

ERF Policy Brief

Climate Change in the Middle East and North Africa: Between the Repercussions of a Lived Reality and the Opportunities for a Brighter Future

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About the authors

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In a nutshell

- Air pollution menacing life in the region: *The Middle East and North Africa (MENA) region exceeds the global average of carbon dioxide emissions due to fossil fuel consumption and reliance on non-renewable energy sources, especially for high-income countries. This poses a multidimensional threat to human presence in the region.*
- Striving for renewable energy: *In recent years, some countries in the region have successfully increased their renewable energy capacity, but they are still far from the global average share of renewable energy in total energy supply. The region can capitalize on this upward progress, particularly through partnerships with the private sector.*
- Scarcity of natural resources: *As warming and rainfall patterns change, most countries in the region will see their water reserves dwindle throughout the twenty-first century. This water shortage has severely damaged the food security of most of the region's already fragile countries, causing much social unrest.*
- A set of requirements must be considered: *Policymakers must consider a range of political, financial, and technical requirements. Governments can cooperate by promoting renewable energy and investing in water infrastructure. Rich countries in the region can also provide compensation to poor countries through mechanisms such as climate finance, carbon pricing, and green bonds.*

Introduction

Although countries in the MENA region share similarities in terms of culture, language, history, and religion, there are significant disparities between high-income economies such as the GCC, low-income economies such as Yemen, lower-middle-income countries such as Algeria, Egypt, Morocco, and Tunisia, and upper-middle-income countries such as Iraq, Iran and Libya (World Bank, 2021).

Some of these countries face economic and social challenges, such as Lebanon, which is going through a financial and/or economic crisis, characterized by escalating protests due to high prices and unemployment. These are the main drivers of social unrest, and the case is similar for Algeria and Tunisia. Other countries in the region also face risks related to fragility, conflict, and violence such as Syria, Libya, Iraq and Palestine, or the indirect effects of regional conflict such as Jordan and Lebanon.

While the region is still grappling with the negative impacts of the COVID-19 pandemic, the Russian-Ukrainian war has exacerbated the situation and left the region lagging in most of the sustainable development goals (SDGs), including economic growth, gender equality, healthcare coverage, quality of education, and, especially, climate change. Many countries in the MENA region are suffering from the repercussions of climate change.

In addition to the aforementioned geopolitical challenges, countries in the region are exposed to the risks of climate change, including the risk of famine in Yemen, acute water scarcity in Morocco, Libya, Oman, and Djibouti, and desertification and land degradation in Libya, Egypt, and Djibouti. These environmental challenges could exacerbate the effect of the sea level rise.

Since 2014, the World Bank has warned that average temperatures in the MENA region will increase by four degrees Celsius by 2050, which will create multiple challenges such as food, water, and energy security, and increase economic pressures on many of their countries, which are exacerbated by inherently fragile social conditions and politics. Therefore it is becoming increasingly necessary to integrate climate action into crisis recovery efforts. In this context, we aim to focus on three main axes: atmospheric pollution, energy, and natural resources.

This policy brief discusses the main challenges associated with climate change and the opportunities that exist to implement SDG 13 (Climate Action). It also proposes some measures that need to be taken to accelerate progress in achieving this goal.

Polluted Air Threatening Life in the Region

Transport, oil, industry, and greenhouse gas emissions are major sources of air pollution and greenhouse gas emissions in the region. Because of the sometimes-weak institutional capacity to manage these problems, the air has become unbreathable in most major cities in the region, with serious public health consequences. The chaotic development of cities, industrialization, displacement, and refugee flows are also putting severe pressure on urban services and contributing to air pollution in countries in the region.

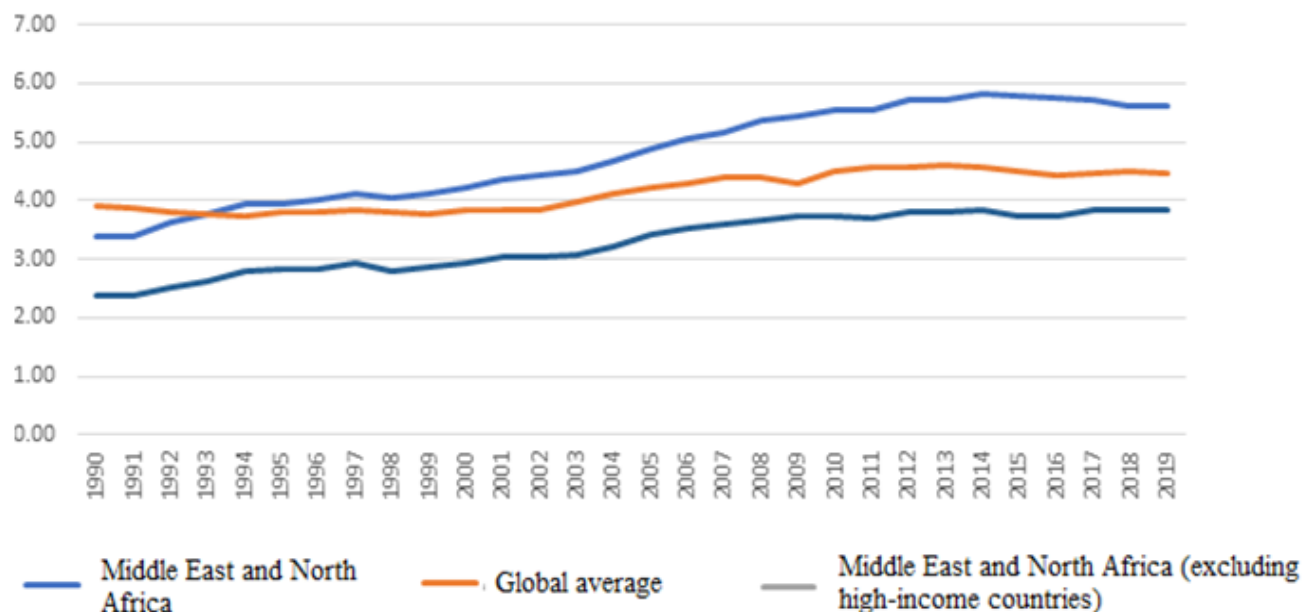
In this regard, carbon dioxide emissions can be considered one of the most important indicators of air quality, and they are also an important measure of sustainability. The main objective of sustainability is how to achieve economic growth with minimal damage and loss, which in this aspect (i.e. atmospheric pollution) is a loss that does not affect the country or region itself but goes beyond to trigger a global cry of panic that affects even human existence as a whole. Warming caused by greenhouse gases produced in the United States, China, and India is causing devastating floods in Sudan and unprecedented droughts in North African countries.

Warming is also interconnected with the sea level rise, which is expected to significantly affect the MENA region. In fact, the sea level rise is besieging the region's coastal cities and causing flooding and severe tropical storms. Given that seven percent of the region's total population lives in areas under five meters above sea level, including major urban metropolises such as Alexandria in Egypt and Basra in Iraq, the sea level rise is expected to significantly affect the MENA region (Chibani, 2022). Cyclone Gonu, which reached Oman's coast in 2007 with fierce winds and torrential rains, led to floods in Muscat and forced thousands of people to evacuate their homes. It also induced the shutting down of oil installations, resulted in water shortages, and caused heavy damage.

It is clear and expected that carbon dioxide emissions will be mainly high and exceed the global average due



Figure 1. Evolution of Carbon Dioxide Emissions (Metric Tons Per Capita) in the MENA Region and Globally



Source: World Bank, SDG Database, 2022.

to the consumption of fossil fuels and reliance on non-renewable energy sources, especially for high-income countries that are characterized by the highest carbon emissions per capita in the world within their endeavor to develop their economies and maintain a distinctive standard of life and comfort for their citizens. This explains the clear discrepancy between the general average for the MENA region and the rate of the countries of the region with medium and low income (Figure 1).

The countries of the region recorded a slight stagnation in carbon dioxide emissions after 2013 as a result of the recession in most of their economies, high environmental awareness, and the involvement of these countries in achieving the SDGs, especially SDG 13.

Energy Between Oil Depletion and Untapped Potential for Renewable Energies

The MENA region is one of the richest regions in the world in terms of fossil energy reserves, especially oil.

If exploited, its countries can increase their electricity production and reduce the current weakness of energy supply, which is a real problem given the context that demand will increase in the coming decades under the influence of demographic pressure and economic development, and because of the cooling systems that must be provided as the heat intensifies.

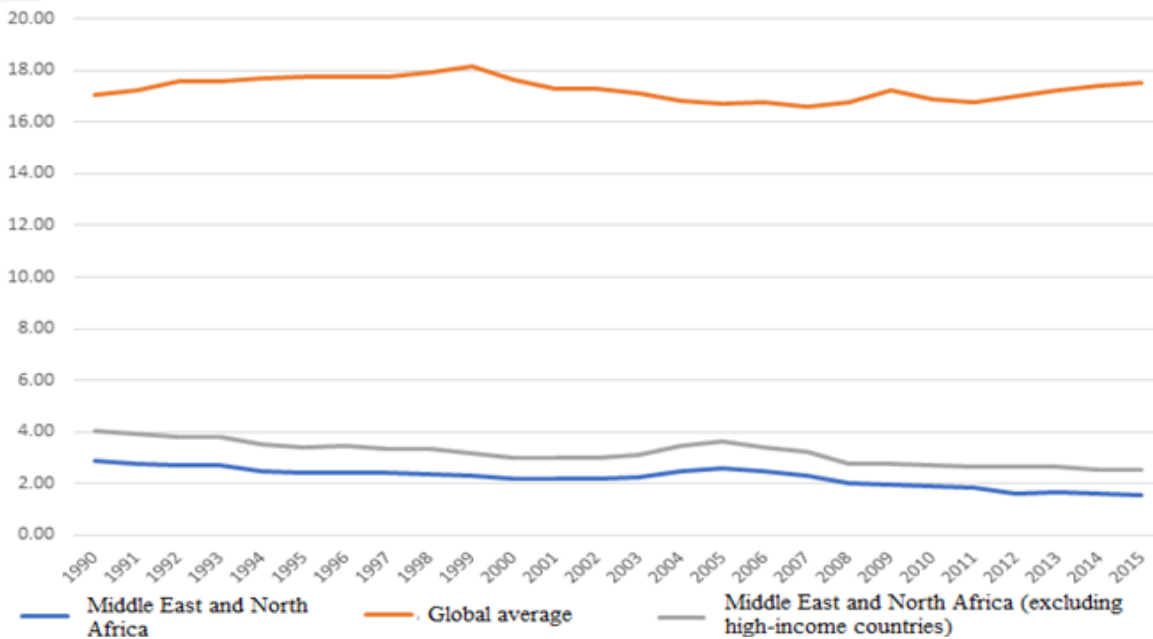
These countries are located in a region with the highest levels of solar radiation in the world (Koday, 2022). For instance, Morocco inaugurated its Solar Complex in 2016, which is the world's largest concentrated solar power plant. It has set a target of generating 52 percent of its electricity from renewable sources by 2030, with a focus on solar power. Saudi Arabia has also made significant progress in harnessing solar power in recent years. However, to date, around four percent of energy supply sources are renewable energy sources and the transition from traditional oil and gas sources to clean energy will be one of the main market opportunities in the coming years, some countries in the region have succeeded in increasing their renewable energy capacity in recent years, but they are still far from the global average share of renewable energy in total energy supply (Figure 2).

This upward progress is still in the initial stage and is a positive development that the region can continue to build on, particularly through partnerships with the private sector.

The national renewable energy action plans and nationally determined contributions adopted by countries in the region in recent years will form the cornerstone of this initiative. Through these and other processes, more ambitious goals and more innovative policies have emerged and are now forming the basis for attracting private investment, reforming energy subsidies, establishing national energy institutions, and financing renewable energies.



Figure 2. Proportion of Renewable Energies in Total Energy Supply



Source: World Bank, SDG Database, 2022

Unsustainable Management of Natural Resources Threatening the Region on Multiple Levels

The MENA region is witnessing a clear degradation of its environmental resources. Facing threats in three main areas (urban sprawl, water, and land and food), many of these countries are draining resources for human sustainability. A prolonged future drought is causing population movements and major disruptions.

In most countries in the MENA region, drinking water sources are diverted, misused, or contaminated by the discharge of hazardous products (wastewater, agricultural effluents, and other chemicals). Desertification and runaway urbanization are also causing progressive erosion of arable land. Coastal areas are also poorly managed and vulnerable to various types of pollution, and this situation threatens fragile ecosystems and biodiversity.

With warming and changing rainfall patterns, most countries in the MENA region will see their water reserves dwindle throughout the twenty-first century, with experts predicting losses of more than 15 percent for an additional two degrees Celsius. However, this number could reach 45 percent if the temperature increases by four degrees Celsius. This water shortage has severely damaged the food security of most of the region's already fragile countries, and the agricultural production that has been damaged as a result of this drastic decline in water resources is a major cause of

much social unrest. Famines and revolts of the poor, which were just news from other parts of the world, have become a reality in some countries of the region and a ghost in others.

Water scarcity also plays a multifaceted role in this region. The supply difficulties that society has to manage are also an important determinant of the spread of many infectious diseases such as diarrhea and cholera, especially in countries exposed to political and military crises such as Yemen, Iraq, and the Gaza Strip, in addition to other non-communicable diseases, which will put more and more pressure on a mostly dilapidated health sector.

The significant lack of rainfall has increased pressure on rivers and exacerbated the situation between riparian countries. The Nile River, which benefits 200 million people from 11 countries and most of whom depend entirely on the river for survival, threatens a complex and undesirable conflict between upstream and downstream countries, especially between Egypt and Ethiopia after the start of the operation of the Grand Ethiopian Renaissance Dam. This is in addition to the conflict over the Jordan River between Israel and Jordan and over the Tigris and Euphrates rivers between Turkey and Iraq, which threatens to plunge the region into water wars that may amount to military confrontations (Gueldry, 2013).

The water shortage issue in the MENA region is also intertwined with the inefficient demand management



policies and the poor water infrastructure. In fact, despite its scarcity, the region has the world's lowest water tariffs and the highest proportion of GDP (two percent) spent on public water subsidies. For instance, on average, the water sale revenue in Saudi Arabia is about USD 0.08/m³. The average sale revenue is very low in comparison to the marginal cost of water (about USD 1.09/m³). This situation questions the sustainability of the water services system in the Kingdom (Ouda, 2013). Moreover, the region has the greatest expected economic losses from climate-related water scarcity, estimated at six to 14 percent of GDP by 2050 (World Bank, 2017).

This significant pressure on resources, exacerbated by climate change and decades of mismanagement, is one of the most material reasons that could drag the region into a lot of political, social, and economic turmoil if it is not urgently addressed and shifted to more sustainable management for a less bleak future than what is currently foreseeable.

Toward Accelerating Progress on SDG 13: Climate Policies That Can Make A Difference

The achievement of climate action is intertwined with the achievement of many associated SDGs, including SDG 7, which promotes clean and affordable energy; SDG 2, which seeks to completely eradicate hunger and enhance food security; SDG 9 on reducing industrial emissions; SDG 12 on sustainable production and consumption; and SDGs 14 and 15 on the marine and terrestrial environment. This complementarity between the SDGs requires the countries of the region to consider a set of political, financial, and technical requirements in order to accelerate progress in achieving goal 13 related to climate action, as decision-makers must develop responses to mitigate and adapt to climate change according to local conditions as well as international agreements, especially the Paris Agreement. In fact, governments of the MENA countries should use a set of economic instruments that could play a crucial role in fostering mitigation and adaptation to climate change in the region, including subsidy reform, green bonds, energy efficiency standards, and carbon taxes, which were already introduced by the United Arab Emirates in 2018.

Policymakers in the region should strengthen their institutional and technical capacities to address climate change and enhance cooperation and integration in this context among the countries of the region in line with SDG 17. They should also mobilize more financing

and technology and accelerate capacity building related to climate action in the region, relying on public-private partnerships and creating an enabling environment for investment in environmentally-friendly technologies and renewable energies, including appropriate policies aimed at reducing or transforming its risks and encouraging large-scale private sector investments.

Furthermore, MENA countries can cooperate by promoting renewable energy, investing in water infrastructure, sharing knowledge and best practices, collaborating on research and development, and supporting vulnerable countries. Rich countries in the region can also provide compensation to poor countries through mechanisms such as climate finance, carbon pricing, and green bonds.

In addition to all these recommendations, the high financial cost of climate change and combating it makes local, regional, and international financial institutions key actors in this regard. In this context, the Arab Monetary Fund (2021) issued "Guidelines on how central banks deal with the effects of natural disasters and climate change on the banking system and financial stability," which included many aspects related to financial stability issues, most notably the preparation of stress tests that include the potential impact of natural disasters and climate change on the banking and insurance sectors. It also issued the study and analysis of the impact of the transition from "carbon-intensive" to low-carbon products, in an effort to monitor and assess systemic risks arising from climate change and study their sectoral impact.

The agreement during the United Nations Climate Change Conference (COP27) held in Egypt in 2022 to establish the loss and damage fund will certainly assist the region's developing countries that are particularly vulnerable to the adverse effects of climate change.

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ERF at a Glance: *The Economic Research Forum (ERF) is a regional network dedicated to promoting high-quality economic research for sustainable development in the Arab countries, Iran and Turkey. Established in 1993, ERF’s core objectives are to build a strong research capacity in the region; to encourage the production of independent, high-quality research; and to disseminate research output to a wide and diverse audience. To achieve these objectives, ERF’s portfolio of activities includes managing carefully selected regional research initiatives; providing training and mentoring to junior researchers; and disseminating the research findings through seminars, conferences and a variety of publications. The network is headquartered in Egypt but its affiliates come primarily from different countries in the region.*

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