Natural Resource Governance Institute

The Energy Dilemma Energy Transition and Regional Collaboration in the Middle East and North Africa



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This briefing is part of the Natural Resource Governance Institute's (NRGI) contribution to the just energy transition debate in the Middle East and North Africa. The content has been developed through discussions between the author, Laury Haytayan (MENA director at NRGI), and Dr. Shihab Elborai, partner at Strategy& Middle East and co-author of Arabian Gambit: The path to leadership in a shifting global energy landscape.

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Key messages

- The Middle East and North Africa (MENA) region has abundant hydrocarbon reserves as well as vast renewable energy potential, giving it a unique and profitable position in the global energy transition.
- Governments in the MENA region are strategically leveraging hydrocarbons and renewables to reduce emissions and enhance energy security.
- Cooperation between MENA countries is crucial to building an integrated energy infrastructure, boosting competitiveness, and facilitating access to global markets.
- Engaging the private sector will be vital for advancing MENA's energy transition. Governments must incentivize participation through partnerships, supportive policies and favorable investment conditions.
- Strategic policies–such as developing integrated energy infrastructure, fostering regional cooperation, investing in cutting-edge research and development, and developing human capacity–are critical for positioning the region as a leader in green energies.

01
Introduction

In recent years, resource-rich countries in the Middle East and North Africa (MENA) have played a pivotal role in global energy markets, mainly due to their abundance of oil and natural gas reserves. This has driven the economic growth of resource-rich MENA countries and established them, particularly the Gulf states, as key producers in the global energy supply chain, shaping international energy dependencies and market dynamics. With increasing pressure to put an end to the catastrophic effects of climate change, countries across the globe have been drafting strategies and plans to transition away from fossil fuel production and consumption towards green alternatives. The momentum of the energy transition has raised legitimate questions in the MENA region—especially for the countries which are the main producers of fossil fuels, whose economies depend on this energy. These concerns center around how post-oil economies will affect the future of MENA's societies and whether governments in the region will still have a role to play in a future less dependent on fossil fuels.

This briefing examines the potential of resource-rich countries in the MENA to capitalize on their natural resources and strategic placement to lead in renewable and green energies. It explores the possible benefits for MENA countries, highlights the importance of regional cooperation, and provides recommendations for achieving sustainable energy leadership in the coming decades.

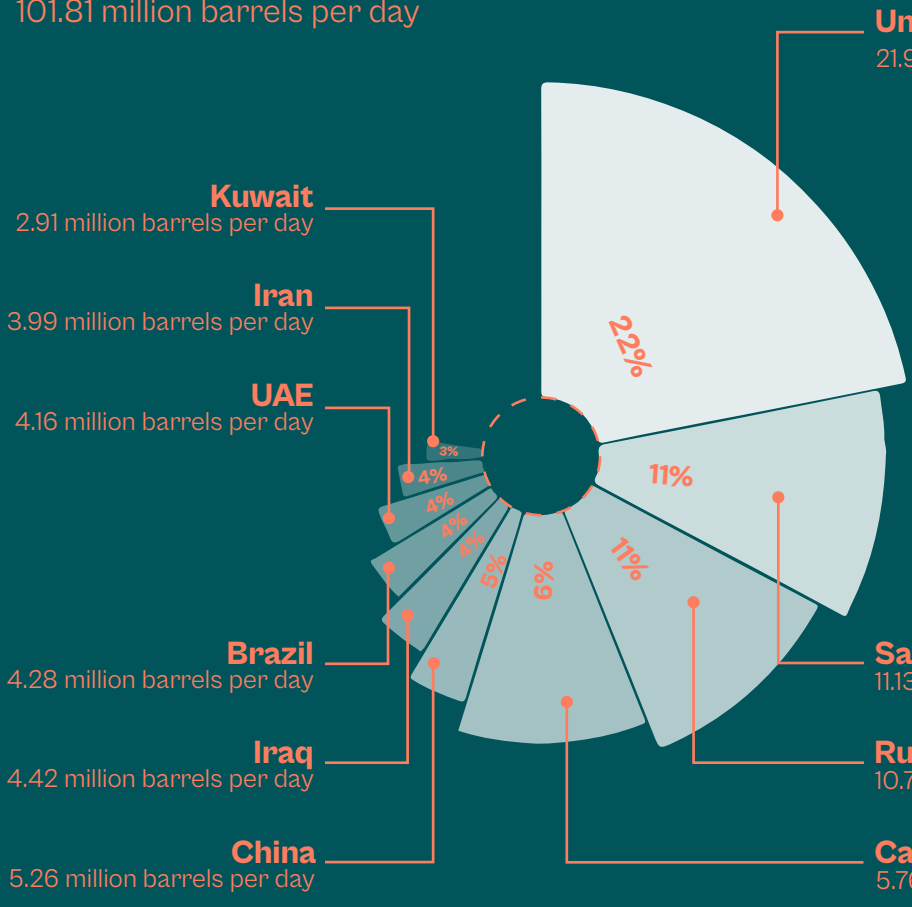
02 MENA at the crossroads of the energy transition

The MENA region's impact on global energy markets is underscored by its substantial contribution to global oil and gas production. As shown in Table 1, five MENA countries—Iran, Iraq, Kuwait, Saudi Arabia and the United Arab Emirates (UAE) —rank among the top ten oil producers worldwide, collectively supplying approximately 26 percent of the world's oil.

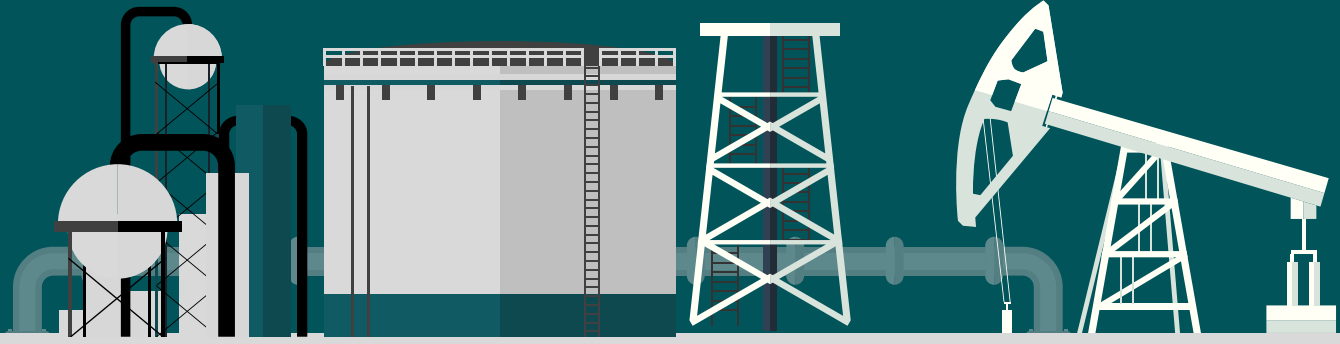
Top ten oil-producing countries in 2023



World Total
101.81 million barrels per day



Source: U.S. Energy Information Administration
https://www.eia.gov/tools/faqs/faq.php?id=709&t=6.

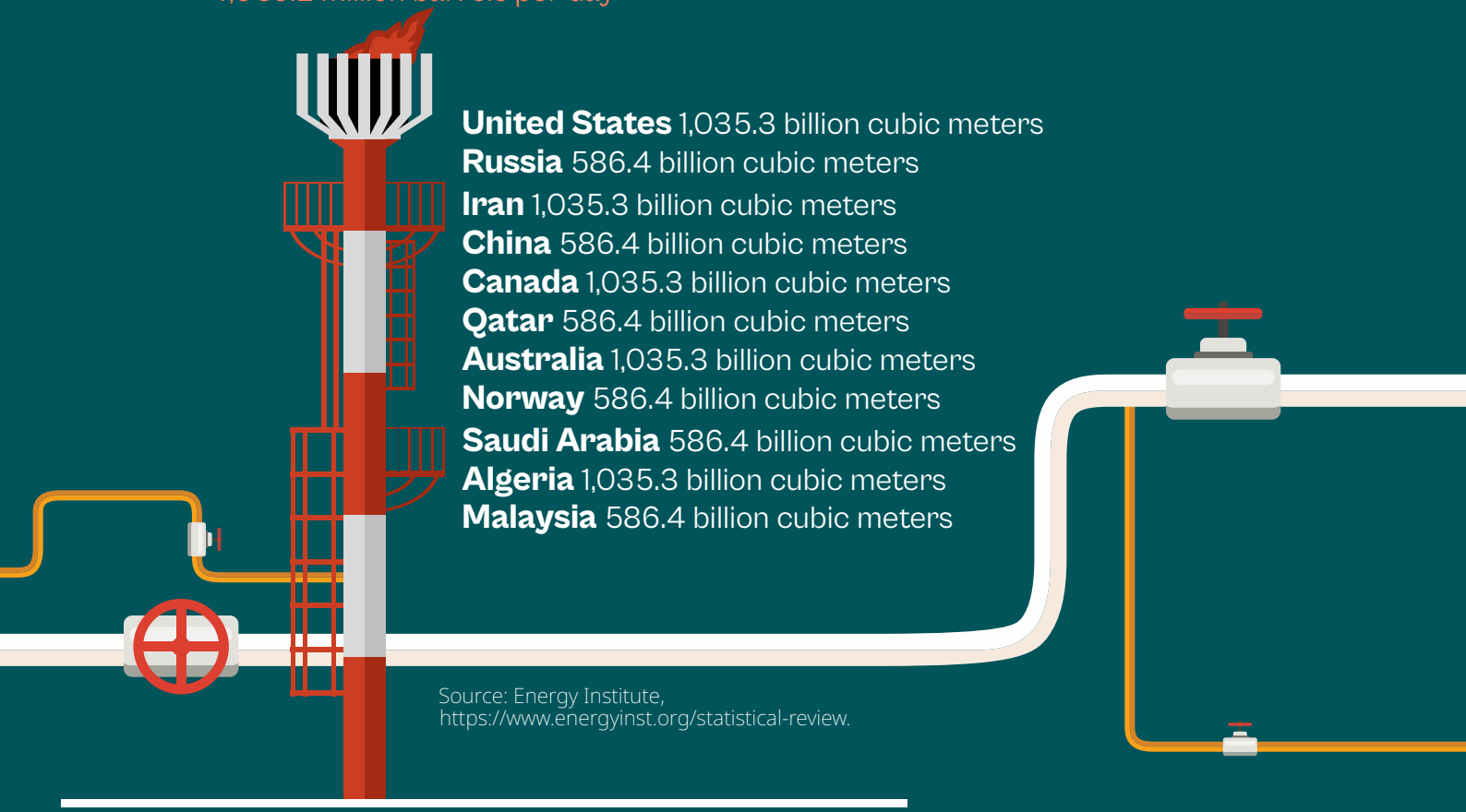


Similarly, as shown in Table 2, four MENA countries—Algeria, Iran, Qatar and Saudi Arabia—rank among the top ten natural gas producers, collectively producing around 16 percent of the global natural gas supply.



Top ten natural gas producing countries in 2023

World Total
4,059.2 million barrels per day



United States 1,035.3 billion cubic meters
Russia 586.4 billion cubic meters
Iran 1,035.3 billion cubic meters
China 586.4 billion cubic meters
Canada 1,035.3 billion cubic meters
Qatar 586.4 billion cubic meters
Australia 1,035.3 billion cubic meters
Norway 586.4 billion cubic meters
Saudi Arabia 586.4 billion cubic meters
Algeria 1,035.3 billion cubic meters
Malaysia 586.4 billion cubic meters

Source: Energy Institute, https://www.energyinst.org/statistical-review.

The global energy transition from hydrocarbons to renewable energy sources aims to combat climate change and reduce emissions, and it is redefining traditional economic and energy paradigms. Amid this shift, the MENA region stands at a crossroads. Resource-rich MENA nations face a choice: they can either lose the economic power they have held for many years, or seize the golden opportunity to emerge as global leaders in the era of clean energy. Nevertheless, this transition also brings about institutional, organizational, and financial challenges that governments in the region need to address. MENA countries must explore pathways to diversify their energy sectors in order to maintain economic growth and remain competitive in an evolving global energy market. However, governments of resource-rich countries do not have to view the energy transition as a complete shift away from hydrocarbons. Many are adopting policies where both hydrocarbons and renewables contribute to reducing emissions and enhancing energy security.

03 A win-win scenario for the MENA region

According to the governments of the region, MENA countries can uniquely benefit from a win-win scenario in the energy transition. By leveraging its dual strengths in both hydrocarbons and renewables potentials, the MENA region can drive economic resilience and growth. Its competitive advantage derives from three key factors:

- ***Dual resource advantage :*** The MENA region is endowed with a dual foundation in hydrocarbons and renewable energy potential, particularly solar and wind, thus giving it a natural advantage in adapting to the global energy transition. According to the World Bank, 22–26 percent of solar energy is concentrated in the MENA region, allowing it to produce at least half of global electricity needs. Moreover, each unit invested in solar energy is expected to reduce emissions by twice as much as a similar investment in Europe or North America. The region also has abundant unused land that is well suited for large-scale solar farms as well as having untapped potential for wind energy. Large-scale wind projects can be carried out in key locations, such as Morocco's Atlantic coast, the Gulf of Suez in Egypt, as well as north-western deserts in Saudi Arabia and southern Oman. There are generally fewer challenges in implementing these projects than in Europe or North America, where obtaining permits can be more time-consuming and projects tend to face stronger resistance from local communities. Capitalizing on wind and solar energy could enable the MENA region to also become a hub for green hydrogen production, something that is a high energy transition priority for many governments.

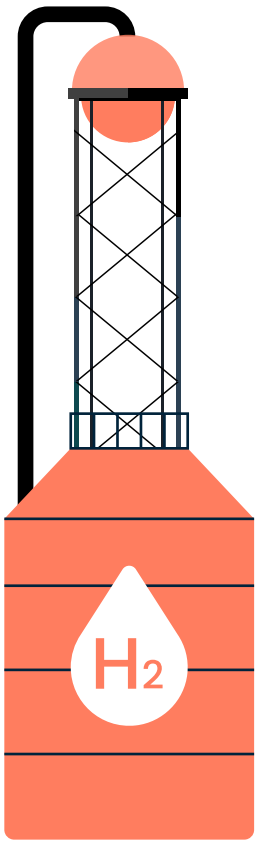
- ***Balanced economic transition :*** For resource-rich producing countries, the global energy transition does not imply an immediate shift from hydrocarbons to renewables. Rather, it involves a balanced approach, allowing MENA countries to maintain economic stability through hydrocarbon exports while developing their renewable energy sectors.

- ***Competitive production in energy-intensive sectors and strategic export advantage:*** The MENA region could take advantage of its access to low-cost and renewable-based energy to support energy-intensive industries, such as metals and chemicals, thus producing goods with low emissions. It could then export these goods to nearby regions, such as Europe, to transform them into final products. As such, the MENA region would be an attractive production hub for global markets as well as a reliable supplier in the green energy economy.

04 Regional cooperation: The backbone of MENA's energy transition

Regional cooperation could be a driving force for the energy transition in the MENA region. Some have the land, while others have the financial capacities, workforce, infrastructure, or political leverage. Gulf Cooperation Council (GCC) countries, particularly Saudi Arabia and the UAE, have been using the hydrocarbons sector and their financial capacities to advance their clean energy transition plans. Other countries, such as Morocco, have been able to attract investment for their projects through gaining knowledge and expertise to negotiate with financial institutions with complex standards. Others, such as Egypt, are attracting investment by catering to the needs of the global north, especially the European Union.

Several energy collaborations and infrastructure projects already exist in the MENA region, showcasing the potential for broader cooperation. These are projects related to hydrogen, renewable energy, electricity, and grid interconnectors.



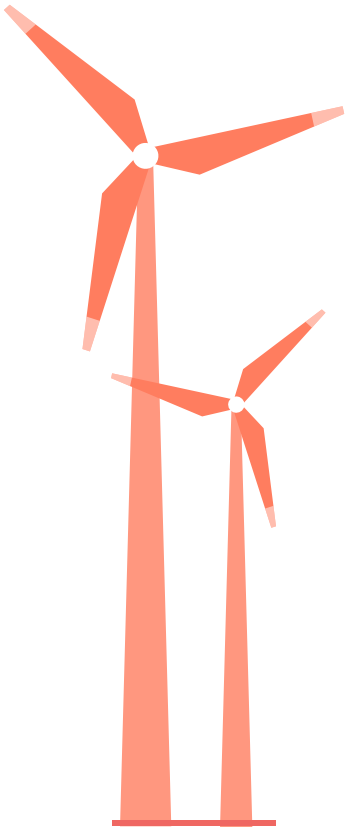
Hydrogen projects

Saudi Arabia's green hydrogen initiative: Saudi Arabia is leading the development of the largest utility-scale green hydrogen project globally, set to begin operations in 2026 in Neom. The facility is projected to generate 600 tons of clean hydrogen per day and 1.2 million tons of green ammonia annually. The majority of this is intended for export, with transportation routes to include shipment via the Red Sea, pipelines through Egypt, and overland pathways to neighboring countries. This project is expected to reduce carbon emissions by 5 million metric tons annually, showcasing Saudi Arabia's commitment to sustainable energy.

Egypt's hydrogen agreements: At COP27, Egypt advanced its ambition to become a regional hydrogen hub by signing eight memorandums of understanding. These agreements include plans for an $8 billion hydrogen plant in the Suez Canal Economic Zone.

Morocco's hydrogen roadmap: Morocco aims to establish a thriving hydrogen market, targeting a local demand of 4 TWh and exports of 10 TWh by 2030. This plan requires the development of 6 GW of new renewable energy capacity to support its ambitious goals.

Hydrogen pipelines and infrastructure: Proposals are being explored to establish a network of hydrogen pipelines connecting Israel, Jordan, Oman and the UAE. These pipelines could facilitate collaboration among these countries, leveraging existing natural gas infrastructure to transport hydrogen to regional and global markets.



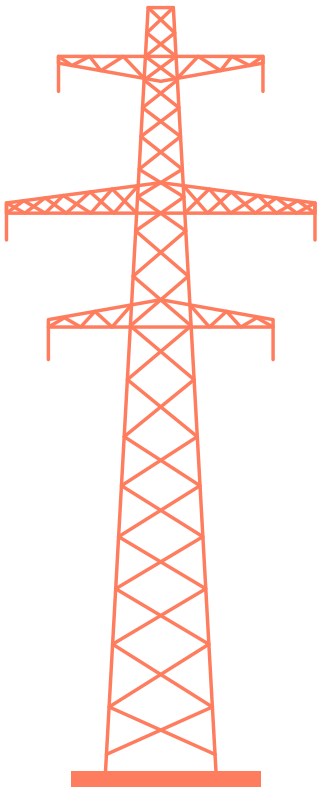
Renewable energy projects

Saudi Arabia's renewable energy in Neom: Saudi Arabia aims to produce 4 GW of renewable energy, with 3 GW allocated specifically to power its green hydrogen plant in Neom, demonstrating its commitment to integrating renewable energy into its projects.

Project prosperity: At COP27, Israel, Jordan and the UAE agreed on a water-energy swap initiative. This project includes the construction of a 600 MW solar PV plant in Jordan, which will supply electricity to Israel in return for desalinated water. Developed by Masdar, a UAE state-owned company, this collaboration underscores the advantages of regional cooperation in addressing energy and water challenges.

Egypt's renewable energy advancements: Egypt is rapidly increasing its renewable energy capacity through large-scale solar PV projects. A notable example is the Benban Solar Park in Aswan, which has a capacity of 1,650 MW and reflects Egypt's dedication to clean energy development.

Renewable energy potential in conflict-affected areas: The Sinai Peninsula in Egypt and the West Bank possess considerable potential for renewable energy projects. However, significant political and security barriers must be resolved to unlock these opportunities.



Electricity grids

GCC grid: The GCC operates a reliable electricity grid for emergency and peak-load scenarios.

Mashreq grid: The Mashreq grid connects countries such as Egypt, Iraq, Jordan, Lebanon, Libya, the Palestinian territories, Syria, and Turkey, though it has been less effective than other regional grids.

Maghreb grid: North African countries such as Algeria, Libya, Mauritania, Morocco, and Tunisia use this grid for electricity trade.

Egypt-Saudi Arabia interconnector: The Egypt-Saudi interconnector project aims to enhance electricity trade between the two countries, with plans for significant capacity expansions.

Regional grid interconnection: Projects such as Israel-Jordan connections *(as part of Project Prosperity)* and Egypt-Cyprus-Greece interconnectors are under way, aiming to link MENA grids with Europe for better energy integration.

By cooperating, MENA countries can create a connected energy infrastructure that enhances regional competitiveness and facilitates access to global markets. Regional cooperation also enables the strategic placement of renewable energy stations across diverse areas, allowing for more efficient resource use. A well-connected or unified market would attract foreign investment more effectively, transforming natural resources into economic opportunities and solidifying the region's position in the global green economy.

MENA countries are richly endowed with renewable resources and are deploying energy projects at varying paces under diverse policy frameworks. While many of these projects depend on imported technologies, such as solar PV panels, countries like Morocco and Tunisia have begun integrating elements of renewable technology value chains locally. Expanding this integration at a regional level presents a significant opportunity for collaboration across the MENA region. By adopting a coordinated approach, countries can leverage regional expertise in industries such as metals, mechanics, and electronics to develop complementary links in renewable technology value chains.

A strategy based on regional integration would not only create a larger market for renewable technologies, but also encourage manufacturers to scale operations and foster the creation of new businesses. Healthy competition among manufacturers in different countries could further drive productivity, innovation, and resilience against global competition. Additionally, a regionally integrated approach could optimize supply chains by reducing transportation distances, lowering carbon emissions, and improving overall efficiency. Such efforts would not only strengthen the renewable energy sector but also position the MENA region as a leader in the global energy transition.

05 The private sector: A catalyst in MENA's energy future

In the MENA region, the energy sector—that is mainly electricity companies and those in oil and gas production—has generally been dominated by government-led investments. However, the need for private sector involvement in the energy transition is becoming increasingly apparent. Governments alone cannot shoulder the financial burden of meeting the region's growing energy demands, especially as populations expand and economies industrialize. Most governments plan to replace the local energy needs from fossil-based fuels to clean energy, and this requires not only public investments in renewable projects but also a more active role for private companies that will need financing from different public and private sources.

Despite its potential, the private sector in the MENA region faces several challenges in contributing to the renewable energy transition. One of the primary obstacles is the capital-intensive nature of renewable energy projects, which requires developers to secure financing from banks or other financial institutions at the best prices and terms. Additionally, suppliers and contractors face significant pressure to deliver projects at the lowest possible cost while meeting stringent specifications, further complicating the process.

The overwhelming demand for renewable energy infrastructure has also created intense competition for supply chains, natural resources, and construction contractors, as the volume of demand exceeds the available supply on all levels. Companies like the Saudi and the Emirati Masdar have demonstrated global competitiveness by securing projects in Eastern Europe, Central Asia and South Africa. However, even these industry leaders face significant challenges—including navigating strained supply chains and securing favorable financing—as nations worldwide accelerate their renewable energy agendas. The broader market continues to struggle with establishing institutional frameworks and implementing effective risk-mitigation mechanisms to support project financing and attract global capital. Addressing these issues requires governments to prioritize investments in regional infrastructure and create environments that encourage private-sector participation. No single country's resources are sufficient to meet the ambitious targets alone.

A key strategy to incentivize private-sector participation in the energy transition is for governments to encourage partnerships between small businesses and established companies. These collaborations enable smaller firms to gain expertise, thus equipping them to operate independently in the renewable sector. Governments can also play a critical role by committing to long-term purchase agreements for the produced energy, providing investment security and reducing risks for investors. For example, companies like ACWA Power and Masdar have benefited from such frameworks, enabling them to secure competitive financing and deliver large-scale renewable energy projects within and beyond the MENA region. This highlights the importance of creating regulatory environments that encourage private sector participation.

Establishing frameworks that attract global capital is equally important, as it ensures the scalability of projects beyond the capacity of domestic resources. Government resources can serve as seed funding to attract larger private investments, both domestically and internationally. Moreover, creating a regulatory and legal environment that protects and encourages investment—whether from local or foreign entities—is essential. MENA governments should also prioritize cross-border collaborations and public-private partnerships to establish an institutional framework that fosters private-sector growth and regional integration. Cross-border initiatives involving companies like ACWA Power and Masdar show how regional cooperation can amplify the impact of renewable-energy investments. These companies have initiated projects that not only strengthen local energy infrastructure, but also connect MENA markets to global energy systems. Combined with focused investments in regional infrastructure, these strategies can significantly enhance the region's capacity to meet its ambitious renewable energy targets.



04 Recommendations for strengthening collaboration on MENA's energy transition framework

To be established as a pioneer and leader in renewable energy—and to be able to produce enough green energy to suffice local demands and export the excess—governments in the MENA region should undertake several strategic actions to move toward complementarity, integration, collaboration, and exchange:



Develop energy infrastructure and regional connectivity:
MENA governments should prioritize policies that enhance green infrastructure and establish connections with neighboring countries. Establishing a reliable and integrated electricity network would support the efficient distribution of renewable energy across the region, providing ease of access and strengthening energy security.



Maintain low-cost and high-reliability hydrocarbon electricity:
Amid the transition to renewable energy, MENA governments should capitalize on their existing hydrocarbon resources to reliably produce electricity at a low cost. In this way, they can retain economic stability and allocate hydrocarbon revenues to fund projects based on renewable energy.



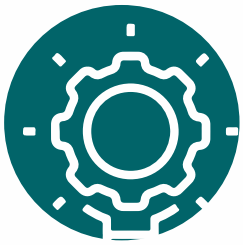
Encourage energy-intensive industries:
MENA governments should attract industries that rely heavily on energy to transform their industries by focusing on clean electricity and green hydrogen. Providing low-emission products could transform the region into a competitive renewable production hub.



Invest in research and development:
The Egypt-Saudi interconnector project aims to enhance electricity trade between the two countries, with plans for significant capacity expansions.



Enhance human capacity:
MENA governments should develop the local expertise in both traditional and renewable energy sectors by equipping the workforce with the necessary skills. For example, governments could invest in training programs that upgrade the skills of those working in the oil and gas sector to meet the demands of a renewable-focused economy.



Create a favorable investment environment:
MENA countries should establish a favorable organizational and legal framework, which will help attract local and foreign investment. Government policies that protect investments and reduce risks will stimulate private-sector participation in renewable energy projects. Government funding should serve solely as seed capital in order to stimulate larger investments.



Develop a regional roadmap for the energy transition:
MENA countries should collaborate on a comprehensive regional roadmap, similar in structure to the European Green Deal, to guide them through the energy transition. The MENA Green Dealshould outline infrastructure needs, such as integrated electricity connections, and establish organizational and legal frameworks to support renewable energy development. Moreover, it should define the role of the private sector and provide incentives for investment in renewables, critical minerals, and research and development.

References

Coleman, L. (2024, April 25). World Economic Forum. "This is how the MENA region can accelerate its renewable energy production". Retrieved from https://www.weforum.org/stories/2024/04/renewable-energy-capacity-mena/.

Energy Institute. (2024). Statistical Review of World Energy. Retrieved from https://www.energyinst.org/statistical-review.

Ezrahi, A. (2024). An Energy and Sustainability Road Map for the Middle East. Atlantic Council. Retrieved from https://www.atlanticcouncil.org/in-depth-research-reports/report/an-energy-and-sustainability-road-map-for-the-middle-east/#specific-initiatives.

International Energy Agency. (2024). Natural gas information: Database documentation (2024 edition). Retrieved from http://wds.iea.org/wds/pdf/gas_documentation.pdf.

Natural Resource Governance Institute. (2024). ندوة عبر الانترنات : الثروة المعدنية وتعزيز التعاون الإقليمي في الشرق الأوسط وشمال أفريقيا. YouTube video. Retrieved from https://www.youtube.com/watch?v=gGzXRGdI2rQ.

U.S. Energy Information Administration. (2024, April 11). "Frequently Asked Questions (FAQs) – What countries are the top producers and consumers of oil?". Retrieved from https://www.eia.gov/tools/faqs/faq.php?id=709&t=6.

World Economic Forum. (2023). Closing the Climate Action Gap: Accelerating Decarbonization and the Energy Transition in MENA. Retrieved from https://www3.weforum.org/docs/WEF_Closing_the_Climate_Action_Gap_2023.pdf.



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