GTF Arab Regional Report: ESCWA

Progress in Sustainable Energy: The Arab Region

The Arab region is a large and diverse region that shares a rich geography that is known for its natural resource wealth as well as its climate vulnerability. Its geography comprises 19 countries, stretching from Morocco and Mauritania at the Atlantic coast of North Africa, across Egypt, Syria, Jordan and Palestine in the Levant, or Mashreq, to Iraq, the GCC economies and Yemen on the Arabian Peninsula.[i] The region has wide variations in natural resources, while water scarcity and food security are major challenges overall. Income and wealth vary widely, leading to an economically diverse region comprising high- and middle-income countries, with a combination of exporters and net importers of energy, as well as three least-developed countries (LDCs) with high levels of energy poverty[ii].

In 2014, the region accounted for 5.1% of the world's total primary energy supply, 7.8% of its carbon dioxide emissions,[iii] and 5.6% of global GDP,[iv] much generated in the Gulf Cooperation Council (GCC) subregion. Fossil fuels still dominate much of the region's primary energy mix. Arab economies account for some 40% of the world's proven crude oil and around a quarter of global natural gas reserves (IEA 2016), and are major net exporters of energy to international markets.

Fast-growing energy demand in the region, coupled with prospects of the Middle East becoming a global economic center by 2030 alongside the Asia-Pacific region, drives the need to diversify energy sources and to move to a more sustainable energy sector. As regional economies move on to accommodate more economic growth, ever growing populations and rising living standards for all parts of their societies, their energy needs are expected to increase significantly over the coming years and decades. Nevertheless, the Arab region is still at the very beginning of its transformation toward a more sustainable way of using its rich natural resources, while protecting itself from its very own long-term vulnerabilities: declining mineral resources, water scarcity, and the threat of the negative implications of climate change on precious local and regional land and maritime resources and food security.

Access to electricity

The Arab region ranked third globally in 2014 on access to electricity, after the Europe, North America, and Central Asia region, and the Latin America and the Caribbean region, closely followed by the Asia-Pacific region. The access rate reached 90.4% in 2014, up from 76.2% in 1990, as 7.8 million people each year gained access (equivalent to the population of Jordan). Progress was driven by the prevalence of middle- to high-income countries, whose governments have made considerable efforts to supply electricity (and clean fuels and technologies for cooking) to their populations. High rates of urbanization in the GCC and Mashreq subregions have aided this outcome. The region's endowment in oil and natural gas helped many countries close gaps in access to electricity and to clean fuels by the 1990s and 2000s across the Middle East and North Africa. However, about 35.8 million people in the region still lacked access to electricity in 2014 (equivalent to Iraq's population), with 21.7 million of them in Sudan. The three Arab LDCs account for over 85% of the region's access deficit.

Figure 1. Share of people in the Arab region by sub-region with access to electricity, 1990-2014 (%)

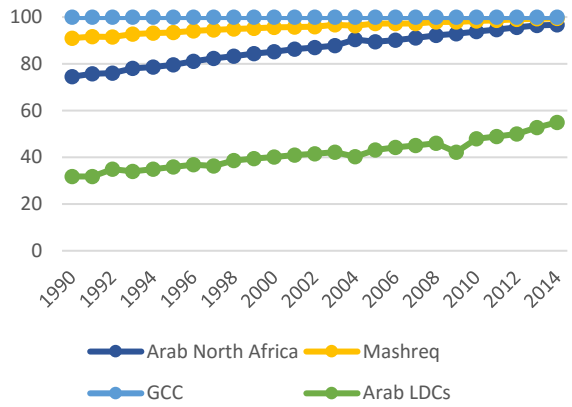
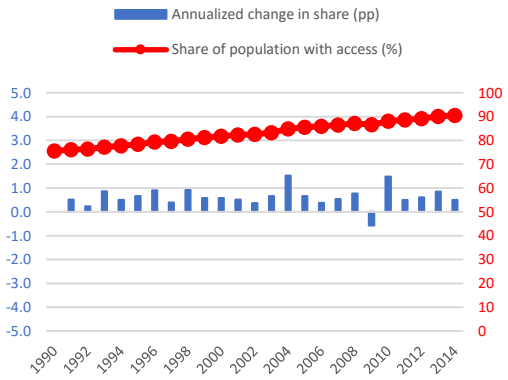


Figure 2. Share of population in the Arab region with access to electricity and annualized change in share 1990-2014



In urban areas, the electrification rate was historically relatively high, at 93.8% in 1990, and reached 97.3% in 2014, but about 5.8 million urban people remained without access that year. In rural areas, the gap narrowed with access increasing from 59.4% in 1990 to 80.5% in 2014, but about 30.4 million people still lacked access. In countries with incomplete access (below 98%), a considerable urban–rural divide persists, with rural access rates lagging far behind urban ones. The gap ranged from around 10 percentage points in Morocco, to over 60 percentage points in Mauritania. Lack of access is often restricted by geography, including for remote settlements and villages that are uneconomic to connect to the main grid, particularly in mountainous areas. In more recent years, several off- and mini-grid solutions based on renewable energy solutions have become cost competitive with alternative generators, suggesting that future costs of such projects will fall on a life-cycle basis, provided governments give initial support to promote such schemes (IRENA 2015; IRENA 2016).

Another frequently forgotten aspect of electricity access in the region is the quality and reliability of supply. While access rates in many countries have become universal, service disruptions and power outages are very common. This is a result of decades of electricity underpricing and hence underfunding of national utilities, lack of investment in electricity infrastructure, poor maintenance of infrastructure, and slow moves to liberalize markets with no legal framework or economic incentives for private parties to invest. In economies such as Yemen, Iraq, and the State of Palestine, the issue is further exacerbated by destruction of infrastructure in conflict.

Access to clean fuels and technologies for cooking

The Arab region ranked second among all regions, after the Europe, North America, and Central Asia region, on access to clean fuels and technologies in 2014 at 88%, closely followed by the Latin America and the Caribbean region. The share had risen from 79.2% in 2000, for a yearly increase of 7.8 million new users, equivalent to the population of Jordan. It is one of the few regions in the world where access to clean cooking is almost on a par with access to electricity.

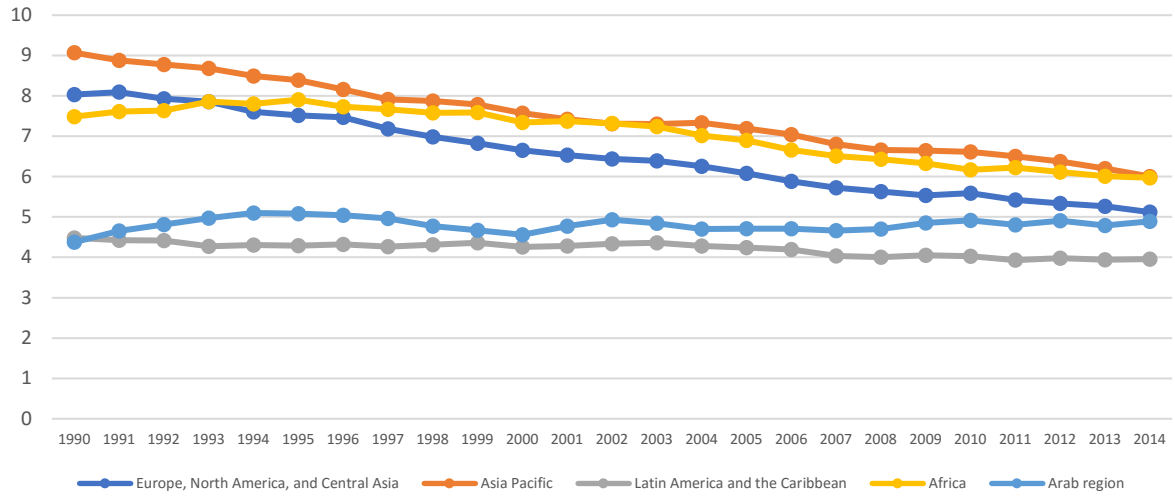
The drivers of the high access rates to clean cooking in the region are similar to those for electrification. Middle- and high-income countries have historically put considerable gas supply infrastructure in place, enjoying access to technology and low-cost fuels. In addition, a relatively well-educated population has been more disposed to adopt modern fuels, as evidenced by significant use of liquefied petroleum gas (LPG) cookstoves, even in rural areas. Nonetheless, in 2014, 43.4 million people still lacked access to clean cooking, almost equivalent to the population of Yemen and Syria combined. The highest deficit was in Sudan, at 30.4 million.

Energy efficiency

The Arab region was the second-least energy-intensive region in 2014, after the Latin America and the Caribbean region. It was also the only one presenting rising energy intensity trends in 1990-2014. However, a small decline could be perceived in 2012-2014, allowing the region to show about 0.2 EJ of energy savings, corresponding to 1.3% of global energy savings. Energy intensity in the region increased from 4.4 MJ/$ in 1990 to 4.9 MJ/$ in 2014, as total energy supply grew faster than GDP.

Incentives to improve energy efficiency have been low throughout the Arab region (with some recent changes), for multiple reasons. One is the abundance of fossil fuel at low cost for domestic users. Energy subsidies implemented in many countries during the global oil price increases in the 2000s exacerbated the issue. Vertically integrated state-owned electricity utilities have had limited incentives to implement energy efficiency measures and innovative technologies (CCEE 2014). High global oil and natural gas prices from the mid-2000s to June 2014 further reduced the urgency for such measures. Windfall revenues from this period were used largely to expand public spending, particularly in the oil-rich GCC economies (IMF 2016). More recently, energy net-importing countries saw their exposure to higher oil prices increase, and their fuel and subsidy bills rise as well, spurring them to take measures. Since the Arab Spring, several countries, including Egypt, Iran, Jordan, Morocco, and Tunisia, have undertaken major energy subsidy reforms and are beginning to give stronger price signals to incentivize energy savings (IMF 2014; Sdralevich et al. 2014).

Figure 3. Energy intensity trends by global region, 1990-2014 (MJ / GDPPPP 2011 $)



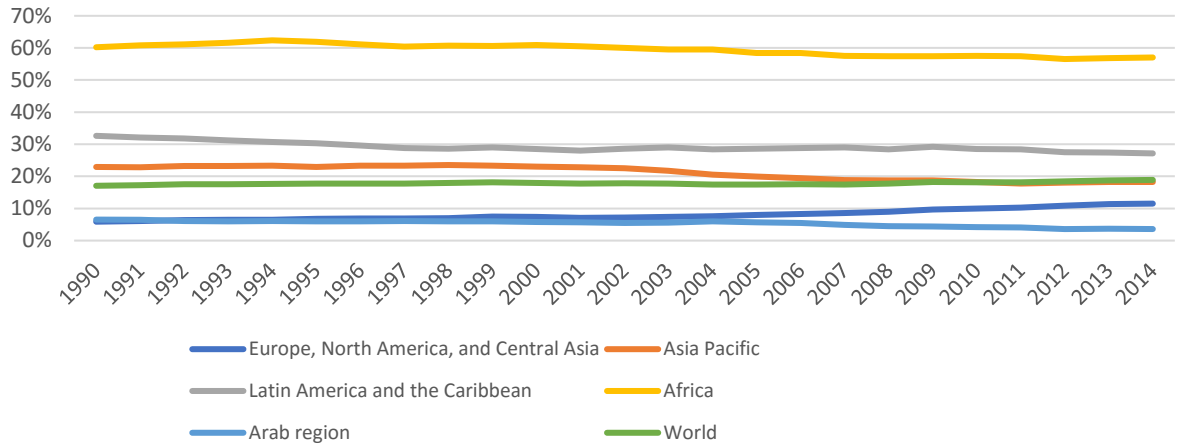
Conflict and political instability have affected the region, particularly Egypt, Iraq, Libya, Syria, and Yemen (UN ESCWA 2015b). In some, data may not reflect reality. Fear of conflict contagion in the wider region has stalled economic reforms and investment programs that could have contributed to a structural improvement in energy efficiency across other economies in the region.

Institutional capacity throughout governments, regulators, and other public institutions has been weak historically, as have civil society and consumer interest organizations. Regulatory frameworks and enforcement of technical norms, product labeling, and quality control are weak, if not absent. Affordability of efficient technology is a major barrier to household, commercial, and industrial use. Many countries lack financing mechanisms and dedicated state programs, such as soft loans and banking guarantees, to support industries and businesses in investing in energy efficient equipment (UN ESCWA 2015c; Ganda and Ngwakwe 2014).

Renewable energy

The Arab region had the lowest share of renewable energy consumption in total final energy consumption (TFEC) of any region in 2014, at 3.6% (0.56 EJ), moreover this low renewable energy share has been declining renewable energy in 1990–2014. It has historically been a hydrocarbons-producing region, and many countries have had access to low-cost oil and natural gas resources since the 1960s, reducing the need for alternative energy sources. In most parts of the region, conventional fossil fuels have for many decades underpinned the systematic expansion of modern energy access and higher living standards, leading to near-universal access rates of electricity and clean cooking fuels. Renewable energy sources have played a marginal and declining role in the region's energy mix.

Figure 4. Renewable energy share of total final energy consumption (%) by global region



Similar to energy efficiency, the weak presence of renewable energy stems from the absence of targeted policy initiatives, as well as the prevalence of state-owned energy utilities and widespread use of fossil-fuel subsidies, which have traditionally discouraged the use of new non-fossil fuel-based technologies (UN ESCWA 2015c; Fattouh and El-Katiri 2012). The dominant role of fossil fuels in Arab countries' economic development has also restricted the sociopolitical discourse, including that on environmental sustainability and domestic energy security, that has supported renewable energy deployment elsewhere.

However, this rationale has started to change in recent years in some parts of the region, and the share of modern RE stabilized in 2012–14. The region witnessed fast-growing energy demand during the late 2000s and early 2010s, driven by the economic boom and rising living standards, particularly in the GCC subregion. High oil prices during this period led to rising cost of energy for net importing countries, and growing opportunity costs for oil and gas exporters. Renewable energy costs have been falling, making investments, particularly in wind and solar power, more attractive.

Although the Arab region is still at the beginning of investing in renewable energy technologies, there is potential for strong growth over the next decade, in particular for solar energy. Nonetheless, long-term policy obstacles to deploying renewables remain in place, and while new initiatives such as competitive auctions and public–private partnerships hold considerable potential for the future of the energy sector, such business models have yet to prove their popularity regionally.

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[i] The Arab region here includes Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, Sudan, Syria, the United Arab Emirates (UAE), Tunisia, the West Bank and Gaza, and Yemen.
[ii] For background information on socio-economic progress in the Arab region, see UN ESCWA and UNEP (2015a), UN ESCWA (2015a) and UN ESCWA (2016a).
[iii] Carbon dioxide emission in kilotons for 2013.
[iv] GDP, PPP (constant 2011 international $).