, it is unclear whether current dynamics of cooperation or at least pragmatic arrangements will persist. Celebrations of the Indus Waters Treaty, which has held between Pakistan and India despite three conflicts, is a positive sign, but it is far from proof that all inter-state water agreements will remain unaffected by conflict. And tensions are indeed increasing against the backdrop of a widening mismatch of supply and demand and ongoing resource mismanagement in many contexts.

In the MENA region, the volume of renewable water per capita has been decreasing, with a drop to about 5.85 thousand cubic meters per inhabitant in 2020³. This is occurring alongside a demographic expansion, with the population expected to nearly double by 2050⁴. The high demand for water in agriculture contributes to the mismatch between population growth and freshwater resource availability and management in the MENA region. The link between water stress and conflict is evident in the region; water scarcity can lead to disputes over water distribution and use, potentially escalating into conflict. Looking at the Tigris-Euphrates River basin, tensions over the shared water resources have shaped relations between the riparian states for years, with Turkey and Iran using their upstream position for blockages and diversions that give them leverage over Baghdad. And while water stress is a reality in the entire region, it does and will continue to affect MENA countries in different intensities. The Gulf states are examples of already very water poor countries, which would thus seem most inclined to fight over this resource. However, given that they have been able to invest the necessary financial means and to develop technical solutions for desalination in order to reach up to 70% of their drinking water needs, potential confrontation over the supply of water has been eased. Meanwhile, less wealthy actors, like Jordan, Syria, Tunisia, and Palestine, do not possess the necessary funds for this option and thus are more dependent on scarce natural water resources. Even more direly affected are the most water-stressed countries of Iraq and Yemen, which both also suffer from political instability and lack of financial resources and management capacity. Water stress will also affect economic

sectors differently. Agriculture is a significant water user, responsible for between 75% and 90% of water use⁵, but it is no longer a major part of the GDP for most countries in the region (as it would have been 20 to 40 years ago) – even if it is still a relevant employment factor. Another increasingly pertinent question, however, is how elites in different countries will react once economically more important sectors, such as gas extraction, might be affected, since these sectors are often more closely linked to their own interests as well. Another dynamic, which could create additional threats for regional stability, is if water becomes more attached to nationalist narratives and discourses about sovereignty, as seen in the Nile dispute. In such situations, politicized narratives could harden and increase the risk of escalation and conflict – a threat which is currently underappreciated and thus met with complacency.

Another field with the potential for major disruptions and shifts in the power balance in the MENA region is the energy transition. Even if oil and gas will persist as important energy sources for at least the next 50 years, the green transition – and its new winners and losers – could completely reshape the rule book of the region. Iraq, Libya, and Algeria are significant powers at present thanks mainly to their oil and gas, but they have little capacity to transform their economies. The countries of the Gulf Cooperation Council (GCC), while also heavily dependent on fossil fuels, show a higher awareness of the necessity to diversify their economies, coupled with necessary capacities and already launched efforts in that regard, including in renewable energy production. Nevertheless, changes in the GCC's influence throughout the region in the context of changing energy dynamics are possible. Egypt, while being a gas exporter, is pushing ahead with its energy transition, vying to capture relevant import shares for the European market and to assume increasing regional weight as an energy hub, despite ongoing economic challenges. The expected impacts of the energy transition are also linked to potential disruptions within countries characterized by a heavy dependence on fossil fuel exports, subsidies to industry, and revenues that fund clientelist systems. A shift away from rentier economies will certainly trouble societies in the short run. Fear of these disruptions helps explain why MENA states are often adopting two parallel approaches, trying to 'go green' even as they retain their current economies and social arrangements. The question will be how and when to make important shifts. These internal challenges could generate instability and actually make inter-state relations more difficult, as countries take advantage of others' internal instability to advance their own interests (as seen in Ethiopia's GERD construction, done while Egypt was embroiled in the Arab Spring). Countries like Morocco and Tunisia, on the other hand, that currently rely on energy imports, started to capitalize on their potential for renewable energy production early on and have a chance of increasing their influence in a changing regional landscape.

State capacity in the face of climate change

In all domains related to climate change impacts in the MENA region, the state itself is often part of the problem due to weak state capacity. This weakness leads to limited emergency preparedness, a lack-luster ability to attract FDI for climate projects, and limitations in adapting to climate change impacts. Many states are thus positioned neither to react adequately to climate change-related emergencies nor to adapt to and manage long-term stresses like rising sea levels in the Mediterranean, which will slowly eat up the shores – a process that could extend to the Red Sea in the future. In some cases, there is also the factor of pride and politics leading to an unwillingness to accept support from neighbors or outside actors because it might indicate weakness. For example, in 2021, Algeria rejected Moroccan aid in wildfires⁶. At other times, internal divisions can disrupt emergency relief: Libya missed external support during the dam disaster and flooding in Derna in 2023, in part because there is no recognized authority in that area. Another question regarding the role of states in climate change is which political model seems best fit to manage these challenges. When stipulating three necessary elements for successful climate action – political will, economic viability, and social acceptance – the likelihood of this combination emerging differs between various authoritarian and democratic models. To better understand resulting challenges and stumbling blocks, these questions need to be taken into account.

Looking on the bright side: potential for cooperation

Despite the multitude of risks for geopolitical tensions and conflict in the context of climate change in the MENA region, not all is lost. Examples have shown that collaboration on issues of climate and energy, even in complicated geopolitical constellations, is still in the interest of many states. Case in point is a joint initiative by Iran, Iraq, Syria, and Kuwait to deal with sandstorms, which was agreed upon in 2022⁷. An agreement between Israel, Jordan, and the United Arab Emirates (UAE) was set to launch a desalinated water and solar energy swap between Israel and Jordan, playing on identified synergies. Both cases, however, also show that agreements do not necessarily translate into effective implementation, due to the many existing geopolitical stumbling blocks. While not without its difficulties, the shared challenge of climate change can thus provide an entry point and lever for regional cooperation. For this to materialize, however, countries must be willing to invest concerted efforts to focus on avenues for cooperation and to extend their perspectives beyond a traditional national security and defense understanding.

Reconfiguring a security view of climate issues and looking at matters in a different light, might lead actors to see climate as a way of even ending conflict, as countries can potentially transform climate challenges into opportunities for peace-building efforts. Addressing environmental challenges is essential for promoting peace and security in conflict-prone regions like MENA. By implementing joint solutions that prioritize preparedness, resilience-building, inclusive decision-making processes, and sustainable transitions, governments can work towards a more secure and environmentally sustainable future for all⁸. Sustaining such an approach would mean changing mindsets: advancing, for example, ongoing efforts to link the Southern and Northern shores of the Mediterranean, such as through energy infrastructure projects, knowledge exchange, and so on. These connections do make sense in the long run, including from a broader human security perspective, but long-term investment is required. Overall, recognizing the interconnectedness of climate change with conflict dynamics underscores the importance of international cooperation in addressing these complex challenges. By investing concerted efforts in cooperative strategies that transcend traditional security paradigms, countries can work towards a more sustainable and peaceful future amidst the shared challenge of climate change.

New challenges, new alliances?

Climate change is also affecting MENA relations with global powers. In theory, climate change could be a 'win-win' field for strategic competitors, but often rivalry is the norm. MENA countries do work with the West on climate transition: Morocco, for example, works closely with European countries on decarbonization and climate ambitions and has even joined the recently launched Climate Club of high-ambition states^{9,10}. The EU and the GCC are connected through the EU-GCC Clean Energy Network, which aims to catalyze cooperation on clean energy. But many MENA countries are worried by inconsistencies and wavering levels of ambition in Western countries in the field of climate cooperation, and they criticize a double standard with regards to proclaimed climate policy and Western nations' efforts to guarantee their own energy security, particularly in the wake of the war in Ukraine. Moreover, the current crises in Ukraine and Gaza have created further doubts in the minds of MENA leaders, who are unconvinced that Western powers stand on principle rather than hypocrisy. At the same time, the impacts of the war in Ukraine have emphasized Russia's importance for the supply of food and fertilizer to the MENA region. China also retains considerable leverage through its key role in the production of batteries, electric vehicles, and solar panels, and its proclaimed willingness to enter into 'win-win' partnerships with Global South players – who are well situated to advance on renewable energy production, but still need to develop the technological and human resources to do so.

Another important development has been the invitation of four MENA countries – namely Egypt, Saudi Arabia (KSA), the UAE, and Iran – to join the BRICS group. Positioning itself as aspirational counterweight to other groupings, such as the G7, the BRICS present an interesting forum for MENA countries

which serves to widen their options in terms of partnerships. MENA countries may find joining the BRICS attractive for the economic opportunities, increased trade, the chance to exchange in local currencies, and the possibility of achieving their growing ambitions to develop foreign policies with greater freedom from Western influence. The BRICS also promises to liberate fiscal, economic, social, and institutional changes from the threat of structural adjustment packages by traditional lenders. Looking specifically at the fields of climate and energy, the BRICS offers MENA countries promising opportunities for accessing green technology, such as Chinese solar panels, and cooperation on large decarbonization projects.

And while the BRICS members are not completely aligned – China and Russia want to become counterweights to Western powers whereas Brazil, India, and South Africa do not desire a hard decoupling from the West – the group nevertheless holds, through its members, symbolic importance as well as economic and political leverage that should not be underestimated. The potential new members add to this leverage. If expanded as envisaged, the BRICS could bring together around 42%¹¹ of the world's oil supplies and around 44%¹² of oil reserves as well as substantial shares of global energy consumption. This strongly increases its leverage to counter Western states' sanctions on oil and gas against its members, such as a price cap on Russia. In a similar logic, KSA recently announced that it would not sell oil when conditioned by a price cap¹³. The expected adhesion of MENA countries to BRICS may thus be a harbinger for a more polarized global geopolitical landscape, with climate and energy serving as important fields of action. As these alliances evolve, strategic shifts and negotiations in energy markets could shape future cooperation frameworks.

Challenges for resilient economies in the face of climate change

Besides expected impacts on geopolitical relations and political stability in the MENA region, climate change will also require decisive adaptations in order to keep economies resilient. Ideally, in a framework of well-tailored policies and clear economic incentives, the private sector could also play a key role in pushing climate mitigation. Looking at the challenges for water supply, food security, and energy systems in the region – and the complex interlinkages between those fields – allows a distillation of current shortcomings and of necessary adaptations for more resilient economies.

Water scarcity

Increasing water scarcity, and its secondary effects on food security and energy production, presents one of the main challenges for economic resilience and development in the MENA region. With governments increasingly challenged in their ability to guarantee sufficient water allocation – particularly with a view to the link with food security – and to manage the water budget, the pressure is rising. At the same time, many MENA populations have high expectations regarding water. They see water as a natural resource that should be free, with access to it ensured by the state – since there is little understanding of the costs associated with producing and providing fresh water.

To react to this challenge, governments have only a few solutions. Groundwater extraction is sometimes understood as a 'silver bullet', but that is a fallacy. Countries have to dig deeper and deeper to reach aquifers. In some areas of Jordan, it is already necessary to pump water from depths exceeding 1,000 meters in order to obtain non-brackish water¹⁴, whereas KSA has had to abandon aquifers on the Arabian Peninsula which are already depleted or tapped out. Desalination, meanwhile, is seen as another 'silver bullet', especially by countries and companies that will profit from its use. While GCC countries and Israel have made great advances in building desalination capacities, many other

countries in the region do not have the financial capacity to make the necessary investments. Tunisia, for example, cannot afford large-scale desalination projects, while parts of the country are already facing a 90% drop in certain agricultural products due to lack of water¹⁵. And even in the energy-abundant and financially rich GCC states, with high amounts of energy being put into desalination (in the case of UAE, up to a 20% of its total energy production¹⁶), the water produced is still not enough to cover the needs of the agricultural sector^{17,18,19}. Additionally, desalination comes with negative environmental impacts, particularly higher salinity levels and marine pollution in areas in which the brine by-product is injected. While the science on the environmental externalities of desalination is in its infancy, voices cautioning about such impacts should be taken seriously in any further scale-up of this technology.

Beyond those supply-side dimensions of water security, far less emphasis is currently being put on the demand side of water. This presents a problem, since on the demand and user side, massive water losses occur – thus also creating far-reaching potential for water saving. In reality, MENA countries will need to find strong water conservation policies that go beyond the agriculture sector. They will need institutional solutions that better allocate water, including by empowering local authorities in the process. This includes, on the one hand, technological solutions, such as more efficient irrigation techniques, water infrastructure improvements that minimize losses, and smart metering systems; but on the other hand, it also requires better regulation as well as stringent implementation of water-saving measures, including an increased awareness of the necessary role played by private sector actors and the population for their success.

For a better understanding of water security and its implications for MENA economies, a nuanced discussion of the complexities of all aspects of the water-energy-food nexus is necessary. This also includes sometimes unintended consequences, such as instances of over pumping by farmers after switching to water pumps which they produce themselves at no additional cost and which are powered by solar energy (as opposed to previous pumps' reliance on oil or electricity for this purpose). Another question within this nexus context arises when looking at the increasing use of desalinated water. Given the high energy demand and environmental costs of desalination, for which purposes should desalinated water be used? Should the provision of water for countries' own populations and their food security be prioritized? What about water use to produce cash crops destined for export? These examples show that questions of water allocation and usage are closely linked to broader questions of food security, agricultural regimes, national priorities, etc. All these complexities have to be taken into account when designing respective strategies – a difficult challenge in a context of ever intensifying complexity and scarcity.

Vulnerabilities in the energy sector

Climate change also has far-reaching implications for the strategically important energy sector in MENA countries. Energy production and the power sector have received focus due to the cost of extreme weather events. Water scarcity and drought conditions make it more difficult to guarantee the adequate cooling of power plants, as was also seen in France during the summer of 2023 when nuclear power plants had to be shut down due to a lack of water for cooling. The change of precipitation levels in its other extreme form, flooding, is threatening damage to energy infrastructure. Regarding the impacts of extreme temperatures, a view to both supply and demand is necessary. On the latter, increasing cooling needs for industry and populations has a concrete and considerable impact on energy demand in the region. At the same time, on the supply side, energy systems experience losses due to extreme heat.

Clean energy systems in many cases seem particularly vulnerable, since materials not designed for extreme weather conditions can lead to considerably lower output. Looking on the bright side, if countries manage to invest in research and development as well as in the building of (or at least in

contributing to value chains for) technologically adapted clean energy materials, they could benefit from important economic opportunities.

Moreover, looking at the resilience of energy systems in the MENA region, two previously known facts become even more relevant in the face of climate change: (1) Countries need to invest in the diversification of their energy systems in order to enhance their resilience, and (2) interconnections with neighboring countries become increasingly necessary to guarantee the stability of supply, particularly given the higher share of intermittent renewable energy sources in the overall supply as well as risks of loss due to extreme weather conditions. The energy sector is thus one example in which the necessity of adaptation to climate change (and related investments in this direction) is obvious. Moreover, MENA countries and workers are specialists in energy, and their skills, assets, and infrastructures may be leveraged and repurposed from gas and oil to new energy supplies.

There are, however, also voices that cast doubt on how serious the MENA region is about green transition. Beyond tactical or technical questions (such as the political, economic, and social impacts of carbon), there must be a vision for what MENA would look like in a post-carbon world. At present, the most ambitious plans are for 'Net Zero 50', meaning having net zero carbon emissions by 2050, but even that scenario involves using fossil fuels like oil for a quarter or third of energy needs and assuming the emissions can be abated. The difficult negotiations at COP28 showed that several MENA countries are still firmly in the camp of proponents for continued fossil fuel production who are trying to prevent higher ambition goals concerning fossil phase-out. There are, however, also many countries in the region that show high ambition levels and are pushing for an accelerated transition to renewable energy, as well as countries that adopt pragmatic approaches which – despite accounting for some path dependencies in energy systems – still enable the advancement of the transition.

For energy, as in the field of water, demand-side measures mean reducing energy use and enhancing energy efficiency, and they have an important role to play. But as in the water field, demand reduction policies are difficult and harder to promote. Reduction does not garner headlines, whereas it is easy to communicate the logic of increasing supply, such as building a big dam or a field of solar panels. Yet reduction is key to the water and energy transition in the MENA region.

Pathways for resilient economies

Responses are many. MENA governments should diversify their supply chains, replacing 'just in time' supply for more sustainable approaches. They also need to address the externalities of the current water and energy supply systems as well as other economic sectors, including by raising costs. Reflecting the actual cost of goods – while taking into account social impacts – should also eventually build support for mitigation and adaptation work, because it will show the concrete economic benefits of such action (since the actual cost of the current system will be revealed as the true baseline). Markets will make clear that inaction by the private sector is more expensive than investing in measures to mitigate climate change risks. The question remains, however, who will be willing to pay for mitigation and adaptation – especially in the early stages of the process.

In order to create the necessary framework for such an economic transition, there must be efforts to create markets for transition in all economic sectors – including market incentives for the transitional work itself, which can be difficult. Linked to this is a need to generate capital for the technologies necessary for the transition, since advanced technologies for carbon capture, renewables, and so on must be part of the answer to sustainability challenges. Looking at the numbers, technology-based solutions for climate mitigation should be of interest to investors, since they yield higher returns per dollar of investment than nature-based solutions²⁰, which are quantitatively at a higher risk of not meeting financial targets²¹. But generating investment remains a major problem – a lot of the technology needed for achieving the goal of 'net zero' emissions is not yet commercially available at scale, partly because there is insufficient demand. Generating demand and a functioning market must be done deliberately.

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Investors who crave stability for their investments must also come to understand that stability does not mean static, and that MENA countries undergoing transition are not necessarily politically unstable.

Different transition pathways fit the economic structures of different countries. The GCC states, with influential state-owned enterprises (SOEs) that are at the same time major emitters, have in many cases proven to be first movers in setting emissions reduction goals. Through their leadership and work with big supplier networks, these SOEs can have an important impact on their respective countries' transitions. Leading private sector actors, which have realized the economic necessity of mitigation and are aiming to become transition leaders, can create a coalition of first movers to invest in the necessary infrastructure and to motivate early demand commitments, particularly in hard-to-abate sectors such as aviation, trucking, and cement, which together account for approximately 13% of emissions²². Economic integration of this sort within MENA is important to reassure larger companies that their investment in transition technologies will indeed find a market, since no national market in MENA – with the potential exception of KSA's – is big enough on its own.

It is also important to assure industry that demand will be sustained, as well as realistic and impactful. Sustained demand for clean energy and decarbonized products must thus move beyond Europe, which has not demonstrated consistent and sustained demand and investment readiness due to internal dissent, a focus on ideological solutions, and policy changes in reaction to changing geopolitical circumstances. While the EU remains an important current and future importer of clean energy products and still has some weight through regulatory frameworks that impact price and economic perspectives (such as the Carbon Border Adjustment Mechanism, or CBAM), alternative markets are also developing, which inevitably affects the rhythm and process of transition, as well as the options for potential partnerships.

Social buy-in for the transition

When designing and implementing large-scale economic transitions, governments and the private sector must make sure that they create the necessary social buy-in. Governments must find a way to communicate that the MENA region is in a climate crisis. For this, they should learn the lessons of crisis communications during COVID-19, a pandemic which seems to be largely forgotten despite its fundamental impact. The coronavirus was a testbed for understanding how disruption affects MENA and how governments might communicate during times of crisis. To hammer home the importance of making fundamental changes, of transforming water and energy use, of reworking economies, etc., governments must develop new discourses. Governments and civil society tend to talk about climate change issues with an elite discourse that does not touch the broader population. What the people see is that prices are rising, supply of necessary commodities is no longer guaranteed, and agricultural livelihoods are threatened. They often do not understand why this is happening; they do not see why sheep must now be imported to MENA from Spain to have a sufficient supply for the major Muslim holiday of Aid al-Adha, for example. A better communications plan is thus needed to create the requisite understanding and buy-in for climate change mitigation and adaptation measures, in order to prevent frustrations that might turn into unrest.

Beyond communications, both governments and companies must ensure that projects within the framework of the transition do not lead to the disenfranchisement of local populations or the feeling that resources are being exported while local populations do not receive appropriate benefits. In Tunisia, for example, there is fear that multinational corporations and start-ups attracted to wind and sun energy opportunities may leave out locals' interest. Countries can find themselves exporting electricity to markets that are not in urgent need, even when their own states and economies are unable to provide electricity for local communities' needs. Often the calculus, especially for businesses, is to act in the interest of their stakeholders and clients, without considering or discussing domestic impacts. Such dynamics can create problems and deepen rifts within MENA societies. Moreover, states may invest in large-scale transition projects, like big dams, because they enhance state technological legitimacy and

transform arable land, but big transition projects can also undermine biodiversity, disrupt ecological connectivity, and create new burdens of implementation, maintenance, etc. And such projects can not only exclude; they can also generate real costs to local populations. One cost is so-called energy displacement. States will sometimes install massive energy projects in rural areas that do not enjoy access to electricity or water, and the projects will ultimately generate new costs and even displace local populations.

It is imperative, therefore, to overcome the trust deficit and convince local populations that the water and energy transition can be a 'win-win' for state and society. Without local buy-in, relationships could sour over the long run. Transition projects need to demonstrate concrete benefits at the local level and include communities in the revenues generated. But money is not enough. Libya has developed a rentier economy based on its natural resources, yet oil plants are still shut down when local populations feel they are not receiving their fair share²³. Local governments might be best placed to handle questions of water access, distribution, and use, because they have greater legitimacy than distant national government officials. Local actors and informal institutions must be involved in order to build trust and legitimacy for a successful and sustainable transition towards more resilient economies.

Displacement and migration

The exact role that climate change plays in migration is difficult to determine. The causality between climate and movement is not linear, and the topic is still understudied and research results on the subject remain limited. Much more evidence is needed to improve the public discourse. There is no comprehensive understanding of quantifiable links between the environment and migration, and there is insufficient research on, for example, climate *immobility* – on people who stay in place, even when they face greater vulnerability or suffering than those who migrate with climate change. The challenge is that governments must act now to try and handle climate migration, even if not enough is known about it and the best approaches for each government remain as yet unsure.

Limited information along with political considerations help explain why it has been difficult to define the categories of 'climate migrant' or 'climate refugee', for example. As a result, there is no international treaty to protect 'climate migrants' and domestic law reigns, such that the situation varies greatly by country. The COP28 outcome document, the Global Stocktake, recognizes the need for "policymaking and planning for displacement and planned relocation"²⁴ and the newly operationalized Fund for Responding to Loss and Damage includes displacement in its scope. Yet despite these positive developments, the climate summit also did not truly edge closer to a solution to the absence of robust legal frameworks addressing climate migration.

There is an important North-South divide as well. Most research about climate migration takes place in the North, but many of the impacts are experienced in the South. Climate migration can seem part and parcel of a larger problem of climate injustice – where climate change makes vulnerable people more vulnerable, and those who contribute the least to climate change suffer the most from it. The costs to the most vulnerable do not only take the form of climate departures. Much of climate migration is an entirely South-South affair, with people moving within or towards countries of the South. The MENA region has increasingly become a de facto destination for migrants from other countries of the Global South. Barring significant climate action, by 2050 North Africa is projected to have upwards of 19 million internally displaced persons (IDPs)²⁵. In 2019, the MENA region was already host to 30% the world's total number of IDPs²⁶.

The Mediterranean as climate change and migration hotspot

The Mediterranean Basin, MENA's shared space with Europe, is a hotbed of climate change and migration today, and it will likely become a focal point of climate migration in the years and decades to come. All around the Mediterranean, countries already face wildfires and flashfloods. The MENA shore has seen a combination of climate impacts, including rapid events like a series of storms, as well as slow factors like soil degradation. Moreover, the rate of population growth (1.5% in 2022²⁷) in a region that imports nearly half its food and faces regular cycles of conflict and violence, means that climate change will likely exacerbate many existing drivers of displacement. So far, much of climate-related migration seems to be internal to countries. Internal migration in MENA countries in 2021, for example, counted more than 233,000 IDPs from disasters. Over 68,000 Iraqis were displaced by drought by mid-2022²⁸. In Libya, around 45,000 were displaced in Derna from the flooding disaster caused by Storm Daniel²⁹ in 2023. The MENA region as a whole has witnessed around 1.5 million displacements due to disasters in the last decade³⁰. But climate migration might also connect the Mediterranean's southern shores to its northern shores, through well-established migration routes. Given these complexities, a better understanding of the relationship between climate and migration might help reduce misperceptions about the specific role of climate change as a driver for migration as well as mitigate inflammatory rhetoric around migration.

Contextualizing migration

Improving MENA's climate migration situation will also require remembering that migration is a normal part of history and has been a form of resilience that has long redistributed people across space. It might be useful to overcome the inadequate but influential 'push/pull' factor analysis of migration that was popular in previous decades, which suggests that migration is simply a rational calculation based on economic, social, political, and economic factors. New analysis should restore to migration its complexity of internal and external movement, its unevenness of gradual and sudden movement, and so on. Improving MENA's climate migration situation will mean learning to live with climate vulnerability. The reality is that many climate migrants will be moving from one climate-stressed location to another climate-stressed location, from a rural landscape devastated by drought to an urban environment subject to intense overheating, for example. There must be government policies and aid for such cases and strategic approaches to positively harness such migration movements for development and resilience. Governments should also continue to invest in programs intended to keep people in place, through climate mitigation and adaptation.

In the current global geopolitical context and the prevalent mood within many MENA societies, there is little appetite for expansive universal treaties extending rights to all peoples. On the contrary, support for global solutions even seems to be declining. (The reality is that the Geneva Conventions probably could not be passed if proposed today.) Nonetheless, developing a legal status to protect climate migrants and climate refugees is also desirable, even if it remains difficult to achieve.

Defense and security forces facing climate change

Looking at MENA defense and security forces as important actors for regional security and stability, at present, while climate change is on their agenda, it may be there primarily to enhance security cooperation activities with outside actors. MENA military and law enforcement are open to including climate change into their policies and are not as polarized over the topic as defense and security forces in other parts of the world may be. They might, however, think these issues are not a direct responsibility of their own or may feel that climate change concerns are a luxury, given the many serious direct security

challenges facing MENA uniformed personnel, including interstate rivalry, protracted civil wars, violent non-state actors, internal stability problems, and so on.

For this reason, MENA defense and security forces are positioned to partner with external actors like NATO, which has, since 2021, looked at climate security and adopted climate-attuned actions. In the Brussels heads of state summit, a very ambitious agenda was adopted in June 2021 that endorsed an action plan with four pillars (awareness, adaptation, mitigation, and outreach)³¹. The plan also addressed partners worldwide and southern partners, including MENA countries, especially through the Mediterranean Dialogue and the Istanbul Cooperation Initiative. NATO has a long track record of working to improve understanding of climate change and its impacts, and the alliance works on the topic both bilaterally and within larger frameworks. It is particularly interested in the impacts of climate change on core tasks and operations, but beyond that, NATO also aims to mainstream climate change in all domains, such as disaster response and defense planning. Regarding direct impacts on operations, NATO has gained awareness through assessments and direct experiences: sea level rise and climate-related weather changes have affected installations Joint Force Command Norfolk in Virginia and the Naval Air Station Sigonella in Sicily. The military is also often one of the largest carbon emitters, and NATO aspires to reduce military emissions levels³² and eventually achieve carbon neutrality³³. In MENA, meanwhile, the defense and security professions' language, policies, and even strategic objectives regarding climate change often largely follow the example of external partners like NATO (or the EU and UN), and for a reason. MENA adopts these agendas mainly for important external goals, in order to facilitate security cooperation at the highest levels. For this reason, often the older, strategic-level officers who engage regularly with international partners are more conversant in the topic of climate change than the younger, junior officers.

Faltering climate commitments?

There may be an upper limit to MENA defense and security sector commitments to climate priorities, however, because the will of international partners can at times falter. An underappreciated cost of the so-called *Zeitenwende* and rise of contemporary conflicts that involve the West, has been Europe's stumble regarding energy transition. The war in Ukraine has led to several deviations from Western-led whole-of-government/society green transition strategies. Temporary instances of returning to coal in Europe to bypass Russia's energy markets, and Europe's willingness to meet its own energy needs by working with countries making few efforts to follow EU standards, are seen as signs of this sort of compromise. MENA defense and security sectors have found planning difficult under conditions of uncertainty about the rate and impact of transition investments. At times, the pace for a climate-attuned transition in the defense sector seems to have slowed, to allow for backfilling the energy gap left by Russia or to cover expenses for conflict. The process of transition in the defense and security sector has been a topic of debate: some argue for a fast transition that will require emissions and waste in the short term (e.g., discarding military hardware), whereas others see wisdom in a progressive and balanced shift. The result is a sense of doubt, a questioning of Western intentions, and a worry that perhaps support for the green transition in the defense and security sector actually lacks commitment or even reflects hypocrisy in outside players that seem committed to transition only so long as it does not affect their own interests.

A question of priorities

Part of the question is determining the relative weight that MENA defense and security forces should give to climate adaptation and mitigation. NATO talks about mainstreaming climate into everything it does, and indeed the alliance has long worked on climate issues through proximate concerns, such as international humanitarian law, environmental security, and the like. For example, NATO's energy security efforts have long included increasing military interoperability and efficiency, which can have corollary green effects. NATO has also prioritized climate in its outreach engagements through the NATO Strategic Direction South Hub and with other multilateral organizations, and it has adopted a human

security lens, which includes topics related to climate change. Even in its traditional role, NATO has seen climate change become a threat multiplier in its MENA engagements. Climate impacts can affect operational capabilities. Each year Iraq has dozens of 'black flag' days, meaning days of high risk for heat casualties. In these conditions, military training and exercises are often canceled, armored vehicles break down in the heat, specialized suits for handling CBRN (chemical, biological, radiological, and nuclear) threats become unwearable, and helicopters must reduce payloads in order to take flight in thin air.

Adaptation and mitigation are nonetheless taking place, whether or not it is described as climate related or it corresponds to the language of the official strategies. At the level of the environment, where MENA defense and security forces must face the reality of desertification, water scarcity, flooding, rising sea levels, extreme storms, and the like, there is no choice but to adapt. At this practical level, the military in particular finds itself in its comfort zone: adjusting to battlefield conditions – changing terrains, weather, fighting seasons, etc., – is as old as the military itself. Perhaps the biggest impact has been on the types of missions and deployments that militaries experience, which in turn drives training, materiel, etc. There is a growing focus in MENA countries on humanitarian assistance and disaster relief (HADR) missions, including civil engineering to deal with floods, distribution of tents and food to displaced populations, establishing and maintaining quarantines during pandemics and medical emergencies, and so on. NATO and European militaries have received a growing number of requests for partnership on disaster management and building resilience, in order to manage food and water insecurity and to respond to large movements of people. New critical infrastructures in the context of energy transition, such as wind farms and solar power plants as well as infrastructure for the processing and distribution of water and energy, will have to be protected by defense and security forces. This can be seen, for example, in Egypt, home to one of the largest solar parks in the world, Benban Solar Park. Border security and territorial defense is another mission set likely to be affected by climate. As climate change displaces populations through dynamics such as shifting land use patterns, natural disasters, and scarce resources, migrants and refugees will probably cross borders in ways that require responsible management, not least to maintain internal order when these new populations place greater strain on already tenuous water-energy-food distribution systems. In responding to climate change, MENA defense and security forces will thus need to mainstream the emerging human security paradigm and extend long-standing collaborative approaches familiar in domains like maritime safety and security.

The future of defense

Updating education and training to respond to climate change and its effects is a priority for defense and security forces. MENA security actors recognize the need to improve their courses in order to increase climate literacy, perhaps by creating a system of accreditation within their forces for these skills. Educational opportunities may need to be interagency, given the broad relevance of the topic and the cross-sectoral relevance and impacts. Training opportunities will also need to focus on the emerging climate-related missions and include modules about dealing with extreme weather emergencies, safeguarding infrastructure/data under harsh conditions, and so on. Countries like Iraq (arguably MENA's most climate-affected nation) and Mauritania (which is looking to build up its crisis response capabilities) have expressed interest in collaborating with NATO on this topic, and NATO is looking for ways to add value to MENA defense and security forces in areas like climate mitigation, defense capacity building, and defense planning. NATO could use its existing competencies to meet the MENA interest, such as its experience in tabletop exercise development and its established courses, including the climate course at NATO School Oberammergau (Germany) as well as the lessons learned from the Kosovo Force (KFOR) mission. NATO is also well positioned to take a lead role in collecting and distributing compendia of best practices and relevant scientific findings. Eventually the alliance might take the lead in setting climate standards in areas like defense equipment procurement and lifecycles, etc.

The next generation of strategic defense and security leaders in MENA will likely emphasize climate change in cooperation and education, but they might extend considerations more completely into strategy and procurement plans. Mid-career professionals may try to integrate climate change into home-grown strategy development processes and figure out how to categorize, prioritize, and address climate as a concrete challenge. The next generation will be better positioned to ensure that the theme becomes cross-cutting in strategy articulation, implementation, and review. The next generation must also determine how best to distinguish between wartime and peacetime practices on climate, and to ensure that fighting capability and effectiveness is not sacrificed for long-term green goals. There may also be progressive steps to 'green the force' through updated procurement practices. MENA countries will likely need to evaluate the emissions footprint of their military and security forces and focus on efficiencies within their existing practices and materials. For example, it may be possible to start building or retrofitting stationary buildings, making 'smart barracks' that rely on solar power, for example. They could then move on to transportation, replacing older diesel- and eventually gas-fueled vehicles and determining how to 'sunset' existing equipment. They might eventually begin ensuring an accurate assessment of life-cycle costs for new equipment, avoiding buying 'green' items that actually increase emissions and waste in maintenance, for example. MENA defense and security forces have, through their market share, the opportunity to support energy efficient technologies. They can help shape and set requirements that include both capabilities and green standards, and they might contribute to diversifying suppliers by expanding the market to different levels, helping to move beyond single sourcing – an important problem in the emergence of green defense technologies.

And lastly, MENA countries may find ways to collaborate on green matters, especially within their own region. They might work through existing cooperation platforms for climate (e.g., The 5+5 Dialogue, Arab League, etc.), or they may create new ones. They could take increasing action together – coordinating their strategies; sharing technologies, information, and materiel; sharing bilateral or multilateral training on resilience, HADR; etc. MENA nations might also advocate as a collective with other regions, such as Europe – supporting stronger legal standards and measures to control waste dumping in the Mediterranean, potentially enforced through joint missions, for example. The most ambitious young leaders may even believe that their defense and security forces can take a leading role in climate awareness, adaptation, and mitigation in their societies, thus serving as the spark for transition within the MENA region as a whole.

Conclusions

When considering the geopolitical implications of climate change in the MENA region, the analysis must always attend to the diversity of countries in the region, not only in terms of political systems but also with a view to economic systems. MENA countries differ in their natural preconditions, such as the existence and availability of water, arable land, and fossil energy resources. While some countries have always faced water scarcity, others experience it as a new challenge with increasing impacts on economic opportunities. Depending on land availability, economic structure, and progress in innovation, the role of agriculture regarding employment, GDP, and water use differs decisively. In terms of income and financial capacity to invest in climate mitigation and adaptation, countries also clearly differ. The high-income countries, in the Gulf for example, have considerable financial resources to spend on water security, climate adaptation, and energy transition, as well as on the modernization of their economies in general. Some middle-income countries, like Morocco, have also started to invest considerably in the fields of energy transition and water security. Fragile and conflict-affected countries, such as Lebanon, Libya, Iraq, and Yemen, have a hard time mobilizing the political and financial capacity to make necessary adaptations.

This diversity continues when looking at how climate change-related aspects in the MENA region are interconnected with each other and with existing regional dynamics. It remains difficult to understand and articulate all the connections between climate developments and their impacts on societies,

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economies, and political systems in the MENA region. On the one hand, precise detailed data is often lacking; on the other hand, conceptual understandings of linkages are often underdeveloped, making it difficult to see the large-scale connections between, for example, climate and demography or climate and conflict. It is necessary to 'zoom in' on specific aspects and cases; it is necessary to 'zoom out' for a comprehensive analysis that accounts for the many interlinkages and to understand the big picture. Increasingly both approaches will have to go hand in hand. In order to foster a better understanding of climate impacts in MENA as a basis for more adept policy making, experts and policy makers need to develop their analytic capacities and invest more in translating their understanding into actionable policies.

Successful climate adaptation and mitigation in the geopolitical context of the MENA region will also require an inclusive approach, one that combines political will, economic interest, and social acceptance. Any approach must include buy-in from multiple stakeholders (political leaders, economic actors, and local communities) within countries, as well as collaboration among countries. It requires political leaders who temper the rate and approach to transition; at times MENA leaders have in fact hedged against total transition, 'keeping one foot out' in order to mitigate the risk of complete change in critical sectors like water and energy supply. Successful climate adaptation and mitigation requires economic and financial leaders who recognize and act upon the economic opportunities of the transition and who can help adapt the financial system, finding ways to fund climate transition research and technologies, calculate financial risk from new environmental security trends, and so on. It can also mean societies learning to work with governments, despite the blocks and obstacles that can exist within official services, in order to ensure that climate action moves forward.

Moreover, climate change requires better communications in the MENA region. Views on climate change are becoming more contentious. There are growing debates about the importance of this challenge compared to other priorities for the region, and about the level of resources that should be devoted to the transition. Moreover, climate is tied to other tense topics, such as migration and burden sharing. In time, MENA countries will need to develop traditional and social media campaigns and narratives that influence the public discourse on climate transition. They will need to harmonize their narratives with their actions, to avoid accusations of hypocrisy. And they will need to convince their populations and the leaders of their economies to make important changes, even if research remains ongoing about how exactly climate relates to a number of contemporary challenges.

Finally, climate change will affect international relations within the MENA region and beyond. And while in some instances the risk of contention over scarce resources is increasing, the changing dynamics in the context of climate change also offer a window of opportunity. To make use of this opportunity, governments will need to figure out how to identify entry points for cooperation, 'win-win' opportunities, and incentives for collaboration. Some low-hanging fruit for cooperation might be intensified trade in foodstuffs as well as energy-water-exchange partnerships that exemplify regional synergies. Beyond states, governments may also need to work with new and different actors. For example, the role that religious authorities in MENA might play in climate transition remains open for discussion.

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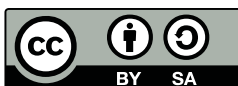
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