Atlantic Council
GEOECONOMICS CENTER

ISSUE BRIEF

The Rising National Security Threats from Climate Change in the Mediterranean Region

APRIL 2022 KATERINA SOKOU

Known as Mare Nostrum ("Our Sea") at the height of the Roman Empire, the Mediterranean Sea has facilitated trade and cultural exchanges for centuries and shaped its surrounding lands into a distinct region. A crossroads for civilizations,[1] its coastal environment has served as a constant feature for the diverse peoples around it to forge a common heritage and a distinct way of life that has resulted in similar traditions and values. To this day, the region is characterized by major flows of people, intense trade in goods and services, and, increasingly, environmental risks that also raise important security questions.

The Mediterranean region is shaped by its own complexity: it is far from homogeneous in terms of climate, environment, or culture.[2] And the twenty-one nations that border the Mediterranean Sea have significant social, economic, and political contrasts.[3] As the United Nations' 2020 report, *State of the Environment and Development in the Mediterranean,* notes, "throughout the past decade, gaps have persisted between Northern Mediterranean Countries (NMCs) and Southern and Eastern Mediterranean Countries (SEMCs) in terms of demographic dynamics, human development, access to natural resources and environmental protection."[4]

1 Katerina Sokou, "Treat the Mediterranean Like the Center of the World Again. Europe's Climate Security Depends on It." *New Atlanticist*, Atlantic Council, January 13, 2022, https://www.atlanticcouncil.org/blogs/new-atlanticist/treat-the-mediterranean-like-the-center-of-the-world-again-europes-climate-security-depends-on-it/.

2 Wolfgang Cramer, Joël Guiot, and Katarzyna Marini, eds., *Climate and Environmental Change in the Mediterranean Basin – Current Situation and Risks for the Future*, First Mediterranean Assessment Report (MAR1), MedECC (Mediterranean Experts on Climate and environmental Change), 2020, 632, https://www.medecc.org/first-mediterranean-assessment-report-mar1/.

3 The countries that are part of the Mediterranean region are all riparian states: Albania, Algeria, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Monaco, Montenegro, Morocco, Slovenia, Spain, Syria, Tunisia, and Turkey.

4 United Nations Environment Programme, *State of the Environment and Development in the Mediterranean*, United Nations, 2020, https://planbleu.org/en/soed-2020-state-of-environment-and-development-in-mediterranean/.

Locals evacuate the area with their animals as a wildfire rages in the suburb of Thrakomakedones, north of Athens, Greece, August 7, 2021. REUTERS/Giorgos Moutafis

Yet as coastal ecosystems, they are all facing increased environmental risks and impacts due to climate change: rising sea levels, global warming, and a heightened prevalence and intensity of major weather events are all predicted to significantly impact coastal nations, raising the urgency for climate change adaptation and resilience.[5]

Higher temperatures are already affecting the Mediterranean region 20 percent more than the world average and are projected to continue to do so in the future too.[6]

Prolonged heat waves will also have an outsized impact on the Mediterranean region. Risk of heat stress within the European population is expected to increase by 4 percent annually and could swell to 20 to 48 percent by 2050.[7] Forest fires will affect an increasing area in the Mediterranean region, projected to be 40 to 100 percent bigger compared to recent levels.[8]

Precipitation, meanwhile, is projected to be reduced by 10 to 15 percent, which will increase current water short-

5 Sokou, "Treat the Mediterranean."

6 While the average air temperature worldwide has increased by about 1.1 degrees Celsius since pre-industrial times, Mediterranean temperatures are 1.5 degrees Celsius higher, according to the United Nations' 2020 report, *State of the Environment and Development in the Mediterranean*. High-resolution climate simulations project that Mediterranean temperatures will rise 2.2 degrees Celsius by 2040, as future regional average warming is projected to surpass the global average by 20 percent per year, and 50 percent in the summer. See, "Climate Change in the Mediterranean," United Nations Environment Programme, accessed April 1, 2022, https://www.unep.org/unepmap/resources/factsheets/climate-change.

7 Cramer, Guiot, and Marini, eds., *Climate and Environmental Change*.

8 Marco Turco et al., "Exacerbated Fires in Mediterranean Europe Due to Anthropogenic Warming Projected with Non-Stationary Climate-Fire Models," *Nature Communications* 9, 3821 (2018), https://doi.org/10.1038/s41467-018-06358-z.

ages and decrease agricultural productivity.[9] Similarly, demand for water is projected to double, or possibly triple, by 2050, while water resources remain limited and unevenly distributed.[10]

At the same time, coastal zones will face erosion, flooding, and the salinization of river deltas and aquifers. Finally, warming of the sea surface will also continue this century, by 1 to 4 degrees Celsius, depending on the greenhouse gas emissions scenario.

These climate impacts also have socioeconomic implications for the economies of Mediterranean countries. As the independent network of Mediterranean Experts on Climate and environmental Change (MedECC) notes, "the expected extreme climate conditions and pollution of the Mediterranean are likely to result in economic vulnerabilities and risks of higher intensity than in other European regions."[11]

According to the most recent Intergovernmental Panel on Climate Change (IPCC) report, the Mediterranean region is already experiencing increasingly adverse impacts of climate change on the availability of water and food production, including on animal productivity and fisheries yield, which is damaging key economic sectors. Similarly, climate change is impacting the health and well-being of populations, especially as it relates to heat and malnutrition.[12]

Populations in coastal areas have continued to increase at unsustainable rates over the last decade.[13] These growing urban populations will likely face severe droughts, with the number of people affected increasing as the temperature rises.[14]

The economic costs of droughts could exceed the costs of earthquakes or floods. Food security is a particular threat, as the projected increase in drought events will affect the agricultural sector in the Mediterranean region, especially wheat exports and livestock production. In combination with growing populations, these impacts may exacerbate the risk of food insecurity.[15]

At the same time, extreme weather events such as flash-floods may affect agriculture, tourism, and industry, while sea level rise coupled with changing storm features is likely to seriously impact port operations. Likewise, warming in combination with overfishing may cause more than 20 percent of exploited fish and marine invertebrates to go locally extinct by 2050.[16]

The economic risk is particularly high for tourism. Climate change is putting a strain on Mediterranean tourism, which is the region's most important industry. Tourism's contribution to GDP has risen by 60 percent in the past twenty years; it is highest in Malta, Montenegro, Greece, and Morocco and is a big employer throughout the region. As the number of tourists visiting the Mediterranean region has doubled since 1995, reaching 360 million in 2017, this creates its own strain on natural resources, including freshwater availability.

The hotter and drier summers projected for the Mediterranean region may have a significant impact on tourism as they affect the comfort level of tourists, while the projected sea level rise and coastal erosion may also threaten the region's major tourist attractions.[17] In the summer of 2021, while Southern Europe experienced its worst heat wave in almost three decades, the IPCC published a report which

9 According to *Climate and Environmental Change in the Mediterranean Basin – Current Situation and Risks for the Future*, the southern countries, in particular, will experience longer dry spells, while in Southern Europe rainfall will be reduced by up to 30 percent.

10 More than 70 percent of the renewable water resources of the Mediterranean region are found in the north, even as demand is projected to grow more in the south and east. Some scenarios project that half of the Mediterranean countries, mostly in the south and the east, will be unable to cover irrigation water demand by the end of this century. See, Cramer, Guiot, and Marini, eds., *Climate and Environmental Change*, Section 3.1.5.2, 250; and *State of the Environment and Development in the Mediterranean*, United Nations Environment Programme (UNEP/MAP), 2020, 185, https://planbleu.org/en/soed-2020-state-of-environment-and-development-in-mediterranean/.

11 Cramer, Guiot, and Marini, eds., *Climate and Environmental Change*.

12 Hans-O. Pörtner et al., *Climate Change 2022: Impacts, Adaptation and Vulnerability*, Working Group II contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, In Press, 11.

13 United Nations Environment Programme, *State of the Environment.*

14 United Nations Environment Programme, *State of the Environment,* Section 3.1.4.1.

15 United Nations Environment Programme, *State of the Environment,* Section 5.1.1.3.

16 United Nations Environment Programme, *State of the Environment*, 45.

17 United Nations Environment Programme, *State of the Environment.*

suggested that once-in-fifty-year heat waves are now likely every decade.[18]

Yet the danger that climate change presents to the economic prospects of the Mediterranean countries should their shores no longer be hospitable to tourism is just beginning to be assessed. MedECC estimates that Northern Mediterranean regions may experience climate-induced tourism revenue declines of up to 0.45 percent of GDP per year by 2100.[19]

The potential economic cost of climate change is wider. In a 2017 sectoral report, Moody's noted that climate change will increasingly pose credit challenges for European cities and regions as they face a growing likelihood of sudden climate shocks that will test city governments' adaptability and could alter their economic and financial strength—both essential components of their credit profiles. The credit rating agency noted that droughts and wildfires are a concern for Southern European cities, such as Lisbon and Athens, as more than 30 percent of their urban areas face the risk of forest fires and their dry spells are projected to become more than sixteen days longer than what they used to be (in 2071–2100, compared to 1971–2000).[20]

Climate Change As a Geopolitical Challenge

The impacts of climate change extend way beyond the economy. As MedECC notes, climate change is a risk to human security as it undermines livelihoods and indirectly influences violent conflict.[21] Global warming will be particularly severe in the Mediterranean region and will put a strain on infrastructure and food systems, increasing the risk of instability. At the same time, the projected population growth in the east and south is predicted to add to migration pressures, which may contribute to existing geopolitical tensions.

In its first National Intelligence Estimate on climate change, the US National Intelligence Council (NIC) warns that challenges directly related to climate change will affect all countries, both developed and developing. In fact, the report cites greater demand for climate-related aid and humanitarian relief, as well as for financing and technology assistance—and it notes the UN estimate that developing countries will require more than $300 billion in annual investment by 2030 to adapt.[22]

The NIC sees heightened geopolitical tensions over the climate response and the race to "dominate" the new energy transition technologies. It projects that up to 2040, geopolitical tensions will grow as countries argue about how to reduce greenhouse gas emissions. At the same time, the financial needs of the developed world will also grow as the physical impacts of climate change intensify. The NIC report also predicts growing competition over minerals and technologies, and the use of "contentious" economic tools by countries to advance their interests.

At the same time, the NIC report warns that cross-border migration that is at least partly attributed to climate impacts may exacerbate geopolitical flash points—and it projects a heightened need to deal with migration pressures. The report notes that cross-border migration will likely increase as climate impacts "put added stress on internally displaced populations already struggling under poor governance, violent conflict, and environmental degradation."[23] The NIC report warns that such migration may contribute to instability "when it upsets socioeconomic, political, and demographic dynamics," straining ties between originating and receiving countries.[24]

More widely, the NIC report predicts that the increasing impacts of climate change on the environment will exacerbate cross-border geopolitical tensions. Competition over natural resources is a key concern—in particular, conflict

18 Jake Spring, "Once-in-50-Year Heat Waves Now Happening Every Decade—U.N. Climate Report," Reuters, August 9, 2021, https://www.reuters.com/business/environment/once-in-50-year-heat-waves-now-happening-every-decade-un-climate-report-2021-08-09/.

19 Wolfgang Cramer, Joël Guiot, and Katarzyna Marini, eds., *Climate and Environmental Change in the Mediterranean Basin – Current Situation and Risks for the Future*, First Mediterranean Assessment Report, Summary for Policymakers, MedECC (Mediterranean Experts on Climate and environmental Change), 2020, Section 5.1.2, 27, http://www.medecc.org/wp-content/uploads/2021/05/MedECC_MAR1_SPM_ENG.pdf.

20 Moody's, *Climate Change Will Pose Increasing Credit Risks for Cities*, Sector In-Depth, Regional & Local Governments – Europe, December 12, 2017, https://www.moodys.com/login?ReturnUrl=http%3a%2f%2fwww.moodys.com%2fresearchdocumentcontentpage.aspx%3f%26docid%3dPBC_1098303.

21 Cramer, Guiot, and Marini, eds., *Climate and Environmental Change*.

22 Office of the Director of National Intelligence, *Climate Change and International Responses Increasing Challenges to US National Security Through 2040*, National Intelligence Estimate on Climate Change, October 21, 2021, 6, https://www.dni.gov/index.php/newsroom/reports-publications/reports-publications-2021/item/2253-national-intelligence-estimate-on-climate-change.

23 Office of the Director of National Intelligence, *Climate Change and International Responses.*

24 Ibid.

over water due to increased water insecurity. One of the areas identified as high risk is the Middle East and North Africa (MENA), where about 60 percent of surface water resources are transboundary.[25] This focus is in line with a MedECC warning that the MENA region's major river basins (Nile, Jordan, Tigris, and Euphrates) will face a strong increase in demand for water due to demographic pressures, industrialization, and urbanization. Coupled with the impacts of climate change, MedECC also warns that these changes may increase insecurity internationally, as **water insecurity may lead to conflict, which in turn may increase migration pressures toward the Mediterranean region.**[26]

Finally, **developing countries** will experience the most acute physical impacts of climate change in the longer term, requiring more resources from the United States on a diplomatic, economic, humanitarian, and military level. **Given their inability to adapt due to a lack of adequate resources, the NIC notes that climate change "will increase the potential for instability and possibly internal conflict in these countries."**[27]

One of the two most vulnerable areas identified by the NIC is neighboring some Mediterranean countries. The NIC report identifies **a regional arc of instability in Central Africa**, increasing the need for the United States and its allies "to provide humanitarian aid, settle disputes, or accept migrants." A projected decline of fossil fuel revenue would even strain the finances of Middle Eastern countries that rely on fossil fuel exports, which will also be severely affected by climate change as very high heat and extended droughts are expected to require more resources for adaptation.

The relationship between climate, migration, and conflict is complex. While acknowledging this reality, MedECC notes that climate change is likely to act as a threat multiplier in the MENA region, and is likely to affect interstate relations.[28] **It also notes studies that suggest migration in the Mediterranean region may actually be toward regions facing higher environmental risk due to the rapid urbanization trend that is evident in these regions, especially in the south and the east**—and underlines the need to prepare and adapt infrastructure to sustain and protect migrants in their destinations.

Climate Adaptation and Resilient Development As Matters of National Security

In its latest report, the IPCC notes that it has very high confidence that climate change "is a threat to human well-being and planetary health"—and warns that any more delays to take truly global action "will miss a brief and rapidly closing window of opportunity to secure a livable and sustainable future for all."[29]

Yet despite the high confidence of the scientific community in the systemic nature of climate change, and for many of its direct impacts, its impact on national security interests is not as easy to map. In its inaugural report, the NIC notes that it has low to moderate confidence in its own predictions, given the complex dimensions of decision-making and the difficulty in connecting weather, climate, and socio-political models.[30]

In addressing the systemic challenges that climate change poses to the world, national security establishments should heed environmental experts' advice and rethink global supply chains, food systems, and economic interdependencies, rather than only focusing on their national climate plans.[31] This is key to accounting for the future threats to national security, given the prediction that there will be growing cross-border risks within the energy, water, and food sectors.[32]

Despite their advantages regarding capabilities, the United States and its partners in the developed world face increasingly costly challenges that will require a concerted effort to succeed in reducing emissions and capping climate warming.[33] Even in the most resilient developed countries that have ample access to resources to adapt to climate

25 Ibid.
26 Cramer, Guiot, and Marini, eds., *Climate and Environmental Change*, 518.
27 Office of the Director of National Intelligence, *Climate Change and International Responses.*
28 Cramer, Guiot, and Marini, eds., *Climate and Environmental Change*, 518.
29 Hans-O. Pörtner et al., *Climate Change 2022*, 35.
30 Office of the Director of National Intelligence, *Climate Change and International Responses*, ii.
31 Sokou, "Treat the Mediterranean."
32 Hans-O. Pörtner et al., *Climate Change 2022*, 19.
33 Office of the Director of National Intelligence, *Climate Change and International Responses*.

Damaged cars are seen following flash floods at Marousi suburb, near Athens, Greece, July 26, 2018. REUTERS/Costas Baltas

change, this transition will not be easy. Climate impacts, including excessive heat, extreme storms, and flooding, will become more costly, require military shifts, and increase the need for humanitarian assistance and disaster relief operations.

The national security risks posed by climate change, both systemic and country specific, need to be assessed in the context of each nation's national security strategy. For the Mediterranean countries that face many similar challenges, this should include an assessment of the economic impacts of climate change to also be able to account for the potential geopolitical flash points in a region that has historically been one of the most interdependent in the world.

A good place to start on a national level would be to replicate the US Climate Security Advisory Council—a partnership between the federal science community and the NIC which was established by Congress to anticipate how climate change will impact US national security interests. As regards EU security interests, a comprehensive approach that includes the whole Mediterranean region would help identify the impacts of climate change. The EU has a good base from which to start in the UN Environment Programme/Mediterranean Action Plan (UNEP/MAP), which provides a comprehensive assessment of the regional environment and state of development.

Given the inequalities in resilience, adaptation, and prevention capacities among Mediterranean nations to deal

with the impacts of climate change, the EU should focus its development assistance to strengthen the mitigation and adaptation capacity of its non-EU Mediterranean neighbors. Contrary to the funds available to EU countries, the resources available to non-EU riparian states are limited even as their vulnerability to the impacts of climate change is higher. As the IPCC report notes, across sectors and regions, the most vulnerable people and systems are disproportionately affected by climate change.[34] And when climate hazards are combined with high vulnerability, climate change contributes to humanitarian crises, with subsequent displacement and involuntary migration that lead to regional instability.

The United States and the EU should also consider a concerted effort to promote investment that supports climate-resilient development, access to appropriate technology and rapidly scalable finance, and capacity building at all levels—in government, civil society, and the private sector.[35] Such a transatlantic effort would facilitate the goal of climate-resilient development for both human systems and ecosystems, including by addressing financial, governance, institutional, and policy constraints.[36]

As is the case within the EU, this effort should include supporting energy transition projects in a region largely dependent on hydrocarbons but with a massive potential in renewable energy.[37] Energy transition and integration of renewable energies in the energy mix would have significant economic and geopolitical benefits for the Mediterranean region. According to MedECC, **by developing improved energy efficiency and deploying renewable energies at a greater scale, "the entire Mediterranean region can reduce tensions on energy security for importing countries, improve opportunities for exporting ones and reduce energy costs and environmental damage for the whole region.**

Embarking on an energy transition path will also help improve social welfare and contribute to job creation, among other positive externalities."[38]

At the same time, expanded markets for advanced technologies could be driven by demand for investments in adaptation technologies that manage water stress.[39] Useful advanced technologies could include water storage and reuse systems, such as integrated circular water management solutions and wastewater treatment, but also desalination.

All this does not just make good economic or even environmental sense, it is critically important for Europe's security. **As a strategic conduit between the Middle East, Africa, and Europe that is intrinsically linked to transatlantic security, the Mediterranean region should be a priority for NATO too, as climate change may accentuate the challenges of increased geopolitical competition, instability, and uncontrolled migration.**[40]

Putting the climate crisis at the heart of national security analysis is a key step in anticipating its impacts not just on the physical environment, but also on the economy and the geopolitical landscape. For any of the countries of the Mediterranean region, and indeed for the EU, this should include an analysis of the climate impacts throughout the region. And in parallel with its ambitious Climate Action Plan to limit global warming to 1.5 degrees Celsius, the EU should adjust its foreign policy, development aid, and security policy for plan B: a not-too-distant scenario where it will have to face the geopolitical and security implications of the world missing this target—a prospect that is even closer for the Mediterranean region given it is warming faster than average.

Greece: A Case Study of High Stakes and Opportunities

In Greece, the summer of 2021 offered an example of the climate-related challenges ahead even as the country's tourism sector posted a recovery. Tourism revenues in 2021 more than doubled compared to 2020—even though, at €10 billion, they were well short of the record-breaking €18 billion of 2019, before the COVID-19 pandemic brought global

34 Hans-O. Pörtner et al., *Climate Change 2022*, 7.

35 Hans-O. Pörtner et al., *Climate Change 2022*, 35.

36 Hans-O. Pörtner et al., *Climate Change 2022*, 33.

37 Sokou, "Treat the Mediterranean."

38 Cramer, Guiot, and Marini, eds., *Climate and Environmental Change*, 28.

39 Office of the Director of National Intelligence, *Climate Change and International Responses*, 10.

40 Ambassador (Ret.) Alexander R. Vershbow and Lauren M. Speranza, *More in the Med: How NATO Can Refocus Its Efforts in the South and Italy Can Lead the Charge*, *Scowcroft Center for Strategy and Security*, *Atlantic Council*, 2019, https://atlanticcouncil.org/wp-content/uploads/2019/10/More_in_the_Med.pdf.

A firefighting plane drops water over a fire near holiday homes in Costa village in the Argolida region, in Southeastern Greece during a developing wild fire, July 20, 2015. Dozens of people were evacuated as firefighters fought the fire, which broke out on Monday afternoon in Panorama in Costa village at a forested area where dozens of summer houses are located, according to local media. REUTERS/Yannis Behrakis

tourism to a standstill.[41] For a country that still bears the scars of a decade-long financial crisis and generates a fifth of its GDP from tourism, the pandemic was a major setback.

Yet the pandemic may prove to be a mere blip compared to the longer-term impacts of climate change on one of Greece's biggest industries. Even as tourists were back seeking a return to the pleasures of travel and reconnecting with nature, the impacts of climate change were everywhere around them: In record high temperatures that made physical activity outdoors a challenge, in the smoke from the wildfires burning around Athens that hid the sun in the Aegean, even in the jellyfish that made a rare appearance on the beaches of the popular island of Mykonos as warmer sea temperatures brought them close to shore.

Rising temperatures and more frequent heat waves are likely to negatively impact tourism during the summer sea-

41 Reuters staff, "Greece Sees 2021 Tourism Recovering After Strong Jan-Aug – Minister," Reuters, November 14, 2021, https://www.reuters.com/article/greece-economy-tourism-idUSL8N2S5096.

son, especially as it is oriented toward outdoor activities. Even 1.5 degrees Celsius of global warming could directly impact tourism: Cyprus and Greece may face a decrease of 8 percent and 2 percent in overnight stays, respectively.[42] As the rest of the European region is projected to have marginal positive changes as a result of milder climate warming and making better use of the shoulder season, this projection underlines the need for all countries, but especially Greece and Cyprus, to expand their tourism season. Moody's has warned that additional increases in the frequency and severity of climate events could hurt Greece's tourism industry. In a sector comment on August 10, 2021, the credit rating agency noted that even as wildfire-related costs are "manageable," the wildfires still raging at the time "highlighted Greece's vulnerability to climate change." More specifically, it deemed that "the wildfires are indicative of the credit risks from climate change," which it captured in its "moderately negative" environmental issuer profile score for Greece.[43] Hence, the economic risks from climate change weigh on Greece's credit rating, raising the prospect of another financial crisis as the country still tries to manage one of the world's largest public debts.

Moody's estimates that environmental damage and the possibility of property tax bases decreasing as a result of the subsequent fall in the value of properties also pose longer-term credit difficulties for local governments. More specifically, the disruption triggered by wildfires, including water and power outages, poor air quality, and road closures, will likely affect tourism, an issue for the credit of local governments in each country.[44] The credit strength of Athens, in particular, is sensitive to the impact of climate change. As the city is likely to continue facing extreme heat waves and average summer temperatures are expected to increase by 2 degrees Celsius between 2021 and 2050, Moody's notes the potential impact on the city's economic activity.[45] According to the city's Climate Action Plan, revenues of tourism-related businesses, including restaurants and shopping centers, typically fall by around 10 percent during heat waves. Moody's warns that if heat waves were to lead to lower tourism revenues, this would "negatively impact the city's overall economic strength," which is one of the factors that underpin its ratings—meaning that Athens would face the risk of a downgrade.[46]

Indeed, the NIC identifies Greece and Cyprus as the most vulnerable to climate change among the EU member states, which it rates by the level of exposure and lack of adaptive capacity.[47] This projection underlines the urgent need for Greece to make the best use of the emergency financial support from European institutions and the NextGenerationEU fund. Greece is one of the biggest beneficiaries as a percentage of GDP of the European Recovery Fund (ERF). It plans to use the sizable funding for its national COVID-19 recovery plan to transform its economy and build resilience to climate change. Its Recovery and Resilience Plan, dubbed Greece 2.0, is focused on the energy transition, while its 2021 climate bill sets the road map for achieving carbon neutrality by 2050, in line with the EU's climate goals.

A key part of this plan is focused on mitigation efforts that contribute to slowing the rate of global warming. In his COP26 speech on November 1, 2021, Greek Prime Minister Kyriakos Mitsotakis committed to a fast transition to low-carbon electrification, aiming for Greece to become one of the main generators of offshore wind production in the Mediterranean region by installing a base of 2 gigawatts (GW) by 2030, and for the country to also focus on pumped-storage hydroelectricity, taking advantage of its unique geomorphology. He also announced that Greece will adopt a new strategy for tourist destinations, with a goal of eliminating more than 10 million tons of CO_2 by making the Greek islands 100 percent green and sustainable.[48]

Despite the formidable task ahead and its high vulnerability, Greece is starting the transition from a solid foundation. In recent years, Greece has become one of the ten biggest producers of wind and solar energy in the world as the

42 Based on research quantifying the effect of climate change on future overnights stays. Also see Cramer, Guiot, and Marini, eds., *Climate and Environmental Change*, 479.

43 Moody's, *Greece: Wildfire-related costs are manageable, but events highlight vulnerability to climate change,* Sector Comment, Environmental Risks – Greece, August 10, 2021, https://www.moodys.com/credit-ratings/greece-government-of-credit-rating-348330.

44 Moody's, *Climate Change Will Pose Increasing Credit Risks for Cities*.

45 Ibid.

46 Ibid.

47 Office of the Director of National Intelligence, *Climate Change and International Responses*, 12.

48 Greek Republic, Prime Minister, "Greek Prime Minister Kyriakos Mitsotakis' Speech at the COP26 World Leaders Summit," November 1, 2021, https://primeminister.gr/en/2021/11/01/27841.

Greek energy mix has shifted from lignite to natural gas and renewable energy sources. In 2020, its per capita production of green electricity was the fifth largest in the world, at more than 30 percent of its total electricity production.[49]. And despite the risks of climate change, MedECC calculates that tourism has the potential to become more resilient than the overall economy in the Mediterranean region. Sustainable tourism, in particular, could mitigate the negative economic impacts of climate change, as adaptation and mitigation are key to an effective response to climate change not just for tourism, but for all sectors of the economy, and especially so for large urban centers.[50]

Athens has adopted its own Resilience Strategy for 2030 and, with the support of the Atlantic Council's Adrienne Arsht-Rockefeller Foundation Resilience Center, which has a mission to reach 1 billion people with resilience solutions by 2030, is part of a first wave of cities that aim to build their resilience in the face of climate change. With Athens facing some of the toughest climate conditions as relates to heat among EU cities, it is focused on the most vulnerable population groups, which are also projected to be disproportionately affected by heat stress.[51]

As the city's first "chief heat officer" Eleni Myrivili put it, Athens is an "interesting pilot program" for the region, to try different measures and see what works—and what may be replicated to protect the most vulnerable from future shocks and stresses that the regions' urban centers will face as a result of climate change.[52]

Natural Disasters Highlight the Need for International Cooperation

Greek emergency response teams have been struggling to contain the summer wildfires that are becoming increasingly frequent and destructive. During last summer's record-long heat wave, a total of thirteen megafires decimated more than 287,000 acres of forest, making them Greece's worst wildfires in decades. Deeming the wildfires a natural disaster, Mitsotakis, Greece's prime minister, created a new Ministry on Climate and Civil Protection to confront the challenge of climate change.

At the same time, international assistance was key to helping put the fires out. Greece received support through the EU Civil Protection Mechanism: nine planes, two hundred vehicles, and one thousand firefighters from more than ten EU member states. The United States provided an aircraft and an assessment team to assist in post-fire recovery. Partners willing to help included other Mediterranean countries facing similar challenges: Even as it was facing its own wildfires, Israel provided firefighters and two firefighting planes to help extinguish the wildfires in Greece.[53] Turkey also expressed its support to Greece during that difficult time, with the two sides reportedly agreeing on mutual assistance on battling wildfires.[54] Disaster response teams have helped bring Greece and Turkey closer in the past after powerful earthquakes hit both countries in 1999, leading to a breakthrough in relations described as "earthquake diplomacy." Climate change may present more opportunities for both countries to offer each other disaster response assistance in the future.

Regional cooperation, in particular, is key to building capacity to suppress wildfires. And even as such events tend to happen over the summer season testing each nation's capacity at the same time, sharing resources when possible may create important efficiencies. The countries of the Mediterranean region would also benefit from capacity building in organizational disaster management to handle acute crises. Greece should deepen its ties with other Mediterranean countries, including its trilateral partnerships with Israel and Cyprus, and Egypt and Cyprus, but also with the countries of the Arab Gulf, to focus on technological cooperation to promote energy transition in the region and address the impacts of climate change.

---

49 REN21, *Renewables 2021 Global Status Report*, 2021, https://www.ren21.net/gsr-2021/.

50 Cramer, Guiot, and Marini, eds., *Climate and Environmental Change*, 479.

51 An Atlantic Council report on the economic and human dimensions of climate change in the United States also revealed how heat stress disproportionately affects specific regions, racial groups, and economic sectors. See, *Extreme Heat: The Economic and Social Consequences for the United States*, *Adrienne Arsht–Rockefeller Foundation Resilience Center*, *Atlantic Council*, August 2021, https://www.atlanticcouncil.org/in-depth-research-reports/report/extreme-heat-the-economic-and-social-consequences-for-the-united-states/.

52 Jason Horowitz, "Athens Is Only Getting Hotter. Its New 'Chief Heat Officer' Hopes to Cool It Down," *New York Times*, August 21, 2021, (updated October 29, 2021), https://www.nytimes.com/2021/08/21/world/europe/athens-is-only-getting-hotter-its-new-chief-heat-officer-hopes-to-cool-it-down.html.

53 Aryeh Savir, Tazpit News Agency, "Israel Sends Further Aid to Fires Plagued Greece," *Jewish Press*, August 10, 2021, https://www.jewishpress.com/news/israel/israel-sends-further-aid-to-fires-plagued-greece/2021/08/10/.

54 "Turkey expresses support for Greece over fires," *Kathimerini*, August 6, 2021, https://www.ekathimerini.com/news/1165845/turkey-expresses-support-for-greece-over-fires/.

U.S. Secretary of State Antony Blinken and Greece's Foreign Minister Nikos Dendias deliver remarks for the U.S.-Greece Strategic Dialogue at the State Department in Washington, U.S. October 14, 2021. REUTERS/Jonathan Ernst

In the context of Greece's relations with the United States, there is great value in increasing cooperation on disaster preparedness and, more broadly, security-related climate response capabilities, both bilaterally and in the context of NATO. These capabilities should be added to a new, more strategic mission for NATO in the Mediterranean region, which would also include a stronger focus on defense, deterrence, and containment, as Alexander R. Vershbow and Lauren M. Speranza suggest in an Atlantic Council report.[55]

In a joint statement in October 2021 on their third strategic dialogue, the United States and Greece added a new pillar to their agenda, that of "Humanitarian Challenges and Disaster Preparedness." Taking into account the long-term challenges that climate change poses, the two countries pledged to develop stronger ties to support "disaster prevention-preparedness" and "resilience building, including wildfire response and recovery"; discussed the prospect of training in the future; and agreed to start working-level consultations. [56] Over the longer term, Greece also pro-

55 Vershbow and Speranza, *More in the Med*.

56 U.S. Department of State, Joint Statement on Third United States – Greece Strategic Dialogue, Media Note, Office of the Spokesperson, October 14, 2021, https://www.state.gov/joint-statement-on-third-united-states-greece-strategic-dialogue/.

posed cooperation on soil stabilization, erosion control, and reforestation.

In its policy toward the Eastern Mediterranean, Greece has advocated for increased energy cooperation and a swift transition to renewable energy, even as it continues to explore all options to bring the region's natural gas into the rest of Europe and be part of the transit route for gas travelling from the Middle East to Europe (the so-called Southern Gas Corridor initiative). The latter is not insignificant in the context of European efforts to diversify from Russian gas, which have acquired greater geopolitical urgency following Russia's invasion of Ukraine. Greece plans to use electricity interconnectors that are able to send energy from Egypt and Israel into Europe, which will also provide a conduit to the European market for the Eastern Mediterranean's vast solar energy potential.

But even as climate change threatens Greece's economy and requires that it adapt its key infrastructure systems to account for the changing climate conditions, it is also a particular challenge given the country's geopolitical role as a frontier state for the EU. As such, Greece has seen a rise in migrants that it views as testing the limited capacity of both its major urban centers and much smaller communities of the islands where they first land. Greece was on the front line of Europe's migration crisis in 2015, when nearly 1 million people fleeing conflicts in Syria, Iraq, and Afghanistan landed on its islands.[57] And two years after thousands of migrants tried to forcibly cross over the land border into Greece from Turkey, Mitsotakis noted earlier this year that Greece had "every interest in working with Turkey to contain illegal flows of migrants and to eradicate the smuggling networks that prey on vulnerable people."[58]

As a border state, Greece is responsible for securing the borders of the EU, including preventing uncontrolled migration. Even as the direct impact of climate change on migration is hard to estimate, experts agree that its indirect impacts will be evident in economically driven migration, while weather and climate extremes will increasingly affect violent conflict between states, contributing to forced migration.[59] Managing migration pressures requires political will, building local capabilities to successfully integrate migrants, and coordination within the EU so that each member state carries a fair share of the burden.

Importantly for Greece and the EU more widely, the challenge of dealing with increased instability on their borders incentivizes adopting a systematic approach to climate mitigation and adaptation efforts that include the entire Mediterranean ecosystem.[60] **Increasing EU engagement in its Mediterranean neighborhood and beyond, in the Middle East, and in Africa, should be based on an assessment of future security challenges that include the impacts of climate change in the wider region.**

Katerina Sokou is a Nonresident Senior Fellow at the Europe Center of the Atlantic Council and the Washington DC correspondent for *SKAI TV* and Greek daily newspaper *Kathimerini*, where she is also a columnist, focusing on transatlantic relations, foreign policy and international political economy. She has covered extensively the Greek financial crisis, interviewing economists and policy-makers and providing commentary and reporting for news media in the U.S. and Europe. As a visiting scholar at George Washington University's Elliott School of International Affairs, she researched the US role in the Greek debt crisis and its impact on bilateral relations.

The author wishes to acknowledge Atlantic Council Board Member Kostas Pantazopoulos whose partnership made this project possible.

57 "Greece Says Border Forces on Alert to Avoid Repeat of 2015 Migrant Crisis," Reuters, August 19, 2021, https://www.reuters.com/world/europe/greece-says-border-forces-alert-avoid-repeat-2015-migrant-crisis-2021-08-19/#:~:text=Greece%20was%20on%20the%20frontline%20of%20Europe%27s%20migration,sought%20a%20common%20EU%20stance%20on%20the%20issue.

58 Elena Becatoros, "Greek PM 'Unapologetic' in Defending Greek Borders," AP News, September 30, 2021, https://apnews.com/article/europe-middle-east-greece-migration-athens-1014772cfd86b9722a2bc8fdc120319b.

59 Hans-O. Pörtner et al., *Climate Change 2022*, 16.

60 Sokou, "Treat the Mediterranean."

Atlantic Council

Board of Directors

CHAIRMAN
*John F.W. Rogers

EXECUTIVE CHAIRMAN EMERITUS
*James L. Jones

PRESIDENT AND CEO
*Frederick Kempe

EXECUTIVE VICE CHAIRS
*Adrienne Arsht
*Stephen J. Hadley

VICE CHAIRS
*Robert J. Abernethy
*C. Boyden Gray
*Alexander V. Mirtchev

TREASURER
*George Lund

DIRECTORS
Stéphane Abrial
Todd Achilles
*Peter Ackerman
Timothy D. Adams
*Michael Andersson
David D. Aufhauser
Barbara Barrett
Colleen Bell
Stephen Biegun
*Rafic A. Bizri
Linden P. Blue
Adam Boehler
John Bonsell
Philip M. Breedlove
Myron Brilliant
*Esther Brimmer
Richard R. Burt
*Teresa Carlson
*James E. Cartwright
John E. Chapoton
Ahmed Charai
Melanie Chen
Michael Chertoff
*George Chopivsky
Wesley K. Clark
*Helima Croft
*Ankit N. Desai
Dario Deste
*Paula J. Dobriansky
Joseph F. Dunford, Jr.
Richard Edelman
Thomas J. Egan, Jr.
Stuart E. Eizenstat
Mark T. Esper
*Michael Fisch
*Alan H. Fleischmann
Jendayi E. Frazer
Meg Gentle
Thomas H. Glocer
John B. Goodman
*Sherri W. Goodman
Murathan Günal
Frank Haun
Michael V. Hayden
Tim Holt
*Karl V. Hopkins
Ian Ihnatowycz
Mark Isakowitz
Wolfgang F. Ischinger
Deborah Lee James
*Joia M. Johnson
*Maria Pica Karp
Andre Kelleners
Brian Kelly
Henry A. Kissinger
*C. Jeffrey Knittel
Franklin D. Kramer
Laura Lane
Yann Le Pallec
Jan M. Lodal
Douglas Lute
Jane Holl Lute
William J. Lynn
Mark Machin
Mian M. Mansha
Marco Margheri
Michael Margolis
Chris Marlin
William Marron
Christian Marrone
Gerardo Mato
Timothy McBride
Erin McGrain
John M. McHugh
Eric D.K. Melby
*Judith A. Miller
Dariusz Mioduski
Michael J. Morell
*Richard Morningstar
Georgette Mosbacher
Dambisa F. Moyo
Virginia A. Mulberger
Mary Claire Murphy
Edward J. Newberry
Franco Nuschese
Joseph S. Nye
Ahmet M. Ören
Sally A. Painter
Ana I. Palacio
*Kostas Pantazopoulos
Alan Pellegrini
David H. Petraeus
W. DeVier Pierson
*Lisa Pollina
Daniel B. Poneman
*Dina H. Powell McCormick
Michael Punke
Ashraf Qazi
Thomas J. Ridge
Gary Rieschel
Lawrence Di Rita
Michael J. Rogers
Charles O. Rossotti
Harry Sachinis
C. Michael Scaparrotti
Ivan A. Schlager
Rajiv Shah
Gregg Sherrill
Ali Jehangir Siddiqui
Kris Singh
Walter Slocombe
Christopher Smith
Clifford M. Sobel
James G. Stavridis
Michael S. Steele
Richard J.A. Steele
Mary Streett
Gil Tenzer
*Frances M. Townsend
Clyde C. Tuggle
Melanne Verveer
Charles F. Wald
Michael F. Walsh
Ronald Weiser
Maciej Witucki
Neal S. Wolin
*Jenny Wood
Guang Yang
Mary C. Yates
Dov S. Zakheim

HONORARY DIRECTORS
James A. Baker, III
Ashton B. Carter
Robert M. Gates
James N. Mattis
Michael G. Mullen
Leon E. Panetta
William J. Perry
Condoleezza Rice
Horst Teltschik
William H. Webster

**Executive Committee Members*

List as of February 15, 2022

The Atlantic Council is a nonpartisan organization that promotes constructive US leadership and engagement in international affairs based on the central role of the Atlantic community in meeting today's global challenges.

Atlantic Council

1030 15th Street, NW, 12th Floor,
Washington, DC 20005

(202) 463-7226, www.AtlanticCouncil.org