The Impact of Global Decarbonization Policies and Technological Improvements on Oil and Gas Producing Countries in the Middle East and North Africa

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Endowed with half of the world's known oil and gas reserves, the Middle East and North Africa (MENA)[1] region became – particularly during the second half of the twentieth century – a cornerstone of the global energy architecture.

This architecture is currently undergoing a structural transformation, prompted by two different forces: decarbonization policies and technological improvements.

The adoption and quick entry into force of the Paris Agreement marked a major step forward in international efforts to address global warming. For the first time, developed and developing countries committed to act in order to limit global average temperature increase to well below 2 °C, and to pursue efforts to further limit this to 1.5 °C above pre-industrial levels. This should reinforce strong decarbonization measures already being undertaken in different parts of the world, such as in Europe.

Meanwhile, technological improvements have significantly increased the cost-competitiveness of low-carbon technologies such as solar and wind power generation, power storage technologies and electric vehicles (IRENA, 2017). This has already started to reshape the global energy system, notably by giving a greater role to solar and wind in the power generation mix. Global energy outlooks generally see these trends as continuing in the future. Some outlooks even see these trends further accelerating, leading to a peak in global oil demand in the 2020s.

By transforming the global energy architecture, international decarbonization policies and technological advancements could have an impact on the world's key oil and gas producing regions, such as the MENA. Let's see how.

The Macroeconomic Context of the MENA Region

The MENA region presents a heterogeneous macroeconomic context, which reflects the irregular distribution of oil resources throughout the region[2]. For five regional oil exporters (Libya, Kuwait, Iraq, Oman, Saudi Arabia), more than 40% of their GDP is based on oil and on government activities that are heavily funded from oil revenues. In four other oil exporters (Qatar, Algeria, UAE, Bahrain) this share varies between 40% and 20% (Chart 13).

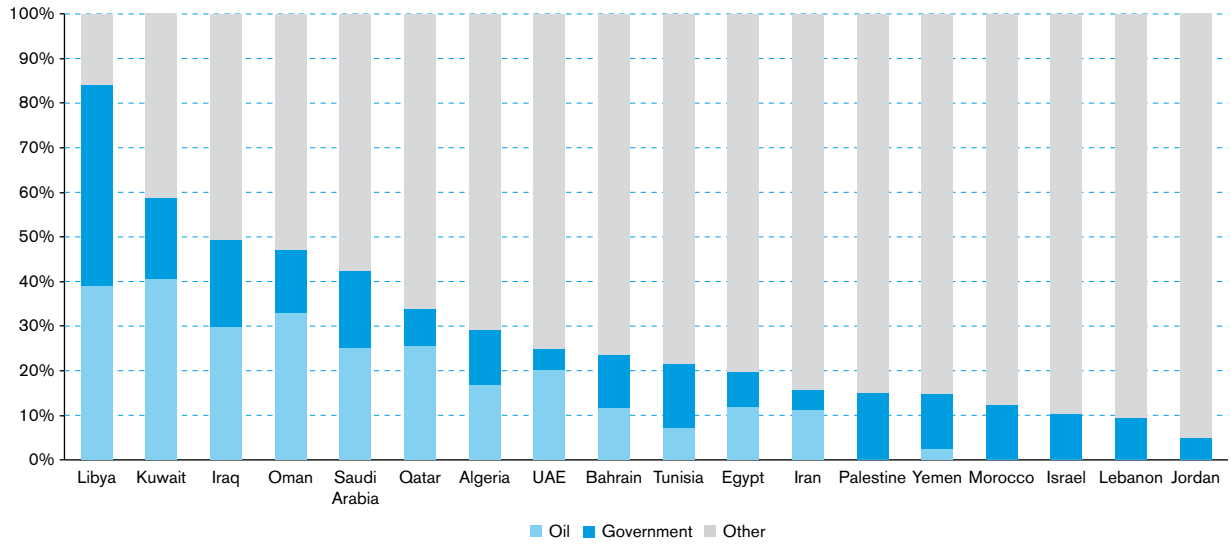
In all these countries, activities in non-oil and non-government sectors are also often linked to oil and government activities. The main sources of manufacturing value-added tend to include refinery, chemical and other mining/extractive industries, while some non-oil sectors, such as construction, depend heavily on government contacts (IMF, 2016).

In the same oil-exporting countries, oil is the primary source of fiscal revenues (Chart 14), and non-oil fiscal revenues are themselves mainly related to oil.

[1] We define MENA as including the North African countries (Morocco, Algeria, Tunisia, Libya and Egypt), the Levant countries (Jordan, Israel, Lebanon, Syria and Palestine), the Gulf Cooperation Council countries (Bahrain, Kuwait, Oman, Saudi Arabia, Qatar and United Arab Emirates), Iraq and Iran.

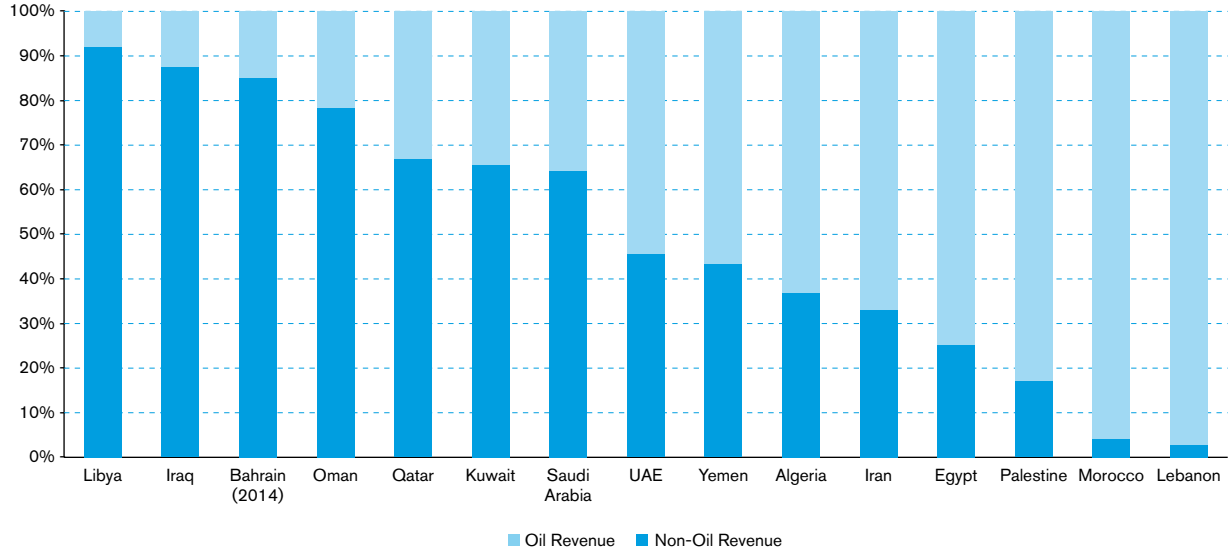
[2] For simplicity, the article uses the term 'oil' to mean hydrocarbons. In some countries (eg. Algeria, Qatar), hydrocarbon production includes a significant share of gas.

CHART 13 **GDP Composition of MENA Countries (2016)**



Source: produced by the authors from the International Monetary Fund's World Economic Outlook database.

CHART 14 **Oil and Non-Oil Fiscal Revenue in Selected MENA Countries (% of General Government Revenue) 2016**



Source: produced by the authors from the International Monetary Fund's World Economic Outlook database.

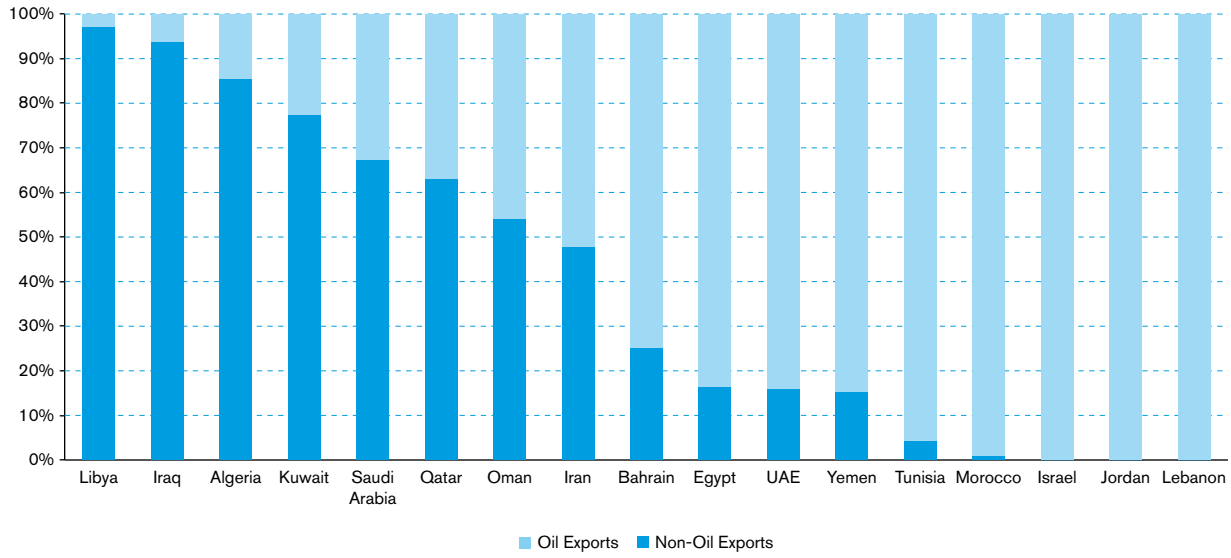
Oil makes up more than 50% of total exports from MENA oil exporting countries (Chart 15). This further illustrates the predominance of the oil sector in these economies, and their consequently limited level of economic diversification[3].

The compositions of GDP, fiscal revenues and exports illustrate how oil represents a fundamental difference in the MENA macroeconomic context between oil exporters and oil importers. But oil also impacts other macroeconomic variables, such as employment and labour productivity.

In oil-exporting countries such as Kuwait, Saudi Arabia and Qatar, more than 60% of nationals are employed in the public sector. This situation sub-

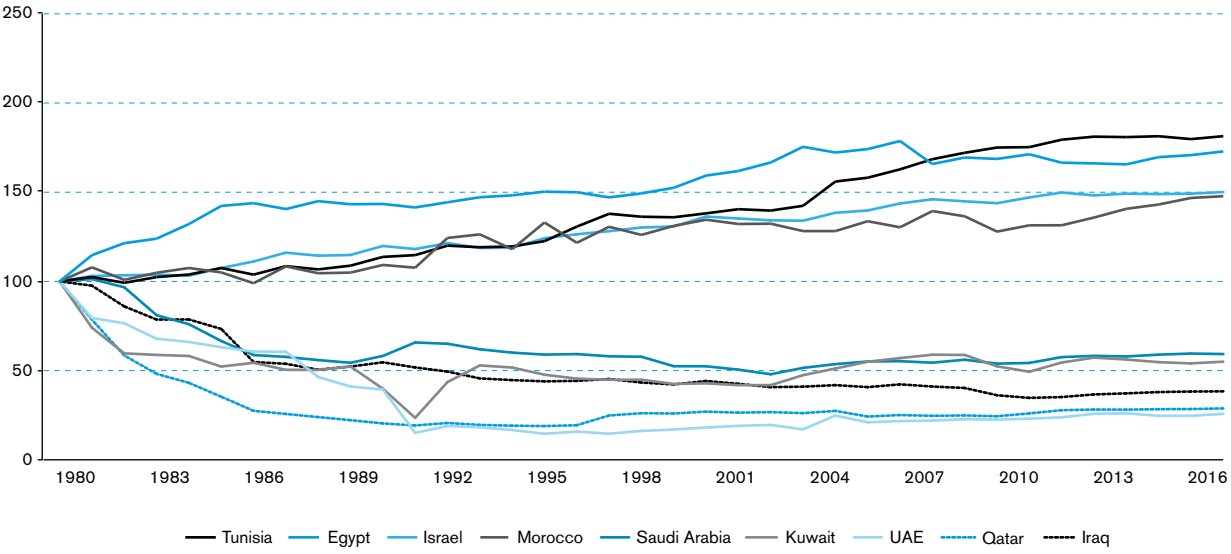
[3] It should be noted that the low shares of oil in exports from the UAE and Bahrain are because non-oil exports include a large share of re-exports (IMF, 2016).

CHART 15 **Oil and Non-Oil Exports in MENA Countries (2016)**



Source: produced by the authors from the International Monetary Fund's World Economic Outlook database.

CHART 16 **Labour Productivity in Selected MENA Countries (Index: 1980=100)**



Source: produced by the authors from The Conference Board Total Economy database.

stantially differs from that in MENA oil-importing countries, where a far more limited share of working populations is employed in the public sector.

High shares of public employment, generally characterized by protected jobs with high wages (WEF, 2014), have contributed to lowering the labour productivity of MENA oil-exporting countries.

This trend has become more entrenched since the 1980s, as MENA oil exporters have increasingly imported cheap non-national labour, reducing labour productivity also in the private sector. As a result, the trajectories of labour productivity in MENA oil exporters and oil importers have profoundly diverged over the last few decades (Chart 16).

This low level of labour productivity is one of the major barriers for economic diversification in MENA oil exporters (Hertog, 2013). It prevents the development of an internationally-competitive private sector. Furthermore, it should be outlined that high percentages of nationals employed in the public sectors of

oil-exporting countries go in tandem with small percentages of nationals employed in the oil sector. This is an important aspect of the social contract in MENA oil-exporting countries, because it shows that only a small fraction of each national population contributes to the generation of the revenue that is used to financially support the vast majority of each population. The support is mainly based on oversized public sectors, but also on expensive and economically inefficient subsidy schemes, such as those for energy.

This *excursus* through the macroeconomic context of the MENA region illustrates the persistent over-reliance of oil-exporting countries on oil revenues.

The Potential Impact of Global Decarbonization on MENA Oil Exporters

Since the 1980s, global oil demand has constantly risen, while between 2000 and 2014 oil prices boomed. In such a favourable context, MENA oil exporters have had little incentive to diversify their economies, and to evolve from rentier to production states. With global markets demanding increasing volumes of oil, and even at increasing prices – at least up to 2014 –, why would MENA oil exporters change course and put at risk their established social contracts?

After all, should oil production continue at current levels, MENA oil exporters still have a long way to go before depleting their reserves (Table 10).

Because of decarbonization policies and technological innovation, these reserves might become stranded before they are depleted. This is particularly the case for oil reserves. For gas the situation is different because gas is an important component of global decarbonization due to its key role in displacing coal from the energy mix.

With the Paris Agreement, global leaders have committed to strengthening the global response to the threat of global warming by keeping the global temperature rise this century well below 2 °C above pre-industrial levels. Climate scientists have estimated that, to have at least a 50% chance of keeping the global temperature rise below 2 °C throughout the century, the cumulative carbon emissions between 2011 and 2050 need to be limited to around 1,100 gigatonnes of carbon dioxide (Gt CO_2) (Meinshausen *et al*, 2009).

Greenhouse gas (GHG) emissions contained in the present estimates of global fossil fuel reserves are estimated to be about three times greater than the global carbon budget (Meinshausen, 2009; Raupach, 2014).

On this basis, McGlade and Ekins (2015) explored the implications of this emissions limit for fossil fuel production in different world regions. According to their study, a third of global oil reserves, half of gas reserves and over 80% of current coal reserves should remain unused from 2010 to 2050 in order to meet the 2 °C target. In this context, they estimate the Middle East to be able to exploit only about 60% of its oil reserves – leaving more than 260 billion barrels underground – and about 40% of its gas reserves (McGlade and Ekins, 2015, p. 189).

Such a development would represent an unprecedented challenge for MENA oil exporters. Their entire economic and socio-political models would need to structurally change in order to adapt to the new reality.

TABLE 10 **Projected Years of Future Oil and Gas Production at 2015 Reserve Level and Average Production of Last Five Years**

	Oil	Gas
Algeria	21	55
Iran	111	196
Iraq	120	>200
Kuwait	90	118
Libya	170	137
Oman	16	21
Qatar	37	147
Saudi Arabia	63	83
United Arab Emirates	75	112

Source: produced by the authors from BP 2017.

TABLE 11 **MENA Economic Diversification Strategies: Key Targets**

Algeria – New Economic Growth Model (2016-2019) *(Launched in 2016)*
▪ Boost non-hydrocarbon exports to 9% of total exports by 2019, from less than 5% currently
Iraq – Private Sector Development Strategy (2014-2030) *(Launched in 2014)*
▪ Increase the private sector to a share of 60% of GDP by 2030
Improve the country's business environment, particularly for SMEs
Reduce the unemployment rate to 4% or less by 2030
Kuwait – Kuwait Development Plan (2015-2020) *(Launched in 2015)*
▪ Increase the private sector to a share of 40% of GDP by 2020
Creation of public-private partnerships to carry out infrastructure projects
Increase the number of Kuwaiti employees in the private sector from 92,000 to 137,000 by 2020
Oman – Ninth Five-Year Development Plan (2016-2020) *(Launched in 2016)*
▪ Reduce the contribution of oil to GDP at current prices from 44% in 8th five-year plan to 26% by 2020
Focus on the private sector and activate public-private partnerships
Create job opportunities
Focus on SMEs
Qatar – National Vision 2030 *(Launched in 2008)*
▪ Increase and diversify the participation of Qataris in the workforce
Create a business climate capable of stimulating national and foreign investments
Manage the optimum exploitation of hydrocarbon resources
Expand industries and services with competitive advantages derived from hydrocarbon industries
Create a knowledge-based economy characterized by innovation, entrepreneurship and excellence
Saudi Arabia – Vision 2030 *(Launched in 2016)*
▪ Increase SME contribution to GDP from 20% to 35% by 2030
Increase Foreign Direct Investment from 3.8% to 5.7% of GDP by 2030
Increase the private sector's contribution from 40% to 65% of GDP by 2030
Raise the share of non-oil exports in non-oil GDP from 16% to 50% by 2030
Increase non-oil government revenue from SAR 163 billion to SAR 1 trillion by 2030
Generate 9.5 GW of new renewable energy by 2030

Source: produced by the authors based on national strategies.

MENA Economic Diversification Strategies

The drop in oil prices that started in 2014 has functioned as a catalyst for new thinking throughout the MENA oil exporters about the unsustainability of their high reliance on oil and about the consequent needs for economic diversification (El-Katiri, 2016). All regional oil exporters have adopted economic diversification strategies, generally based on the targets of increasing the private sector's role in the economy, developing small and medium enterprises (SMEs), creating jobs, investing in education and innovation (Table 11).

These strategies reflect the economic policy guidelines generally aimed at MENA oil exporters, developed by international organizations and academics. However, it should be outlined that these kinds of economic diversification plans have been part of MENA oil exporters' rhetoric for a long time. For instance, the Kuwaitie government was already discussing the need for economic diversification during the 1950s. After 60 years, oil continues to represent more than 60% of Kuwait's GDP, and more than 70% of its fiscal revenues.

MENA oil exporters have often set out similar strategies in times of low oil prices, and then rapidly dismissed them once prices recovered. As Hvidt (2013) outlines, MENA rentier states easily give up their well-argued and planned policies when under pressure and fall back on established ways of doing business, namely through patronage and the predominant role of the public sector. There is, therefore, a risk that current strategies could also be quickly forgotten if/once oil prices recover from the current low levels (IEA, 2017).

This problem is further exacerbated by the fact that when oil prices are high, non-oil exporting and import-substituting sectors of the economy become less competitive, because the exchange rate appreciates. Being aware of this problem, private investors tend not to invest in non-oil sectors, even when oil prices are low. This creates a vicious cycle that helps to explain MENA oil exporters' small private sectors. However, there are remedies to this prob-

lem. For instance, sovereign wealth funds could be used to strategically invest in the creation of productive domestic private sectors, instead of being used as tools to perpetuate the rent via financial or real estate speculation. Of course, to be implemented, such strategies require strong governance and forward-looking visions on the part of governments.

Conclusions

MENA oil and gas exporters should look at international decarbonization policies and at low-carbon technology advancements as an opportunity to develop forward-looking strategies to transform their economies.

Sovereign wealth funds could be used to strategically invest in the creation of productive domestic private sectors, instead of being used as tools to perpetuate the rent via financial or real estate speculation

This transformation should be considered by MENA oil exporters as a structural path, to be pursued without deviation in order to ensure both political stability and socio-economic prosperity – even in a decarbonizing world.

Should the world factually pursue the decarbonization pathway agreed in Paris and should MENA oil exporters continue to be unprepared for that, the consequences could be dramatic, socio-economically and geopolitically, for the MENA region and the overall international equilibrium.

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