

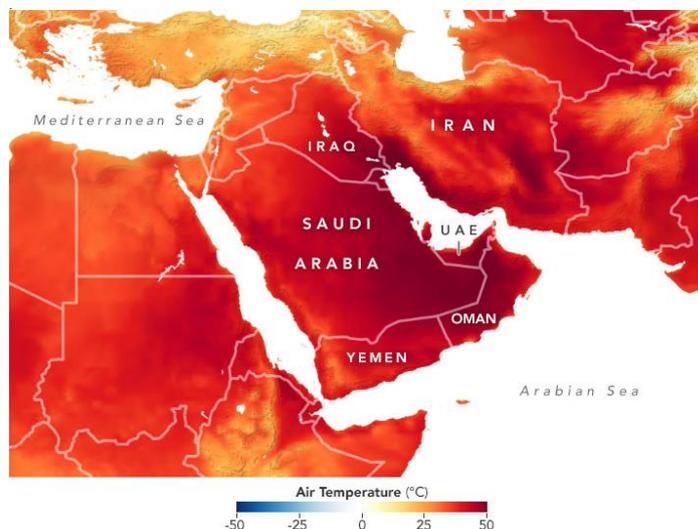
Research Briefing | MENA

Transformation in a changing climate

- The Middle East and North Africa (MENA) region is highly vulnerable to physical and climate transition risks, with water scarcity, desertification, and rising temperatures posing threats to the area. Further, fossil-fuel-dependent MENA economies are exposed to the devaluation of carbon-intensive assets. Thus, mitigation efforts against these risks are imperative.
- The MENA region possesses the financial and natural resources to transition towards low-carbon energy sources. By leveraging current economic diversification plans, the region can bridge the investment gap with "greener" capital stock. In doing so, countries like Saudi Arabia and the United Arab Emirates could emerge as leaders in the fight against climate change.
- However, decarbonisation and encouraging green growth will require the right incentives. Carbon pricing will help renewable energy become more competitive, given the abundance of cheap fossil fuels in the region. Support for those adversely affected by the carbon transition, such as workers in fossil-fuel-related sectors, will also be necessary.
- That said, the transformation to a decarbonised economy can help the MENA region save on costs by increasing energy efficiency and seeking growth opportunities in renewables. Saudi Arabia and UAE are already looking to develop their capabilities in blue and green hydrogen. MENA countries can also adapt to existing climate threats of rising temperatures and drought, and in doing so, reap the benefits of reduced pollution in their cities.

The Middle East and North Africa (MENA) region is highly vulnerable to climate change and needs to adapt to and mitigate against climate risks. Water scarcity, food insecurity, rising sea levels, desertification, and increasing temperatures are just some of the expected impacts of climate change that threaten the region. Indeed, during the heatwaves in 2021, regional temperatures reached 50 degrees Celsius (**Chart 1**). Moreover, the region's fossil-fuel-dependent economies are highly vulnerable to transition risks as the global economy shifts towards a low-carbon future and hydrocarbon assets face devaluations and write-downs. That risk exposure makes climate action imperative. Fortunately, the necessity to diversify MENA economies and increase investments also represent a green opportunity.

Chart 1: June 2021 Middle East Heatwaves



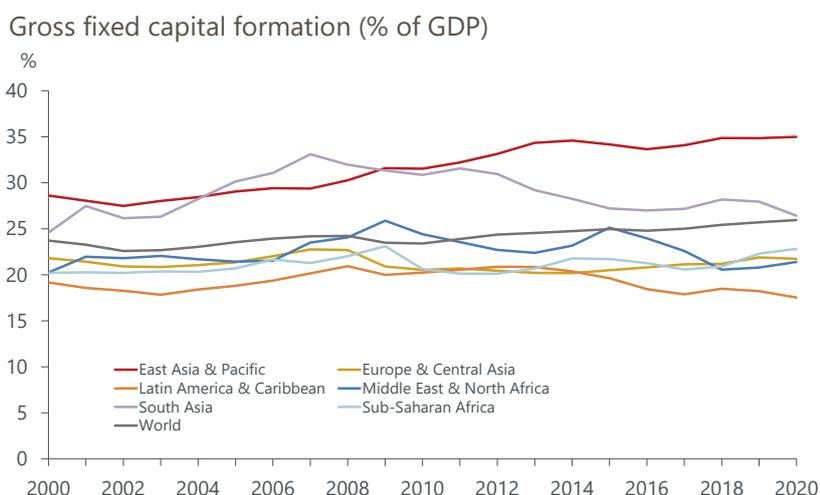
Source: NASA Earth Observatory image by Joshua Stevens

The region has the resources to catch up on the climate transition

MENA economies have the impetus and the resources to adapt to climate risks and become carbon neutral. Many MENA economies are dependent on hydrocarbons and will require deep structural change to meet climate goals. However, the push for diversification and national economic transformation provides an opportunity to transform the regional economy into a low-carbon one. Following the pandemic, governments already have ambitious development plans to diversify their economies and accelerate growth, which includes reducing reliance on oil and gas. For example, Saudi Arabia's national development plan, Vision 2030, makes economic diversification a priority. Other MENA countries have similar goals of re-inventing their economies and diversifying.

There is an opportunity to fill the investment gap with green options. The World Bank estimates the MENA region [needs to spend 8.2% of GDP](#) to meet its infrastructure goals by 2030. Historically, the region has spent around 3% of GDP, with most of it coming from the public sector. This is consistent with observed gross fixed capital formation figures (**Chart 2**), which show that investment in the region currently lags the world average. As the region strives to fill this gap, additional capital investments can be climate-friendly from the start, as it is easier to invest in green initiatives than having to clean up existing carbon-intensive industries.

Chart 2: Investments in MENA need to increase



Source: Oxford Economics/World Bank

Financially, the region has the resources and capital to fund its climate agenda. The IPCC noted that climate financing needs to be higher to reach climate goals. In line with this, the UNFCCC notes that the gap in the Middle East is relatively large. Currently, [climate finance is estimated at US\\$5.1bn–US\\$7.4bn per year, which is paltry compared to the US\\$436bn–US\\$478bn required to cope with climate change until 2030](#). This is an opportunity for the Gulf states to leverage their extensive public-sector funds (i.e., Saudi Arabia has committed US\$186 million to the green initiative strategy and the UAE added US\$400 million to the [Energy Transition Accelerator financing \(ETAF\) platform](#)). Resources can even be used to create blended finance initiatives that will help de-risk climate investments and crowd in more private-sector funds.

The region's natural resources make the shift towards renewable sources of energy a viable option, but it is not without its hurdles. MENA has great potential for solar and wind energy which can be harnessed with improvements in storage technology. The region also has potential for hydrogen and carbon capture, storage, and use (CCUS). Yet while the abundance of natural resources points to untapped renewable potential, electricity generation from renewables in MENA still lags the rest of the world (**Chart 3**). Further, [for renewables to match the cost of low fossil fuel prices](#) in the region, it will require pricing externalities and additional incentives to overcome intermittency problems.

Chart 3: Electricity Generation from Renewable Energy (GWh)

Country/area	2 015	2 016	2 017	2 018	2 019
Asia	2 039 145	2 230 646	2 431 788	2 650 207	2 894 738
Europe	1 173 189	1 195 711	1 210 693	1 300 021	1 333 746
North America	1 037 559	1 116 458	1 211 251	1 233 582	1 250 776
South America	732 943	779 155	782 975	792 935	797 467
Eurasia	265 957	290 490	287 734	305 596	343 314
Africa	137 962	138 851	149 335	160 992	171 405
Oceania	71 524	76 630	78 894	84 252	91 134
Central America + Caribbean	38 014	40 639	46 046	48 368	45 444
Middle East	20 135	25 269	23 884	26 489	35 426

Source: Oxford Economics / IRENA

Incentives are necessary to induce change

To encourage change, the right incentives and market structure will be necessary to generate returns on green investment. To compete with less-costly fossil fuels, countries will need to impose carbon pricing on emissions and remove fossil-fuel subsidies. Charging for emissions will help dissuade the public from carbon-intensive energy sources and encourage a shift towards renewables. This can impact both consumer and investor behaviour. That said, our research reveals that carbon pricing could also lead to an accelerated depreciation of carbon-intensive assets and higher inflation in the near term without an accompanying positive supply-side shock.

Initiatives in the region are encouraging innovation, such as the Dubai Electricity and Water Authority (DEWA)'s [Innovation Centre](#) which was launched to support work on clean energy. Improvements in technology can help renewable energy solutions become commercially viable and cost competitive.

In addition to incentives, support will be necessary for parts of the economy that stand to lose in the transition. While the ILO expects climate action to lead to net job creation in most regions, it projects the MENA region will see [net job losses of over 300,000 jobs for the Middle East and around 350,000 jobs in Africa](#). Given that the skills for working in the oil industry are different than those needed in renewables, oil industry workers, from the exploration to the production side, will be rendered expendable and will need re-training and re-skilling. Investments in the social safety net will be needed to mitigate the shock to the labour market and make the transition as painless as possible.

As they foster an environment that enables a low-carbon transformation, Saudi Arabia and the UAE may emerge as climate-transition leaders. For example, Masdar (a UAE renewable energy company) and ACWA Power (a Saudi power company) are expanding their businesses to the GCC and beyond. On a larger scale, the [Middle East Green Initiative](#) (MGI), which is part of the Saudi Green Initiative (SGI), includes a regional plan for clean cooking fuel and planting 50 billion trees in the region, which is around 5% of the global afforestation target. Smaller economies can benefit and follow this lead.

The Transformation can lead to long-term benefits

Transitioning toward low-carbon energy sources and ultimately reaching a net-zero economy can allow benefits to accrue in the long-term. Here are just a few examples:

- **Resolving inefficiencies can lead to cost savings.** [Inefficient energy production and consumption](#) have contributed to deteriorating energy systems in MENA countries such as Iran, Saudi Arabia, Kuwait, and the UAE. Improving energy efficiency can help reduce emissions and save on costs, enabling the region to [de-couple economic growth from emissions](#). Currently, some MENA economies have not been able to achieve growth without increasing carbon emissions.
- **Greening the economy can lead to new markets, industries, and growth opportunities.** The region may be able to export energy from hydrogen and take advantage of existing infrastructure. The UAE is looking for investors in [hydrogen exports](#), and Saudi Arabia's [Industrial Hydrogen Strategy](#) shows it is

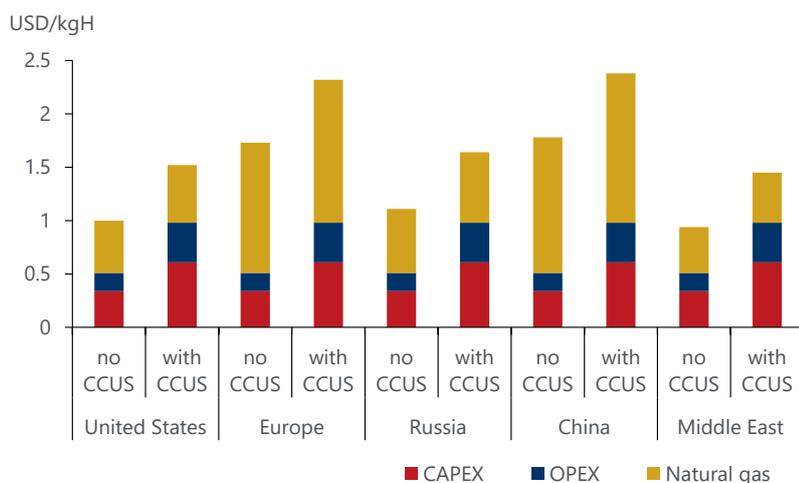
Climate-induced transformation in MENA

interested in becoming a global supplier of blue hydrogen (with CCUS). Green hydrogen is also possible for countries with solar and wind resources. Amidst fierce competition, the region can become a lowest-cost producer (**Chart 4**).

- **Adaptation efforts can reduce physical risks.** Drought, for example, is a long-standing challenge in the Middle East, with the region projected to [run out of water](#) due to climate change and population growth. The region can adapt to the changing climate with [climate-smart agriculture and water management](#).
- **Transition risks can be reduced if countries act earlier.** An early transition means countries can take advantage of the natural investment cycle and avoid further carbon-intensive investments that tend to have long lifespans and tie up capital. Similarly, [expansion plans for current hydrocarbon projects](#) will need to cease.
- **Innovation within the economy can have positive spillovers and boost productivity.** Akin to our [Net Zero Transformation scenario](#), higher investments boost innovation from learning by doing, imitation, and economies of scale. In turn, new techniques and ideas can boost productivity and even lower carbon-abatement costs. For example, the decline in the price of solar in the Middle East was largely driven by lower capital costs, and in part, by [learning behaviour](#). This reduced costs and made solar more competitive.
- **Other non-climate co-benefits are also possible.** Efforts to adapt to and mitigate against climate change can result in cleaner air and improved public health outcomes from a healthier population, the preservation of nature and biodiversity, and other benefits. The former would particularly benefit the region given [air pollution levels in MENA's cities are only second to South Asia](#).

Chart 4: MENA countries can be low-cost producers of blue (and green) hydrogen

Hydrogen production costs using natural gas, 2018



Source: Oxford Economics / IEA